PWP 53-2004
PHD 75-2004
October 12, 2004

THE REGIONAL MUNICIPALITY OF NIAGARA

REPORT TO: Chair and Members of the
Public Works and Utilities Committee

and

Chair and Members of the
Community and Health Services Committee

SUBJECT: Water and Wastewater Servicing Issues
Township of Wainfleet

RECOMMENDATION(S)

That this report be received for information.

PURPOSE

The purpose of this report is to advise members of both Committees and Regional Council of the background, process, status and issues related to the Wainfleet Water and Wastewater Servicing Environmental Assessment.

BACKGROUND

Currently, municipal water and wastewater infrastructure does not exist in the Township of Wainfleet. All communities in the Township, with the exception of Long Beach area, rely on private water wells and individual on-site septic systems for sewage disposal. In the Long Beach area, potable water is provided by a privately owned communal water supply system. Sewage disposal is provided by individual on-site septic systems.

In October 1995, the Township completed the Wainfleet Community Strategic Plan that, based on extensive community input, outlined the long-term development strategy for the Township. Timely resolution of sewage disposal and water supply problems was identified as a priority.

Over the years, Public Health staff has identified significant problems with contaminated wells and aging and failing septic systems in many Wainfleet communities located along

the Lake Erie shoreline. Factors contributing to public health problems include population increases, conversion of summer cottages to year-round occupancy and significant increases in water consumption.

Studies conducted by the Public Health Department (August 2001), Regional Public Works (June 2002) and the Ministry of the Environment (October 2003) concluded that a significant number of private wells are contaminated with water-borne bacteria. As a result, residents utilizing raw groundwater resources are potentially at significant health risk due to related contamination.

The studies recognize that many private septic tank systems are failing for a variety of reasons, thereby having a detrimental impact on groundwater supplies and Lake Erie itself. A summary of the findings of these studies is provided below:

Long Beach Sanitary Survey

At the request of the Township of Wainfleet, Public Health completed a sanitary survey in August 2001. The survey assessed potential human health and safety concerns associated with 286 dwellings on private septic systems in the Long Beach lakeside community of Wainfleet. Findings of the Public Health survey include the following:

- Development has occurred over the past 80 years in Long Beach. Most septic systems are 25 years or older, do not meet current requirements and are too small for present use.
- 86% of the lots surveyed had visible or suspected sewage disposal problems. Lots are too small to accommodate repairs or replacement, except for holding tanks.
- Existing soil consists primarily of one to three feet of sand, overlaying clay and bedrock. This allows for easy penetration of sewage vertically and then horizontally on hard underlay to the lake.
- 79%of the homes in Long Beach are serviced by a private, treated communal water supply, taken from Lake Erie. Only 2% (5 dwellings) rely on wells.

Following the completion of this survey, Public Health notified area residents of potential health risks and advised that frequent testing or proper utilization of water treatment devices should be instituted.

Wainfleet Groundwater Impact Assessment, Water Well and Septic System Survey

As a result of the Long Beach Sanitary Survey, concerns were raised about potable groundwater quality, environmental degradation, and the effectiveness of water and wastewater systems in similar and adjacent lakeshore communities in Wainfleet. Subsequently, Public Health solicited the assistance Public Works to gather additional

information regarding physical and sanitary conditions of neighbouring hamlets along the lakeshore.

In June 2002, Regional Public Works engaged MacViro Consultants to undertake a hydrogeological study to assess potential human health concerns associated with private water and wastewater services in the communities of Belleview Beach, Morgan's Point and Camelot Beach. The study also examined local geology, hydrogeology and land use. At the time, MacViro Consultants was one of the firms engaged in developing the Region's Water and Wastewater Master Servicing Plan Update and the Niagara Water Quality Protection Strategy.

The consultant conducted a survey of drinking water quality and septic systems, including voluntary inspection of some 128 residences. The survey sample size was designed to provide a spatial representation of groundwater quality within the three communities and potential human health concerns related to drinking water. Findings of the survey included the following:

- 30% of the water from dwellings tested had E.Coli exceedences in the groundwater
- 52% of the water from dwellings tested had total coliform exceedences in the groundwater
- 40% of the septic systems had systems older than 20 years
- 44% of the septic systems did not meet current setback requirements between wells, property lines and septic systems
- 57% of the lots were too small for repairs or replacement of on-site septic systems, and could only accommodate holding tanks.

An examination of area geology revealed the existence of bedrock at shallow depths with a thin overburden soil cover. Hydrogeologically, a significant portion of the study area was defined as sensitive due to the presence of fractured bedrock aquifers close to the surface. Very thin overburden provides little or no attenuation to septic effluent discharged from individual septic systems. In addition, individual lot sizes do not provide enough dilution to the septic effluent.

Fractured bedrock serves as a drinking water supply aquifer for the lakeshore community. Geological, hydrogeological and land use information (e.g. lot size and septic system types) suggest significant potential for contamination of the drinking water supply from sewage effluent containing nitrates, bacteria and other pathogens.

The water quality survey confirmed a significant impact on local water supplies from malfunctioning private individual sewage disposal systems. The study confirmed a potentially serious human health risk facing residents in the concentrated urban areas along the lakeshore. This was reported in PHD 07-2003 and PWA 07-2003. Residents and American property owners were notified of these concerns and ways to monitor

their private water well supply, by letter and in other ways including fact sheets, newspaper paid ads, media coverage and website information.

Water Quality on the Lake Erie Shores of Wainfleet Township

In October 2003, the Ministry of the Environment (MOE) released a report addressing localized environmental problems in the nearshore of Lake Erie, including the Wainfleet shoreline. Concerns about malfunctioning septic systems potentially contaminating surface drainage to the lake were examined, as well as contaminant levels on local beaches.

The study provided extensive technical data on water quality characteristics of the nearshore area. It identified the excessive fouling of the shoreline by an abundance of algae. The source of phosphorus, a significant factor contributing to nutrient loading, was not identified. However, the study concluded that the establishment of sanitary services along the shoreline would serve to limit future nutrient discharge from groundwater impacted by failing septic systems.

REPORT

Based on the above studies, Public Health, Public Works and MOE staff took the position that existing dwellings on private septic systems in surveyed communities were affecting local groundwater supplies and causing detrimental impacts to the Lake Erie water environment. These studies also concluded that a community solution is required to correct a problem that has evolved over an 80 year period of lakeshore development and cottage conversion.

Current enforcement strategies that attempt to upgrade individual sewage systems on a complaint basis in accordance with existing Building Code regulations are piecemeal at best. As noted, many lots are small and cannot be retrofitted to upgrade septic systems to current standards.

Geological and hydrogeological sensitivities of this area are also a contributing factor. This suggests that some of the larger lots on private septic systems are also contributing to groundwater contamination, as identified in the above-noted reports.

From a Public Health perspective, ordering individual property owners to install holding tanks is not a viable solution for a variety of reasons. The high cost of installing holding tanks and further ongoing costs of maintaining them are limiting factors. As a corrective measure holding tanks are, at best, only an interim solution pending the construction of a permanent, communal wastewater system.

Holding tanks restrict the use of properties, stigmatise the community and present a host of enforcement issues for regulatory agencies that have the responsibility to ensure that such systems operate in compliance with pertinent standards and regulations. A community solution is recommended that will adequately address the issues of groundwater contamination and detrimental impacts to Lake Erie, as identified in the studies.

To explore various options and involve the Wainfleet lakeshore community, a Class Environmental Assessment (EA) was jointly undertaken by the Township of Wainfleet and the Niagara Regional Public Works Department, following recommendations set out in PWA 7-2004.

Status of the Environmental Assessment Process

In accordance with Provincial requirements for Class EA's, residents of Wainfleet were notified of the commencement of the process in August 2003. Provincial requirements to hold two mandatory public meetings during in the EA process were met by hosting public information centres on October 9, 2003 and April 22, 2004 in the Township. An additional, discretionary public meeting was held on August 26, 2004.

Based on community input and extensive public consultation, additional issues were identified that affect the EA completion date. Consequently, it is expected that the EA schedule will be protracted for approximately 5-6 months to accommodate the additional technical information required to address all issues raised in the process. A summary of the Public consultation process, including references to public issues raised by Wainfleet lakeshore residents, is provided below.

Public Information Centre #1

The first public information centre (PIC) was held on October 9, 2003 to identify and receive feedback on alternative water and wastewater infrastructure solutions evaluated by the Region's consultants (Earth Tech). Water and wastewater alternatives considered are presented in the following table.

Alternative Water and Wastewater Solutions Considered

Water Supply Alternatives	Wastewater Treatment Alternatives
• Extend municipal water supply from existing Port Colborne system. • Establish new Lake Erie-Wainfleet water treatment plant. • Upgrade/expand existing Long Beach	• Extend municipal sewers from existing Port Colborne system. • Establish new Wainfleet wastewater treatment plant, including Lake Erie outfall. • Establish communal wastewater treatment

private water supply system. • Establish communal well supply including well head protection zone. • Private wells with "at point of use treatment" • Do nothing	system. • Improve private on-site disposal systems. • Do nothing.

Approximately 180 people attended PIC #1. Information was provided on the study background, problem statement, health issues, evaluation criteria and potential facility locations. Examples of sanitary hook-up charges applied to similar projects elsewhere in Niagara and a preliminary evaluation of alternative servicing solutions were also presented to the public.

Rationale for the defined study area was presented to the public. The Regional Policy Plan states that developments outside urban area boundaries will not be provided with municipal water and sewer services. However, the Policy Plan recognizes that such services may be extended to correct an existing health problem, as determined by the Medical Officer of Health. Open house participants were advised that the EA study area was generally defined to reflect the public health concerns in Wainfleet's lakeshore communities.

Approximately 37 formal public comments were recorded. These addressed such issues as public notification, opinions on alternatives, hook-up requirements, expanding the service area, environmental impacts, scheduling and proposed facility locations.

Public Information Centre #2

PIC #2 was held on April 22, 2004 to present the recommended design concepts and servicing strategy, considering public input previously received.

The recommended water servicing strategy included extending municipal water supply from the Regional facility in Port Colborne and constructing a local distribution system. Similarly, the recommended wastewater servicing strategy included extending the municipal wastewater trunk system from the Wainfleet service area to Region's Seaway Wastewater Treatment Plant in Port Colborne.

Display boards developed for PIC#2 presented information on the following: an overview of the EA process, study background, identification of alternative water and wastewater solutions, advantages and disadvantages of each alternative, maps depicting the proposed facility locations, hook-up and construction details and an estimated project schedule.

A breakdown of estimated project capital costs (totalling $41 million) was presented with supporting rationale. Detailed estimates of potential individual property owner costs were not presented. This was considered premature, subject to Township Council's consideration of connection policies, hook-up criteria, financing options etc.

Approximately 218 residents attended PIC #2 and 38 comment sheets were submitted. Comments addressed a variety of topics including the proposed alignment of services, property tax implications, definition of the benefiting area, decommissioning costs, servicing of vacant land, hook up charges, scheduling, public/private sector options and policies for multiple unit lots.

Residents expressed concern that construction cost assumptions may not have adequately reflected geological characteristics of the study area and suggested that a closer investigation of geotechnical conditions was required.

Public Information Centre #3

Recognizing concerns expressed at PIC #2, Public Works commissioned a study to identify the physical conditions that could be anticipated for service installation. In particular, a geotechnical study was undertaken to indicate conditions that could increase costs. This included the presence of shallow bedrock, deep fills, overburden soil type and groundwater conditions that could require sophisticated dewatering operations. Consultants revised their cost estimates using this new information.

PIC #3 was held on August 26, 2004 to provide responses to questions raised at the previous session. In particular, this included information on refined project costs, proposed assessment method, estimated typical homeowner costs, and potential payment options. This discretionary meeting also provided the opportunity for some seasonal residents to be apprised of details of the EA study.

Based on sign-in sheets, 462 people attended the August 26, 2004 open house and public presentation. It is estimated that the actual number of attendees exceeded 600. Display board information developed for the informal presentation explained proposed design concepts, route and site selection, estimated project costs and details from previous public information centres.

At the formal presentation members of an expert panel, comprised of representatives of the Township, Public Health, MOE, Public Works, Planning and Development and the technical consultants, addressed matters related to their respective mandates. (A copy of the presentation material is provided in attachment 1.)

The formal presentation was followed by a high-spirited question and answer period. Salient issues raised by the public, for which follow-up action is required, are summarized below:

- Exorbitant project costs and connection fees to be paid by benefiting property owners
- Validation of the representative sample size used in the MacViro survey of private wells and septic systems
- Consideration of other private, on-site disposal options (e.g. Waterloo Biofilter)
- The need to secure additional federal/provincial funding
- Exemptions for properties with fully functioning water and septic systems.

Costs of Providing Municipal Services

The most prominent issues identified by the Wainfleet community related to property owner costs and affordability. Based on new geotechnical information, revised project component costs were presented at PIC#3, as follows:

Revised Project Cost Financing
($ Millions)

Item	Water	Wastewater	Private Services	Total
Niagara Region	$4.7	$7.5		$12.2
Cost to Landowners	$11.6	$9.3	$4.5	$25.4
Provincial Project Funding		$7.0		$7.0
Future Servicing Needs	$2.0	$1.7		$3.7
Total	$18.3	$25.5	$4.5	$48.3

The total ($48 million) reflects a Regional/Township cost sharing arrangement, consistent with typical Regional/local municipal servicing responsibilities. In this case, transmission mains and trunk sewers are generally recognized as Regional costs and distribution mains and the local sanitary collection system components are the responsibility of the Township. The Region's Super Build contribution ($7 million) was applied to the wastewater component.

An example of a typical lot assessment, based on the flat-rate assessment method presented at PIC #3, is illustrated below. The table assumes an estimated connection

charge and a private, on-site servicing cost based on typical water and wastewater servicing costs in Niagara. Individual costs will vary with site-specific conditions.

Example of Typical Municipal Flat Rate Assessment

Lot Type	Flat Rate	Connection Charge	Municipal Assessment	Private Services	Estimated Total Cost
Residential	$16,000	$3,500	$19,500	$4,500	$24,000

From the onset, Regional staff has recognized homeowner concerns regarding affordability. Technical approaches to infrastructure design and construction are being explored that will result in a refinement of preliminary estimates and could reduce overall project costs. Staff is aware of community concerns associated with evolving costs and are taking steps to identify fair and reasonable servicing charges.

However, the most significant cost reductions would be achieved through securing additional federal and provincial funding. Opportunities will be afforded by the new federal/provincial COMRIF program. The Canada-Ontario Municipal Rural Infrastructure Fund is designed to assist small towns and rural communities to improve drinking water and sewage treatment, as well as other services. Regional and Township staff will continue to liaise with federal and provincial counterparts to position Wainfleet Township to secure part of the $900 million earmarked for this program.

Next Steps

MOE requirements for EA processes call for proponents to solicit and consider input from affected parties. As a result of an extensive public consultation process, comments and inquiries from area residents received through correspondence, telephone calls, e-mails and the PICs have been numerous. Consequently, Regional staff proposes to take additional time to provide appropriate responses and follow-up on public advice.

In addition, based on residents' comments, letters to the editor and local newspaper articles, there appears to be some misunderstanding and misinformation about various aspects of the EA process. To better inform the public and improve communication with the Wainfleet community, Niagara Region and Township staff will cooperate to jointly undertake the following:

- Develop a Communications Plan that will identify a variety of appropriate consultation and communications elements and assist in moving the process forward to appropriately address Wainfleet's serious public health concerns.
- Prepare and distribute a community newsletter
- Compile responses to all written comments received from area residents
- Confirm sampling assumptions used in the MacViro Groundwater Report
- Re-evaluate alternative solutions including private, on-site sewage treatment options
- Refine cost estimates using data on site-specific conditions, where appropriate
- Review options for service hook-ups, including flexibility in establishing connection dates, allowances for new septic systems, longer amortisation periods, etc.
- Examine options for phasing water and wastewater components
- With the cooperation of the Township, secure additional federal/provincial funds
- Closely liaise with Township staff and Council
- Work with a Community Liaison Committee, in accordance with a mandate developed by the Township
- Delay the submission of the EA to the Ministry of the Environment to carry out the above.

SUMMARY

This report outlines the extent of public health concerns identified in the lakeshore communities of Wainfleet Township. It summarizes the position of the Public Health Department regarding the need to develop appropriate, long-term servicing solutions. It also describes the steps taken by Wainfleet Township and the Public Works Department in undertaking a Class Environmental Assessment to identify a preferred servicing solution. Issues identified during the process are summarized, as well as proposed next steps to effectively address them.

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This report was prepared by Bob Steele, Project Manager in collaboration with Bjorn Christensen, Director, Health and Protection Promotion, and reviewed by Chado Brcic, P. Eng. Director of Water and Wastewater, and Ian Neville, Commissioner, Public Works.