

REGION OF OTTAWA CARLETON

RÉGION D'OTTAWA CARLETON

MEMORANDUM

NOTE DE SERVICE

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Our File/N/Réf. 07-96-0119

Your File/V/Réf.

DATE 26 February 1999

TO/DEST. The Chair and Members of Planning and Environment Committee

FROM/EXP. Coordinator, Planning and Environment Committee

SUBJECT/OBJET **LEACHATE MANAGEMENT - CONSULTATION RESULTS  
ON THE LEACHATE TREATMENT AND DISPOSAL OPTIONS**

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Please find attached, for your advanced information, a copy of the above-noted report which will be considered at the Planning and Environment Committee meeting of 09 March 1999. I would ask that you bring this report with you to the meeting as it will not be reissued in the Agenda.

*Original Signed by  
Dawn Whelan*

Attach. ( 1 )

cc: Members of Regional Council (who are not members of PEC)  
M. Beckstead, CAO  
M.J.E. Sheflin, Commissioner, Environment and Transportation Department  
N. Tunnacliffe, Commissioner, Planning and Development Approvals Department

Our File/N/Réf.           **50 14-93-0021-V**  
Your File/V/Réf.

DATE                        22 February 1999

TO/DEST.                 Co-ordinator  
                              Planning and Environment Committee

FROM/EXP.                Acting Deputy Commissioner  
                              Environment and Transportation Department

SUBJECT/OBJET           **LEACHATE MANAGEMENT -  
CONSULTATION RESULTS ON THE LEACHATE  
TREATMENT AND DISPOSAL OPTIONS**

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### DEPARTMENTAL RECOMMENDATIONS

**That Planning and Environment Committee recommend Council:**

- 1. Approve the off-site conveyance of leachate from the Trail Road Waste Facility and leachate contaminated groundwater from the Nepean Landfill Site by pipeline to the R.O. Pickard Environmental Centre for treatment and disposal;**
- 2. Authorize the Environment and Transportation Department to undertake a pipeline route selection process.**

### BACKGROUND

In 1994, a consultant was retained to develop a leachate management plan for the Trail Road Landfill Site. The firm's report was submitted in May 1995 and one of its recommendations was "periodic removal of leachate to central sewage treatment plant by dedicated pipeline to the existing sanitary sewer system". This assignment was carried out under Schedule 'B' of the Class Environmental Assessment for Municipal Water and Wastewater Projects. The report did not identify routes for the proposed pipeline.

Work then proceeded to the next phase which was the design of the pipeline. Three possible pipeline routes were evaluated. All three routes were located within existing road right-of-ways and/or utility corridors. The preferred route (1A) was located north along Cedarview Road to the CN tracks, then east along the CN tracks across Greenbank Road to the East Barrhaven Collector. In March 1998, a number of Barrhaven residents raised concerns with pipeline route 1A and, as a result, the design process was stopped and a public meeting scheduled.

During the public meeting on 01 June 1998, public concern resulted in the Planning and Environment Committee, at its meeting of 09 June 1998, directing staff to examine the following items and report back to Committee at its next meeting:

1. the original recommendation of piping the leachate, addressing the economics and environmental risks;
2. the timing of the expansion of the West Rideau Collector, examining the premise and the economics of moving forward with this capital project to permit the piping of leachate directly to this sewage line;
3. more detailed information regarding treatment on site; and
4. should the pipeline concept be reconfirmed, that a higher level of Environmental Assessment (EA) be carried out for the various pipeline routes.

To address Items 1 and 3, a peer review of the 1995 Leachate Management Study was carried out. This review updated the study with respect to new technologies which may have emerged for on-site treatment of leachate as well as incorporating leachate contaminated groundwater from the old Nepean Landfill Site.

The firm of CH2M Gore & Storrie Limited was retained to carry out a peer review. Their report was tabled with the Planning and Environment Committee on 27 October 1998. The Executive Summary of this report is included in Annex 'A'. The report pre-selected eight treatment options and reviewed them using the following four criteria: Technical, Economic, Natural Environment and Social/Health. The pipeline option scored highest in all categories. The findings of this report were included in a public consultation program, which is summarized below.

## CONSULTATION

As discussed at the Planning and Environment Committee Meeting of 27 October 1998, staff committed to consult with the public on the technical review completed by the consultant. The consultation program for the leachate management project was developed to ensure that all communities of interest and stakeholder groups had sufficient opportunity to participate. Consultation methods used included: public meetings/open houses, newsletters, community newspaper advertisements, public tours of the landfill, written and e-mail comments, a phone poll and individual meetings with stakeholder groups.

The consultation received different input from individuals, stakeholder groups and the general public. The common message from the public throughout the consultation was that if there is to be a pipeline, it should not go through a residential area.

Aside from this common element there was a divergence of opinions, as follows:

- The Barrhaven Sewer Action Committee indicated that there should be no pipeline through Barrhaven and on-site treatment is preferred.

- The Citizens Review Committee for Waste Management of Ottawa-Carleton suggested a one year moratorium on the pipeline project and further review of on-site options.
- The phone poll found that there was i) very low awareness from the general public on this issue (10%), ii) strong support for on-site treatment which lessens upon consideration of other factors such as health and safety and the environment impacts - which rated extremely high as the most important factors to reach a solution, and iii) the majority of residents indicated that the method judged by experts to be technically best should be used.
- Individual submissions ranged from support for on-site treatment to support for the pipeline and the majority of submissions stated that the pipeline should not go through a residential area.
- The Ministry of the Environment, as part of the consultation, submitted comments indicating that they concur with the methodology and the recommendations of the CH2M Gore and Storrie Limited September 1998 report on Leachate Treatment and Disposal Options.

A detailed summary of the consultation is attached as Annex 'B', the executive summary from the telephone poll is attached as Annex 'C', a summary of written submissions is attached as Annex 'D', a copy of the letter from the MOE is attached as Annex 'E', and a summary of the submissions from the Barrhaven Sewer Action Committee and the Citizen Review Committee for Waste Management of Ottawa-Carleton is attached as Annex 'F'.

## DISCUSSION

### 1. Issues Arising From The Consultation

There were many issues arising from the consultation requiring clarification. Questions and concerns were addressed at the public meeting, in the meeting notes and in written replies. However, some main themes persisted throughout the consultation, which are addressed below:

#### No Pipeline - On-Site Treatment Is Preferred

Most forms of "on-site treatment" ultimately require either piped discharge of a liquid to a sanitary sewer, or discharge to a receiving body of water (in this case the Jock River), or a large land area for some form of moisture uptake by vegetation. The latter option would also require seasonal storage in this climate. Trucking of leachate, as is the current practice, has a higher risk of an uncontrolled release to the environment than transport through a properly constructed underground pipeline. On-site treatment was considered in both reports, but generally scored lower for reasons such as lack of demonstrated ability to meet discharge criteria, potential longer term impacts to the natural environment and possible visual and odour impacts.

#### One Year Moratorium And Conference

At the public meeting of 03 November 1998, the Citizens Review Committee for Waste Management of Ottawa-Carleton suggested a one-year moratorium on the leachate issue and subsequently suggested in a letter to the Regional Chair, a conference be sponsored by the Region to further consider on-site opportunities. In the initial

technical analysis, and again in the peer review, consulting experts have looked at on-site options. In the September 1998 report, the consultant states that “co-treatment of sanitary landfill leachate at a municipal sewage treatment plant is the most frequently used method in Ontario”. The R.O. Pickard Environmental Centre has been receiving Trail Road leachate, as well as leachate or leachate contaminated groundwater from other landfills since 1996. Although on-site treatment of leachate has been demonstrated in other areas, implementation at Trail Road would involve modelling, pilot testing, design and construction and in some cases, still require a piped discharge. An on-site treatment system would be unique to our situation, more costly than the piping option and not necessarily meet the discharge criteria on a consistent basis.

A conference on this issue would, no doubt, further the background of technical options, which may or may not assist with the specifics of this issue. Sponsoring the conference would require a commitment of funds and staff resources. It is staff's opinion that we not proceed with the moratorium and conference.

#### The Study Was Flawed By Not Considering The Contaminated Nepean Groundwater

As outlined in the consultant's report (September 1998), the study had a number of objectives, including identification of new technologies, assessing treatment options and identifying the appropriateness of the preferred alternative for the management of the contaminated groundwater from the Nepean site. This is, in fact, exactly the assessment done by the consultant. It is staff's opinion that a design based on dealing with the more concentrated wastewater (leachate vs contaminated groundwater) is a more prudent engineering approach.

#### 2. Timing Of The Preferred Solution

The preferred solution for the Trail Road leachate presents an opportunity for dealing with the contaminated groundwater from the Nepean site. Staff have concerns over potential timelines required to proceed with an on-site solution for leachate. On-site treatment would require design, approvals, construction and pilot testing, which would take years and, ultimately, may or may not be a satisfactory solution.

In November 1996, Councillors received a report dealing with the Nepean bufferland and contaminated groundwater. That report proposed a sub-drain collector system and engineered wetland to treat the contaminated groundwater from the Nepean Landfill and suggested that design, land acquisition and construction could take three years. The MOE has approved and monitored progress of our closure efforts for the Nepean site and is expecting timely resolution on this issue.

A delay in the leachate solution for Trail Road may necessitate proceeding with the original Nepean solution, ultimately resulting in two different systems and additional capital and operating costs.

#### 3. Route Selection

The most appropriate route for a pipeline to convey leachate from the landfill to the central sewage system remains to be determined. The previously identified pipeline route 1A along the CN tracks between Cedarview Road and Greenbank Road will not be considered further as it was eliminated by Regional Council on 19 October 1998. The attached map (Annex G) identifies some possible pipeline routes.

Planning and Environment Committee in June 1998 directed staff to investigate the timing and feasibility of expansion of the West Rideau Collector Sewer system with regard to moving this capital project forward to permit the piping of leachate to this sewage line. Staff propose this alternative be investigated as phase 1 of the route selection process. A connection to the extension to the West Rideau Sewer on the south side of the Jock River could be carried out following existing road right-of-ways and utility corridors. Staff propose to have a feasibility assessment of this route completed and report back to Committee the results prior to review of other possible routes for connection to the central sewer system. This assessment would be inclusive of the information assessed to date of possible routes.

The phase 1 feasibility assessment will address the impacts on existing right-of-way, corridors for connection points to the extension of the West Rideau, costing of the West Rideau Sewer extension, community impacts, land use planning issues, operational and servicing issues, and input from landowners adjacent to the route, etc. It is noted that with the adoption of the Wastewater Master Plan in 1997, the EA requirements for an extension of the West Rideau Sewer are completed.

The pipeline route will require a Regional Official Plan Amendment before construction can proceed. The evaluation of the route selection will be designed so that wherever possible all contacts with the public will satisfy both the Environmental Assessments and the Official Plan Amendment. Staff note that the evaluations of alternatives for leachate management carried out by CH2M Gore & Storrie Limited and the public consultation carried out to date including the public meeting on 3 November 1998 fulfil Phase 1 and 2 of the Class Environmental Assessment process. In this manner, the direction of Planning and Environment Committee in June to address a higher level of Environmental Assessment is being fulfilled.

## CONCLUSION

The public was properly consulted in 1994-95 in accordance with provincial requirement for a wastewater pipeline; however; public concern regarding the conveyance of leachate was underestimated. The recent consultation process has been successful in achieving a degree of consensus. It also has given the public an excellent opportunity to make their views known to staff and conversely, allowed staff to increase public awareness of a very technical and complex problem.

The common message that was clear from the majority of the public was that if there is to be pipeline, then it should not go through a residential area. This, in part, led to the removal of pipeline route 1A as a routing option. One of the further key findings from the consultation, specifically the phone poll, was that although the majority thought that on-site treatment was a

better option, they also agreed that the advice of technical experts should be accepted as to the best solution for treatment of leachate.

The Region has commissioned two studies by separate leading engineering consultants. After in-depth analysis and rating, both of these studies have recommended off-site treatment at the R.O. Pickard Centre and conveyance by pipeline. Accordingly, it is recommended that the Region proceed with off-site treatment of leachate.

*Approved by  
Nancy B. Schepers, P.Eng.*

TW/KW/jw

# Executive Summary

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## Background

The Regional Municipality of Ottawa-Carleton (The Region) operates the Trail Road Waste Facility in the City of Nepean, Ontario. The Trail Road Waste Facility began receiving municipal solid waste from surrounding communities in about 1980, and presently operates under Certificate of Approval A461303, issued on April 14, 1992.

Concerns about the eventual build-up of leachate within the landfill and of potential ground water contamination led to the design and construction of a leachate truck loading facility to remove the leachate from the site. Beginning in 1996, leachate from the Trail Road Waste Facility has been hauled to the Robert O. Pickard Environmental Centre (ROPEC) for treatment and disposal.

A 1995 Leachate Management Plan for the Trail Road Waste Facility recommended the periodic removal of leachate to a central sewage treatment plant (ROPEC) through a dedicated pipeline to the existing sanitary sewer system.

In addition to the Trail Road Waste Facility, The Region is also responsible for the management of the closed Nepean Landfill Site. The 1996 Nepean Landfill Bufferlands Assessment recommended the construction of an engineered groundwater collection system for the closed landfill, with the leachate-contaminated groundwater and the surface water from the Goldie Mohr pond to be treated in a constructed wetland. Subsequently, it was determined to be more cost-effective to transfer the leachate-contaminated groundwater and surface water via pipeline to the Trail Road Waste Facility, where it would be combined with the Trail Road leachate and piped to the Region's sanitary sewerage system for ultimate treatment and disposal.

However, prior to pipeline construction, a public meeting was held to discuss the proposed pipeline route. As a result of comments received at that meeting, The Region decided to obtain an independent review of the recommended solution in the Leachate Management Plan.

This report describes the background, objectives, methodology, results and recommendations of CH2M Gore & Storrie Limited's evaluation of treatment technologies for leachate from the Trail Road and Nepean Landfills in the Regional Municipality of Ottawa-Carleton.



## Study Objectives

The objectives of the study were to:

- Identify any “new technologies” for the treatment of leachate and leachate-contaminated groundwater, particularly on-site alternatives; evaluate their suitability for use at the Trail Road site; and determine their related costs.
- Assess the evaluated alternatives for treatment of excess leachate outlined in the 1995 Leachate Management Plan for the Trail Road Waste Facility. Identify the appropriateness of the preferred alternative for Trail Road, for the management of contaminated ground and surface waters from the Nepean site.
- Document the findings and recommend a course of action in a report suitable for Regional use in further Environmental Assessment activities.

## Study Approach

The study approach followed that of the Class Environmental Process. First, the problem was defined in terms of leachate quantity and quality characteristics and the on-site concerns. Criteria were then developed for use in the evaluation of leachate treatment and disposal alternatives. Leachate treatment and disposal technologies were identified and described, under two categories: Off-site Treatment technologies and On-site Treatment technologies. On-site alternatives included those with a surface water discharge, those with land based discharge, and those with zero discharge potential. On-site treatment technologies were further classified as natural treatment systems, biological engineered treatment systems, and physical/chemical treatment systems.

The technical evaluation of the alternatives for leachate treatment was carried out in two stages. First, an exhaustive list of potential technologies and practices was compared to a set of “Pre-Selection Criteria”. The preferred alternatives from this screening process were then developed into complete treatment technology train options and evaluated in more detail. The preferred option was then selected through the use of a risk management assessment, and the development of a weighted matrix using project specific selection criteria. Risk management considered public health and safety, natural environment, social environment and technical considerations. The weighted matrix also included economic criteria.

## Pre-selected Options

The pre-selection process identified certain technologies including some from each of the three categories as being unsuitable for further consideration for Trail Road. Reasons for their exclusion included inadequate site/soil conditions, need for detailed site specific testing to confirm applicability of technology, lack of regulatory acceptance for this application, cost-effectiveness, and non-applicability to the specific characteristics of the Trail Road leachate.

The pre-selection process led to the development of eight treatment train options for detailed evaluation. Four were dependent upon a receiving water based effluent discharge (Jock River); one with land based effluent discharge (spray irrigation on poplar forest); one with combined land based and receiving water based discharge (Snowfuent™); one with zero discharge potential (LFG evaporation); and two off-site options (pipeline to ROPEC with and without pre-treatment).

The pre-selected technology treatment trains were identified as:

1. On-site combined physical/chemical and combined biological leachate treatment with effluent disposal to Jock River
2. On-site combined physical/chemical and activated sludge/membrane leachate treatment with effluent disposal to Jock River
3. On -site combined physical/chemical and biological/membrane (ZenoGem) leachate treatment with effluent disposal to Jock River
4. On-site physical/chemical treatment and storage with effluent spray irrigation to poplar forest
5. On-site physical/chemical treatment with lagoon storage/treatment and Snowfluent™ with effluent disposal to land and the Jock River
6. On-site combined physical/chemical and LFG evaporative treatment with zero discharge potential
7. Off-site conveyance of leachate to the ROPEC for treatment and disposal.
8. On-site pre-treatment and off-site conveyance to the ROPEC for final treatment and disposal.

## Preferred Option

The matrix selected preferred option is Off-site Activated Sludge Process Treatment and Disposal of both the leachate from the Trail Road Waste Facility and contaminated ground and surface water from the Nepean Bufferlands at the ROPEC. Conveyance by pipeline is preferred to that of truck haulage on the basis of public health and safety, environmental impact and technical considerations.

On-site pre-treatment of the Trail Road leachate prior to conveyance is an alternate option to alleviate the concerns of the public with respect to the conveyance of raw leachate. Another alternative of alleviating public concerns is to construct the forcemain using a double walled pipe with provision for leak detection. Either alternative would considerably increase the capital and operating costs of the system.

Capital and annual operating costs for the preferred option have been estimated at \$2.1 million in capital and \$100,000 in operating costs for an amortized capital and operating cost of \$4.75 per cubic meter of leachate.

Pre-treatment is expected to increase the capital and operating costs to \$3.9 million and \$200,000 respectively, for an amortized capital and operating cost of \$8.20 per cubic meter of leachate.

It should be noted that these costs are ballpark only and were developed for comparative purposes only. A more detailed assessment of individual pre-treatment component capital and operating costs would be required to develop budget estimates for the pre-treatment option. The capital costs for the pumping station and forcemain were provided by The Region.

The capital and operating costs are based on an anticipated average leachate flow rate of 185 cubic meters per day. The capital costs will not be affected by moderate variations in leachate quantity. However variations in both leachate quantity and quality will be reflected to some extent in operating costs both for pre-treatment (i.e.: energy, chemicals and sludge management in the pre-treatment option), and for pumping energy in both options.

## Recommendations

It is recommended that The Region implement a public consultation and education program that stresses the public health and safety, social, environmental and economic advantages associated with the off-site treatment and disposal of Trail Road leachate and Nepean Bufferlands contaminated ground and surface water at the ROPEC.

It is recommended that The Region consider pre-treatment of Trail Road leachate as required to alleviate the concerns of the public with respect to the conveyance of raw leachate to the ROPEC.

**LEACHATE MANAGEMENT DISPOSAL OPTIONS  
PUBLIC CONSULTATION SUMMARY**

Background

In 1995, the Region conducted a study on management of leachate, which has been an ongoing operational issue at the Trail Road Landfill. That report studied various options, including on-site treatment, trucking to the R.O. Pickard Centre and pipelining to the wastewater collection system. The recommended solution was conveyance by a pipeline and off-site treatment at the R.O. Pickard Centre. As part of this process, the Region embarked on a public consultation program. A public meeting was held in June 1998 and concern from the public was registered. As a result of this meeting, the pipeline project was put on hold and the options for the management of leachate were further evaluated. In September 1998, a “peer review” was conducted to review the technologies considered in the 1995 report and to determine if any new technologies had emerged.

Consultation

The consultation program was designed in accordance with the Regional Public Consultation Guideline (September 1993). Principles of the consultation included:

- communication and consultation methods reflect clearly and simply the current knowledge and that the process is transparent;
- work closely with the communities of interest and stakeholder groups to ensure that they have a sufficient opportunity to participate in the development of solutions;
- provide an open and inclusive process for all participants.

A chronological summary of the consultation process is presented in Table 1.

**Table 1  
Public Consultation Summary**

Event	Date
First Public Meeting	01 June 1998
First Open House - Trail Road Landfill	04 July 1998
Presentation to Nepean Works Committee	07 July 1998
Second Open House - Trail Road Landfill	15 October 1998
Tour - Trail Road Landfill Site	17 October 1998
Meetings with Stakeholder Groups	ongoing
First Newsletter	November 1998
Second Public Meeting	03 November 1998
Meeting Minutes distributed to attendees	16 December 1998
Telephone Survey	December 1998
Second Newsletter	January 1999
Written and E-mail Comments	ongoing

Details of the main components of the consultation process are as follows:

1. Open Houses And Tour - Trail Road Landfill

As shown in Table 1, open houses at the Trail Road Landfill were held on 04 July and 15 October 1998 and a tour was conducted on 17 October 1998. The purpose of the open houses and tour was to give the public an opportunity to gain a better understanding of the operations of the landfill. These events were not well attended.

2. Presentation To Nepean Public Works Committee

On 07 July 1998, the Nepean Public Works Committee received a presentation from staff on the Leachate Management Plan study.

3. Public Open House And Meetings

Open houses and public meetings were held at the Walter Baker Sportsplex in Barrhaven on 01 June and 03 November 1998. About 70 people attended the first meeting and about 63 attended the second.

4. Newsletters

Newsletters were distributed to the community in November 1998 and January 1999. About 8,000 residents in the Barrhaven and Longfields areas received a copy of both newsletters.

5. Meetings With Stakeholder Groups

Meetings were held with and written inquiries were received from two primary stakeholder groups: The Barrhaven Sewer Action Committee and the Citizens Review Committee for Waste Management of Ottawa-Carleton. The meetings were useful to examine in greater depth the various technologies set out in the 1995 report and the 1998 peer review. Written responses were also prepared by Regional staff.

6. Telephone Survey

In December 1998, a telephone survey was conducted to determine the public awareness of and views on the leachate management project. The poll has a sampling error of plus or minus 5.7% at a 95% confidence level.

Findings of the Consultation

Public Meetings

At the first public meeting in June 1998, public concern about off-site treatment and specifically, about pipeline route 1A were registered. A summary of these concerns was included in a previous Planning and Environment Committee report (Inquiry #8-98, dated 22 June 1998). As a

result of the June public meeting, a peer review of a wide range of on-site and off-site treatment technologies was conducted and a more vigorous public consultation program commenced.

The results of the technical review were presented at the second public meeting. Also at that meeting, presentations were made by representatives from the Barrhaven Sewer Action Committee (BSAC) and the Citizens Review Committee for Waste Management of Ottawa-Carleton (CRC). The BSAC indicated that a leachate pipeline should not go through Barrhaven and that on-site treatment is preferred. The CRC suggested a one-year moratorium on the leachate management project and has indicated a preference for on-site spray irrigation. The most common comment from the attendees indicated that a pipeline should not go through a residential area. Other concerns included the integrity of the pipeline, the potential for contamination to drinking water, lowering of property values, and public health and safety.

Minutes of the second meeting were distributed to all attendees. Questions from the public that could not be fully answered at the time of the meeting were addressed in endnotes within the minutes. A copy of the minutes of the meeting is available from the Solid Waste Division.

### Ministry of the Environment Comments

Ministry involvement in the process is primarily as the regulating body. The Ministry has reviewed the Peer Review Report and submitted comments. On the whole, they are supportive of Regional efforts to solve this problem and concur with the conclusions of the report.

### Telephone Poll

The telephone poll indicated that there is very little public awareness on this issue, only about 10% of respondents knew what leachate is or were aware of the leachate management project. The majority of the public polled had a preference for on-site treatment (77%) over off-site treatment in that they felt that the leachate should be treated where it is produced. However this preference lessens upon consideration of other factors such as health and safety and environmental impacts (to 59%). The majority felt that the most important factors for deciding on treatment options are community health and safety and environmental impacts (9.7 and 9.2 out of 10 respectively).

Cost of treatment registered lower (6.9 out of 10), however the majority (70%) of respondents agreed that if both methods are deemed to be equally safe, the lower cost option should be used. Two-thirds of the respondents thought that the technical experts should decide on the best solution. Finally, over half (56%) of the public felt that a pipeline would be acceptable if it did not run through any residential areas.

### Summary

The consultation received different inputs from individuals in the general area of the landfill, stakeholder groups and a sampling from the general public. The common finding of the consultation process was that if off-site treatment is chosen, then the pipeline should not run through Barrhaven or any other residential area. Other findings from the consultation indicate that there is support for on-site treatment; however, this preference lessens upon consideration of

other factors. The primary criteria for deciding on treatment options are community health and safety and environmental impacts and that experts should decide upon the best technical solution.

## Executive Summary

**Telephone Survey Methodology** - The telephone survey on leachate issues was conducted between December 13 and December 20, 1998. Interviews took an average of eight minutes to complete. The final sample includes 305 completed interviews. The stratified sample included 166 respondents living in areas near the Trail Road landfill site (including Barrhaven and Longfields) and 139 respondents living in other parts of the Region (excluding Osgoode). The sample of 305 households has a sampling error of approximately +/- 6% (19 times out of 20).

**Public awareness of the leachate issue is low.** Although 51% of the population recall receiving information from the Region in the last few months about waste management, only 2% of these identified leachate as the topic of the communications. When asked specifically about recent Regional studies related to waste management, 10% of all respondents were aware of the leachate study (16% of respondents in the target sample area close to the TRLS and just 2% of those in other parts of the Region). When the term leachate was defined for respondents, over half (56%) said they had heard of it. With this prompting, 31% of all respondents said they were aware of recent leachate studies conducted by the Region (46% of respondents in the target sample area and 13% of those in other parts of the Region).

**Health, safety and good environmental practices are more important to the public than costs.** Health and safety risks are by far the most important factors to the public for deciding on leachate management options. Risks to community health and safety and to worker health and safety had average ratings of 9.7 and 9.6, respectively, on the 10-point scales. Environmental impacts, including the impact on soil and water and the quantity of hazardous left-overs, were also rated as very important by respondents, as was the effectiveness of treatment of the leachate.

Cost factors, both start-up costs and long-term management costs, were less important to respondents than safety and environmental factors. Costs were important to respondents only once they have been convinced that safety and environmental standards have been met.

**Based on initial impressions, public support is stronger for on-site leachate treatment than for a pipeline and off-site treatment.** Most respondents (77%) expressed an initial preference for on-site treatment. With some consideration of the different factors involved in the decision, fewer respondents – but still a majority (an average of 59%) – thought that on-site treatment would provide the best solution. Overall, most respondents (74%) agreed with the assumption that the leachate should be processed at the Trail Road landfill site where it is produced – an assumption that is consistent with most public communications about sound environmental management.

On-site treatment was most likely to be considered the best solution for minimizing the risks to community health and safety, for effective treatment and for mitigating impacts on soil and water. Most respondents also thought that on-site treatment would be the best solution for keeping costs low. About half of respondents rated a pipeline and off-site treatment as the best solution to minimize the smell and the visual impact of a treatment facility.



**Two-thirds of respondents think that the method judged by experts to be technically the best should be used.** Two-thirds (67%) of respondents agreed that the treatment method rated by experts as the best should be used – *no matter what the cost*. About one-third (30%) strongly agreed with this view.

**For a majority respondents, a pipeline is acceptable if it does not run through any residential areas.** Over half of respondents (56%) agreed that a pipeline located away from residential areas is acceptable. While a substantial proportion (44%) disagreed with this position, just 15% strongly disagreed.

**Respondents are divided about how to take the preferences of affected residents into account** – 54% agreed and 46% disagreed that the method preferred by the most affected residents (those who live near the Trail Road site and along a possible pipeline route) should be used, even if this method costs more. The opinions about this issue were very similar for those living in the areas that would be most affected and those living in other parts of the Region.

**Most respondents agreed that if both the on-site and pipeline/off-site treatment methods are equally safe, the lowest cost option should be used** – 70% of respondents agreed with this position. Almost one-half (44%) strongly agreed with this position.

**Most respondents are neutral about the performance of the Region on the leachate issue.** Although most respondents were not very positive about the Region's performance and capacity to handle the leachate issue, neither were they negative. The responses of a majority (51%) cluster around the mid-values of the agree-disagree scale about whether the Region has the knowledge to make the best decision for all concerned about the leachate problem. Given the low public awareness of the issue, most respondents were unable to rate their satisfaction with the Region's efforts to get public input regarding the leachate problem (although those who did respond tended to be negative to neutral). Considering the frequency with which surveys show public opinion to be critical of governments, these neutral opinions indicate that the Region still has a lot of opportunity to inform and consult with the public about the optimal solution to the leachate problem. It should also be noted however, that respondent ratings about the potential role of "experts" in the debate were more positive than ratings about the Region.

Public Consultation - Leachate Management  
Summary of Written Comments Received

Comments	Type
Support for on-site treatment.	mc - em
Concern that leaks from the pipeline will affect well water.	mc
Concern about health risks associated with the pipeline option, need to clarify risks.	mc
There is a lack of information as well as misinformation.	mc
Concern that the pipeline will affect resident' property values.	mc
Treat the problem on-site.	mc
Suggestion to put a pipeline south of Nepean and all the way to the Treatment plant so it isn't in open sewers.	mc
A pipeline carrying toxic materials should not be put in a residential area.	mc - em
Concern about the connector pipe being near Mother Teresa Highschool - health effects for children.	mc - em
The Region seems to be in a rush to construct the pipeline.	mc
Tax dollars do not need to be spent "educating" an already educated public or hiring outside consultants to handle communications or facilitate meetings.	mc
Should consider how the solution to the leachate problem will fit with the development plan for Barrhaven - today's potential pipeline route may be impacting future development.	mc
Want to know what is happening to leachate at ROPEC?	mc
Want to know what is the track record of pipelines and other treatment options?	mc
Wonders if pipeline will support the weight of the soil above it.	mc
Barrhaven Sewer Action Committee does not represent the community.	letter
Summary of meeting was quite adequate.	letter
Proper disposal is pipeline, no different than sewage pipe.	e-mail
Sensitive to Jock River, tanker trucks not safe.	e-mail
Must set up big on-site facility for next 50 years.	e-mail
Solution is engineered wetland and discharge into Jock River.	e-mail
Region is not listening to residents of Barrhaven.	e-mail

*note: mc = comment forms from November 3 meeting, em = e-mail, letter = posted letter*

**Ministry of the  
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November 9, 1998

Regional Municipality of Ottawa-Carleton  
Environment and Transportation Department  
111 Lisgar Street  
Ottawa, Ontario  
K2P 2L7

OTTAWA-CARLETON ENVIRONMENT & TRANSPORTATION DEPARTMENT	
TO: PM	
RECD NOV 12 1998	
FILE NO.:	
REC. NO.: 8183	
FILE:	COPIES SENT TO: JM/KHW

ATTENTION: Mr. Pat McNally, P.Eng.  
Director, Solid Waste Division

Dear Mr. McNally:

Re: **Leachate Treatment and Disposal Options at the Trail Road Landfill Site**

We have received and reviewed the report entitled "Region of Ottawa-Carleton Trail Road Landfill Site Leachate Treatment and Disposal Options". Overall, the report provides an excellent review of numerous on and off site options that are currently available for the treatment and disposal of landfill leachate.

The Ministry concurs with the methodology that was used for evaluating the leachate treatment and disposal alternatives presented in the report. We also concur with the conclusion and recommendation that piping of leachate to the Robert O. Pickard Environmental Centre for treatment and disposal is the preferred alternative for this site.

We appreciate the efforts that you are making to address this important issue.

Yours truly

A. Lewis, P.Eng.  
District Engineer

AL/hf

cc: Trish Johnson Cover, RMOC, Environment and Transportation Department  
Keith Watson, RMOC, Trail Road Landfill Site  
Jim Miller, RMOC, Engineering Division



**SUMMARY OF SUBMISSIONS FROM THE  
BARRHAVEN SEWER ACTION COMMITTEE AND  
CITIZEN REVIEW COMMITTEE FOR WASTE MANAGEMENT OF OTTAWA-CARLETON**

Two joint submissions were received from the Barrhaven Sewer Action Committee and the Citizen Review Committee for Waste Management of Ottawa Carleton. Combined, these submissions had comments under the following general headings or topics:

- “*Need to Know for Leachate Decision Making*”- question on the Notes from the public meeting of 3 November 1998;
- “*A Better Way for Dealing with Trail Road Leachate*”;
- “*Conference Proposal - Giving Micro-organisms a Chance*”;
- “*Environmental Hazard of Processing Leachate in Sewage Plant*”;
- “*Advantages of Processing Leachate on Site*”.

Staff responded to the questions arising out of the “End Notes” of these submissions, on 15 February 1999.

Below is a brief outline of the comments from the Committees:

The submission titled “*A Better Way For Dealing With Trail Road Leachate*” suggests that a heuristic approach should be taken at Trail Road to deal with leachate. The document discusses trying different methods: micro-organisms, forestation, wetlands and drawing on the expertise in the community to develop a solution. The document suggests that trucking could be continued until a solution is found. A summary of the performance of the sewage treatment plant in handling the constituents of leachate is also presented.

To assist with the development of the knowledge base in this area, a conference is proposed and possible topics are identified.

The submission on the “*Environmental Hazard of Processing Leachate in Sewage Plant*” draws on a number of statements by various authors on the subject of wetland treatment for leachate. The information presented is from the publication “*Constructed Wetlands for the Treatment of Landfill Leachates*” which is a compilation of papers given at an international symposium, Wetlands for Treatment of Landfill Leachates, held in Detroit in June 1997. The book introduction describes the symposium as a forum for researchers and practitioners to address the issues and concerns related to this ecotechnological approach.

The final submission from the citizen committees is titled “*Advantages of Processing Leachate on Site*” and, again, draws on various statements from the above noted text and conference.

# Possible Pipeline Routes

