REGION OF OTTAWA-CARLETON | MEMORANDUM
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DATE 23 September 1999

TO/DEST. The Chair and Members of Council

FROM/EXP. Director, Water Environment Protection Division
Environment and Transportation Department

SUBJECT/OBJET **WATER ENVIRONMENT PROTECTION IN RMOC 1998**

INTRODUCTION

This is an information report on the water environment protection program and initiatives within the Water Environment Protection Division, with emphasis on the 1998 achievements.

BACKGROUND

"Ottawa-Carleton residents value green space and the protection of the environment above all other values – this was consistent across many groups in the region from homeless people, to Chambers of Commerce, to survey respondents and workshop participants.

Vision for the Environment: Ottawa-Carleton will be a model region in preserving, protecting and enhancing a green, clean and healthy natural environment."

From **Ottawa-Carleton's Community Vision**, Approved by Regional Council July 1995

Environmental protection is a clear priority of residents of Ottawa-Carleton. The surface water environment, from small tributaries flowing to the Rideau River to the Ottawa River itself, is a vital component of our community's natural system wealth. The Water Environment Protection Division (WEPD) manages a comprehensive suite of programs to safeguard the health of the natural water system and to assist in prioritizing expenditures for remedial measures where required.

Information Previously Distributed
To be listed on Planning and Environment
Committee Agenda of 12 October 1999

The Water Environment Protection Division Mission Statement is:

"The mission of the Division is to provide leadership in the protection of the water environment and model behaviour reflecting an eco-system approach to the cost-effective delivery of our services."

The WEPD Programs complement efforts within Environment and Transportation Department and other Departments, notably the Planning and Development Approvals and Health Departments, to carry out Council's policies as they relate to the water environment.

For example, the Official Plan identifies the Region's role in approving watershed plans and terms of reference for sub-watershed plans. This mandate is supported by the Surface Water Quality Program through provision of information needs for Region-wide sub-watershed planning initiatives.

To better describe the suite of programs managed by WEPD, activities are divided into four basic categories:

- point source pollution reduction activities;
- non-point source pollution reduction activities;
- understanding sub-watersheds and assessment of future policy needs for continued water environment protection; and
- future initiatives.

DEFINITIONS

Point Source Pollution (PSP)

PSP results from identifiable specific sources such as industrial discharges and municipal wastewater treatment facility effluent. Combined sewer system overflows and sanitary sewer cross-connections to storm sewer systems are other potential point sources within the Region.

Non-Point Source Pollution (NPSP)

NPSP is pollution that results from a large number of pervasive sources. Generally, it is stormwater (rain) which carries non-point source pollution into surface waters. Sources of non-point source pollution include:

- deposits of salt, oil, grease, and asphalt on roadways;
- fertilizers and pesticides on lawns and farms;
- air emissions from cars, heating fuels and industries;
- pet and animal waste;
- poor storage of materials outdoors and poor construction practices;
- increased solids from exposed soils erosion on land and in-stream; and
- temperature changes from pavement heat transfer and reduced vegetation cover.

WEPD POINT SOURCE POLLUTION REDUCTION PROGRAMMES

Waste Water Treatment

WEPD operates a state of the art secondary sewage treatment plant at the Robert O. Pickard Environmental Centre (ROPEC). This plant was commissioned in 1992. The facility provides physical, chemical and biological treatment to remove nutrients, solids and some metals from the wastewater. The treated water is returned to the Ottawa River. The digested sludge resulting at the end of the waste treatment process, called biosolids is beneficially re-used through a combination of land application and landfill cover.

The 1998 Annual Operating Report for ROPEC has been filed with the Ministry of the Environment in accordance with Certificate of Approval requirements compliance. Copies of the Annual Operation Report are available in the Resource Centre.

WEPD provides some rural wastewater treatment services. Currently, WEPD operates a sewage lagoon in the regional village area of Munster. As directed by Council, staff are proceeding to implement a plan to treat the sewage from Munster at the Pickard Centre. An environmental assessment and Official Plan amendment are underway for this initiative. Additional rural wastewater treatment services will be provided by the Region as development occurs within the rural area.

Staff operating the sewage treatment plant are Certified under the Ontario Operator Certification Program. A training program for operators and for all division staff is being developed to maintain technical excellence.

The Industrial Waste Program

The biological process at the wastewater treatment facility is not designed to remove all industrial type effluent products. For this reason, WEPD has designed an Industrial Waste Program (IWP) which closely aligns with the provincial model. The IWP monitors waste streams from area industries and enters into Compliance Agreements with any industries that must improve their waste products before those products enter the sewage collection system.

The program operates on the principles of source control, self audits by industry and partnership with industrial corporations. Program staff have authority under the *Regional Sewer Use By-Law* to enforce the provisions of the by-law. A report on the enforcement of the *Regional Sewer Use By-Law* is prepared annually per Council's directive of 09 July 1997. The 1998 report is in Appendix 1.

Combined Sewer System Overflows

A portion of the central Regional area is serviced by a combined sewer system. Combined systems carry both rainwater and sewage in one pipe system. The system is designed to convey all of the dry weather flow (sewage) and most of the wet weather flow (sewage and rainwater), to

the wastewater treatment facility for treatment. However, during high flow periods, such as spring melt and heavy rains, the combined system overflows to the river.

Given the current split jurisdiction for this service, the Region and the City of Ottawa have worked closely together in the past to develop management philosophies and long range plans for the combined system flows since they were of common concern. One such joint project is the Central Storage Facility and Interceptor Control System currently underway. A number of planning initiatives and capital projects, which entail shared responsibilities of several Divisions within the Region, will provide direction to the Regional approach to system-wide management of the Regional sewer collection system.

Facility Environmental Effects Monitoring

The Surface Water Quality Program has recently initiated the environmental effects monitoring (EEM) program for assessing impacts of Regional facilities on receiving watercourses.

The Facilities Monitoring Program was initiated in 1998. The objectives of the program are to establish a framework for consistent evaluation of effects of Regional Facilities on receiving watercourses and to incorporate findings into the decision matrix for capital and operating expenditures and practices. The program techniques are based on the Federal Pulp and Paper Industry Environmental Effects Monitoring (EEM) Program which comprises evaluation components for water quality, biologic indicators and effluent toxicity.

The 1998 sampling was designed to provide indications of where additional effort is required to assess the effects of the first three facilities. Where results indicate no potential effect, further study will not be undertaken. Where results indicate potential effects, monitoring will be conducted in 1999. The three initial facilities undertaken are the Robert O. Pickard Environmental Centre Wastewater Treatment Plant, the Lemieux Island Water Purification Plant and the Britannia Water Purification Plant.

WEPD NON-POINT SOURCE POLLUTION REDUCTION PROGRAMMES

Urban Stormwater

The Surface Water Quality Program monitors stormwater management facilities to assess performance of specific facilities and to identify measures that work well for the Ottawa-Carleton area. In addition, recommendations are made on best management practices for design, construction, operation and maintenance of such facilities. In 1998, the program focused on performance assessment of stormwater facilities owned and operated by the Region.

Staff also collaborate with provincial and regional agencies to share information and conduct research in this area. One of the facilities operated by the Region is the Hunt Club Rideau Bridge Infiltration Facility. This is a unique sand infiltration facility that provides excellent stormwater treatment and is of interest to other municipalities and the Ministry of the Environment (MOE). WEPD staff have presented results of performance assessments of this facility at two Provincial technology transfer conferences since 1998.

Stormwater best management practices may range from end of pipe facilities to source and conveyance control measures. The assessment of the applicability and performance of technological options for stormwater management works is an emerging field and is important for both infrastructure management and for sub-watershed planning.

Construction Sediment and Erosion Control

A number of measures have been initiated within ETD to address construction erosion and sediment control on Regional construction worksites. Measures include training sessions for staff, contractors and consultants (with assistance from the MOE), standardized contract management and follow-up evaluation of approach. Several local municipalities have expressed an interest in the Region's work in this area. Consistency in addressing sediment and erosion control on development construction sites is on the workplan for one of the Water Quality Committee sub-committees chaired by WEPD.

Public Education

Public education is a key component in reducing point source and non-point source pollution. The Region conducts tours, provides lectures and brochures regarding these topics. In 1998, over 100 tours, presentations and exhibits were provided by WEPD and Communications staff.

Data collected and reports produced by the Water Environment Protection Division are of interest to community groups, the consulting industry, water quality partners and the general public. Each year, staff answer many general information requests. In 1998, 60 individuals, companies or groups requested information from the Surface Water Quality Program.

UNDERSTANDING SUB- WATERSHEDS

In late 1990, a report outlining an enhanced Surface Water Quality Program was brought to the Region's Environmental Services Committee and subsequently endorsed by both Executive Committee and Regional Council (Executive Report #127 {1990}). This report established the Surface Water Quality Branch (SWQB) and empowered the Region to monitor and manage water quality within the Ottawa-Carleton area and to co-ordinate initiatives within the RMOC. Since that time, the SWQB Program has developed to address the eco-system assessment needs of the Region's watercourses.

Since the early 1990's, the growing realization among water resource professionals is that water environment protection must be implemented with an understanding of the watersheds and sub-watersheds as a whole if individual improvement measures are to be successful. Sub-watershed planning is important to set priorities for an area and to consult with the public on priorities for management and options for remediation. The Planning and Development Approvals Department is the lead Regional Department for sub-watershed planning initiatives. The Environment and Transportation Department, through WEPD and Engineering Division, provides expertise and sub-watershed information required for such studies.

The sub-watershed planning process will be the foundation for all sound decision-making for protection of Region of Ottawa-Carleton watercourses. In the case of environmental initiatives,

the planning process is iterative since original decisions must be reviewed as more current information becomes available.

Core activities of the Surface Water Quality Program include projects such as Baseline Monitoring and Fisheries Assessment that will contribute information necessary for public consultation and decision making processes done in the course of sub-watershed plan development. For example, watercourse temperature assessments conducted by the SWQB in accordance with the Ministry of Natural Resources (MNR) protocols, provide fundamental information needed to determine what fish and insects can inhabit the stream. Assessment of performance of stormwater best management practices and development of standards for implementation of stormwater best management practices will assist in choosing optimum measures to implement to meet subwatershed studies' identified priorities. The Program's River Inputs Monitoring Study provides information for priority setting, for pollutant source investigation and for watercourse response to rainfall events, as required for subwatershed analysis. These projects are outlined in more detail in Appendix 2.

Partnership and Coordination

Since water pollution is an issue that does not follow political boundaries, the Region strives to co-ordinate and to co-operate with other agencies in this area that also have a mandate for water environment protection. For this reason, WEPD chairs the Water Quality Committee to discuss water pollution issues with local, provincial, conservation authority and federal agencies. In addition, water quality monitoring activities are discussed to eliminate duplication of effort and to share information.

Partnership ventures have produced products that would not otherwise have been possible with the resources of one agency alone. A prime example of this is the Fisheries Assessment Program on the Rideau River which has been a continued successful partnership between the Surface Water Quality Program and the Ontario Ministry of Natural Resources, since 1995. The Canadian Museum of Nature, Parks Canada, Ontario Ministry of the Environment, local municipalities, universities, conservation authorities, other federal agencies and consulting firms have all been party to partnerships with WEPD over the past several years.

The technology and information transfer resulting from partnerships is of benefit both to the participating agencies and to the public.

FUTURE INITIATIVES

There are a number of initiatives planned for 1999 and beyond for WEPD to extend the water environment protection program. Briefly, these future initiatives include:

- A Rural Clean Water Program to provide grants assistance to address rural water quality improvements. This program was approved as part of the 1999 Capital Budget.
- Assessment of other regional facilities as a continuation of the Facility Environmental Effects Monitoring Program described above.
- Standards development for source controls. This is an important, fairly new area of investigation to reduce urban rainfall volume and to improve runoff quality at source. Examples of source controls are: changed lot drainage, ditches, soak away pits and more trees. The Region plans to investigate what source controls are best for the Ottawa-Carleton Region. In 2000, the community sewershed partnership project will be initiated to assess options within established residential areas.

MORE DETAILED INFORMATION

For more comprehensive information, please refer to the Surface Water Quality Program 1998 Summary Report and the R. O. Pickard Centre Annual Operations Report, 1998. Both reports are available in the library.

Approved by
N.B. Schepers, P. Eng.

MT/bs

Attach. (2)

APPENDIX 1

1998 ANNUAL SEWER USE BY-LAW COMPLIANCE REPORT

DATE 31 August 1999

REPORT APPROVED BY Deputy Commissioner - Environment

BACKGROUND

This report is in response to a directive received by Council on 09 July 1997, to prepare an annual report on the enforcement of the Regional Sewer Use By-law.

INTRODUCTION

The Region has implemented an Industrial Waste Programme since 1994. The programme's focus is to protect the wastewater infrastructure, health and safety of workers, integrity of the wastewater treatment process and the health of the receiving water environment. Our strategy is based on the concept of pollution prevention which promotes improvements through operational and behavioural changes. This objective is achieved by working in co-operation with sewer dischargers using voluntary initiatives such as agreements and compliance programmes and by promoting awareness through monitoring, inspections and education to achieve reductions in the levels of pollutants discharged to the sewer system.

DISCUSSION

The Industrial Waste Section as part of the Industrial Waste Programme is involved in informal activities with the business community which assist in identifying and abating, with industries' co-operation, exceedances of Part 5.2 of the Regional Regulatory Code (Sewer Use By-law). These informal activities include monitoring and inspecting facilities to assess compliance with the Sewer Use By-law. When exceedances or problems are encountered, the discharger is advised by staff and the discharger usually acts promptly to correct the deficiency.

VOLUNTARY COMPLIANCE INITIATIVES

Over the past year, there have been in excess of 60 short-term compliance activities. These voluntary initiatives were undertaken to correct or ameliorate discharge practices and were quite successful in assisting in achieving the programme objectives. For example, these activities include the improvements to housekeeping activities by industry in order to prevent prohibited discharges.

There have been four formal compliance programmes entered into for the reporting period. These formal arrangements are intended under the Sewer Use By-law to permit dischargers the time required to implement the necessary modifications to eliminate the non-compliance. By reducing

the amount of non-treatable parameters discharged to the sewer system, we are working toward the protection of the sewer infrastructure, a safer work environment and a better water environment.

In addition to these compliance initiatives, there were 15 agreements in effect in 1998 for treatable waste. The treatment of wastes at the source is encouraged as a principle of pollution prevention. However, should a company opt to discharge overstrength waste, these agreements permit the discharge of material that is above by-law limits but can be treated at the Pickard Centre, as well as for water from a separate source. These agreements include the requirement to pay for the treatment of the waste at the sewage treatment plant. The revenue generated from these agreements was approximately $680,000 during the reporting period.

ENFORCEMENT INITIATIVES

In comparison to the voluntary initiatives described above, it is necessary at times to initiate by-law enforcement. Enforcement includes issuing warnings and notices of violation where non-compliance is persistent. A warning is generally issued as an initial notification of an infraction and a notice of violation is issued if a warning is ineffective.

There were a total of 12 notices of violation issued in 1998. None of these notices lead to legal actions as the industries responded to these notices with corrective actions.

STUDIES AND INITIATIVES

During the Ice Storm 98, the Industrial Waste Section was considered an essential service. Staff were on hand to aid other municipalities and industries in the disposal of wastes created by the unusual conditions.

Since 1992, five wastewater characterizations have been conducted by the Water Environment Protection Division. In 1992, the characterization was limited to sampling of influent and effluent at the sewage treatment plant. In 1994, it was expanded to include sampling of biosolids. In 1996, the programme also included sampling leachate received at the sewage treatment plant. In-sewer monitoring was added in 1997 at strategic locations across Ottawa-Carleton. In 1998, the information collected in these sampling programmes was analysed in order to identify improvements to future wastewater characterizations. The 1998 Characterization Program was structured based on the recommendations from this report.

It is anticipated that conducting these annual wastewater characterizations will facilitate in optimizing the use of available resources to ensure the protection of the water environment and sewage infrastructure.

Staff from Legal Department together with the Environment and Transportation Department have developed short form wording and set fines to permit ticketing for some by-law offences and received approval for these fines in 1998. This new tool will provide greater flexibility in dealing with Sewer Use By-Law infractions.

FUTURE ACTIONS

In 1999, a Rideau River Collector Gas Flow Modelling Study was initiated. This study will provide the basis for addressing the ventilation issues of this part of the collection system and will serve to improve the safety of sewer workers and the environment.

The Department will continue to use a co-operative approach with its clients in implementing the activities of the Industrial Waste Programme and will continue to develop new tools, both reactive and proactive, to encourage the business community to act in an environmentally responsible manner and prevent pollution. These tools include communication and consultation initiatives.

Cost effectiveness will also continue to be explored when considering enforcement actions. This process should result in positive financial implications for the community while ensuring protection of the infrastructure, treatment process, safety of workers and the environment.

CONSULTATION

Communication and consultation activities have been and will continue to be at the core of the Industrial Waste Programme.

FINANCIAL IMPLICATIONS

Through the protection of the wastewater infrastructure, safety of sewer workers and of the health of the water environment, the Industrial Waste Programme will continue to have positive financial implications for the residents of Ottawa-Carleton.

APPENDIX 2

SURFACE WATER QUALITY
PROJECT OUTLINES

BASELINE MONITORING

The Baseline Monitoring Program is designed for long-term assessment of aquatic system trends within the Region of Ottawa-Carleton. The Region contains parts of four major watersheds: the Ottawa River, the Rideau River, the Mississippi River and the South Nation River. Each of the watersheds contains a number of sub-watersheds.

The Baseline Monitoring Program includes analysis of water quality parameters and of biological parameters and sediment parameters. Water quality parameters analyzed in 1998 include: microbiology, general chemistry, nutrients, anions, suspended solids and metals, dissolved oxygen, lycor light readings, dissolved organic carbon, chlorophyll a, phytoplankton and zooplankton. Analysis of these parameters embraces the ecosystem approach which offers better watershed management and decision making information.

RIVER INPUT MONITORING PROGRAM

The River Input Monitoring Program goals are to assess and prioritize relative magnitudes of pollutant loads to the Rideau and Ottawa Rivers from input sources that include stormwater outfalls, combined sewer outfalls and natural creek systems. In 1998, the River Inputs Program was coordinated to complement the Facilities Monitoring Program so that stormwater outfalls in the vicinity of Regional facilities being studied were assessed. This allows assessment of relative importance of the Regional facilities versus other inputs in the vicinity.

RIDEAU RIVER FISHERIES ASSESSMENT

In 1998, the SWQB, in partnership with the Ontario Ministry of Natural Resources (MNR), conducted a Fisheries Assessment Program in several reaches of the Rideau. The Fisheries Assessment Program consists of index netting, a nursery habitat inventory, measuring contaminant levels in sport fish (with assistance from the MOE) and monitoring the degree of fish mortality in response to the fall water level drawdown. This program was initiated in 1995 by the Region and MNR on the Rideau River.

The objectives of the 1998 Fisheries Assessment Program were to:

- Continue the long-term trend through time monitoring program of the fish community following the MNR Nearshore Community Index Netting Standard for warmwater fish community species;

- Identify areas of significant fish habitat (nursery, spawning areas) especially in the Ottawa Reach (Rideau Falls to Hog's Back) where there are development pressures but little existing information;
- Measure contaminant levels in representative sport fish species to provide public consumption advisories;
- Continue to monitor the degree of mortality in fish in response to the fall water level drawdown of approximately 3 meters in the Canal system.

TEMPERATURE MONITORING OF POTENTIAL COOL/COLD WATER FISH HABITAT

In 1998, the SWQB conducted temperature monitoring on selected rivers/creeks to determine their thermal regimes. The objective of this monitoring is to assist in identifying potential cool/cold water fish habitats. Appropriate sites for installation of temperature monitoring instruments were chosen based on some initial temperature monitoring results. Specific watersheds within which specific creeks were monitored include the Carp River Watershed, the North Castor River Watershed and the Steven Creek Watershed.

Some cool water sections of watercourses have been identified. Results and conclusions have been complied on a watershed basis and are available in graphic and tabular format. These results are important for understanding fisheries resources within the Region and for protection of remaining cold and cool water fisheries habitat.

STORMWATER IMPACT ASSESSMENT AND BEST MANAGEMENT PRACTICES REVIEW

The objective of monitoring stormwater management practices is to identify measures that work well for the Ottawa-Carleton area and to make recommendations on best management practices for design, construction, operation and maintenance with respect to stormwater. In 1998, the SWQB Program focused stormwater facility performance assessment activities on Regional facilities. These facilities are maintained and operated by the Infrastructure Division since they were constructed in response to Regional Roadway construction. Facilities assessed include the Hunt Club Rideau Bridge Facility, the Hunt Club Graham Creek Facility, Off Line Manhole Retention Inlet Treatment Units for Baseline Road, Eagleson Park & Ride Lot swales and filter, the March and Herzberg Road Biofilters, the Hunt Club Road Triple Pipe Infiltration System. Expertise from WEPD for monitoring program establishment was provided to a consultant for the Gloucester South Urban Community Stormwater Management Pond (a City of Gloucester facility).

Many of the facilities use innovative technology and design. Some work extremely well, others require remedial measures before they can be assessed and others do not appear to be appropriate for their application. Conclusions will be incorporated into on-going work to set standards for design and performance for this region.