

2005 ANNUAL REPORT
OPERATION AND MAINTENANCE
OF
TARA SEWAGE WORKS

MUNICIPALITY OF
ARRAN-ELDERSLIE

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1.0 INTRODUCTION

The Tara Sewage Works in the Municipality of Arran-Elderslie comprises of a wastewater treatment plant and a sewage pumping station. The wastewater generated within the collection area of Tara is collected into the sewer system and pumped to the wastewater treatment plant by way of a 200 mm diameter forcemain. The wastewater treatment plant consists of a waste stabilization pond constructed in two equal cells, with influent and effluent works, inter-connecting structures and a 400 mm diameter outfall sewer to the Sauble River.

The Municipality of Arran-Elderslie retained the services of Oweson Water Services, a Division of Oweson Ltd., to prepare the Annual Compliance Report for the Tara Sewage Works. The Ministry of Environment has issued an Amended Certificate of Approval # 9456-659N92 dated January 18, 2005 to this facility which revoked and replaced the Certificate of Approval # 1-704-80-006 dated July 2, 1980 earlier issued to this facility. Refer to **Appendix A** for both Certificates of Approval. The Amended Certificate of Approval requires that an annual report shall be prepared for compliance addressing the following items.

1. Summary of all monitoring data and a comparison to the effluent limits.
2. Summary of operational problems encountered and corrective actions taken.
3. Summary of maintenance carried out.
4. Summary of complaints received and steps taken to address the complaints.
5. Summary of all by-pass, spill or abnormal discharge events.

This annual report also includes conclusions and recommendations that the owner, who is also presently the Operating Authority, should undertake in order to continue to meet the regulatory requirements.

During the reporting period of this Annual Report (January 1, 2005 to December 31, 2005), the Tara Sewage Works was operated by the Municipality of Arran-Elderslie, who is also the owner, assumed responsibility of the operations and maintenance.

This report is prepared based on the information provided by the Municipality of Arran-Elderslie.

2.0 DESCRIPTION OF FACILITIES

2.1 Wastewater Treatment Plant

The wastewater treatment plant consists of a two (2) waste stabilization ponds with two (2) equal cells, with an area of 3.95Ha each. The depth of the cells are approximately 1.5m deep and are provided with influent and effluent works and interconnecting structures. An inlet force main 200mm in diameter carries sewage to the waste stabilization ponds. A 400mm in diameter outfall sewer discharges the treated effluent from the waste stabilization pond to the Sauble River during the spring and fall discharge period.

2.2 Sewage Pumping Station

The sewage pumping station is located North of Mill Street and is equipped with two (2) vertical, centrifugal, dry pit, non clog pumps (one duty and one standby) each capable of pumping 27.4 L/s against a total dynamic head of 21.5 metres. The discharge force main at the sewage pumping station has a 150mm magnetic flow meter and an emergency bypass connection. Two (2) positive displacement diaphragm type chemical metering pumps (one duty and one standby) each capable of pumping 40 L/h of Alum for phosphorus removal is provided, dosing into the force main. An emergency overflow station that allows overflow to the Sauble River is provided from a manhole located in the inlet sewer. A 50 kw diesel generator to provide standby power is also installed in this facility.

3.0 SUMMARY OF WASTEWATER FLOWS

A summary of the wastewater flows received at the sewage treatment plant is provided in **Table 1**. As can be seen from **Table 1**, in 2005 the average daily flow was 421 m³/day and the maximum daily flow was 846 m³/day which occurred in January. The design capacity of the treatment plant is 650m³/day. The plant therefore was operated at 64% of the design capacity (average day).

On September 29, 2005, the flow meter was calibrated by R&R Instrumentation Services Inc. and the percentage error was found to be acceptable. Refer to **Appendix B** for the calibration report.

Table 1
Summary of Wastewater Flow: 2005
Tara Sewage Works
Municipality of Arran-Elderslie

Month	Monthly Flow (m ³ /day)	Average Daily Flow (m ³ /day)	Maximum Daily Flow (m ³ /day)
January	14,811	478	846
February	11,548	373	613
March	13,561	437	550
April	14,971	499	697
May	13,471	435	529
June	12,113	404	524
July	11,355	366	447
August	12,210	394	647
September	10,554	340	517
October	10,917	352	453
November	14,369	479	681
December	13,869	447	658
Total	153,749		
Average		421	
Maximum			846

4.0 SUMMARY OF EFFLUENT MONITORING AND RAW SEWAGE MONITORING

The Amended Certificate of Approval (C of A) specifies that the raw sewage be tested for CBOD₅, Total Suspended Solids and Total Phosphorus quarterly (once every three months). In 2005, raw sewage grab samples were actually collected monthly (except for Feb. and March) and tested for BOD, Total Suspended Solids and Total Phosphorus. **Table 2** shows the summary of raw sewage monitoring data.

The Amended C of A also specifies that the lagoon contents shall be tested for CBOD₅, Total Suspended Solids and Total Phosphorus once, within one week prior to each seasonal discharge. In 2005, the lagoon contents were sampled and tested for BOD, Total Suspended Solids and Total Phosphorus. **Table 3** shows the summary of the monitoring data of the lagoon contents prior to discharge and also additional samples collected for Best Management Practice.

The C of A further specifies that the effluent from the waste stabilization ponds shall be tested for CBOD₅, Total Phosphorus and Total Suspended Solids two (2) times a week at the beginning, during and at the end of each discharge event. In 2005, the effluent was discharged in spring and fall. In the beginning, during and end of the effluent discharge a sample was collected on the dates indicated in **Table 4** and tested for BOD, TSS and Total Phosphorus. In 2005, the average concentration of effluent during seasonal discharge did not exceed the maximum effluent limit and effluent objectives as specified in the Certificate of Approval. During the fall discharge on November 24, 2005 an elevated TSS of 57mg/L occurred but the average is acceptable. **Table 4 and Table 5** shows the summary of effluent monitoring data during discharge in spring and fall 2005 respectively.

The volume discharged from the Lagoons in the spring of 2005 was 102060 m³ The volume discharged in the fall of 2005 was 58590 m³ (total = 160650 m³).

5.0 SUMMARY OF MAINTENANCE PROGRAM

According to Mr. Scott McLeod of the Municipality of Arran-Elderslie, the Tara sewer mains were flushed starting July 20th, 2005 through to the end of the month.

It should be noted that there was a draft operations manual prepared by the Municipality in January 2005, in accordance with Certificate of Approval Section 7.2.

6.0 SEWAGE BY-PASS

In 2005, there were no sewage by-passes.

The Certificate of Approval requires that at least one (1) grab sample of the by-pass be collected and tested for BOD5, Total Suspended Solids and Total Phosphorus.

7.0 ASSESSMENT OF SEPTAGE ACCEPTANCE AND SUBSEQUENT COMRIF APPLICATION

In January 2005, Henderson Paddon & Associates Ltd., produced a report entitled "Assessment of Wastewater Treatment Plants in the Municipality of Arran-Elderslie to Treat Septage". This study concluded and recommended that:

1. The Tara lagoons could accept 1.5 loads of septage at 13.6m³ (3000 1GAL) per load per week, from May 1 to October 31.
2. During the winter time, this rate should be reduced to one (1) load every two (2) weeks.
3. Improvements to the lagoons to facilitate receiving this septage should be implemented.
4. It must be recognized that the receipt of septage at the lagoons will increase the sludge accumulation rate in the lagoons.

Pursuant to recommendation #2 above in January 2005, Henderson Paddon & Associates Ltd., prepared an application for Grant under the COMRIF (Canada Ontario Municipal Rural Infrastructure Fund), program for funding assistance for capital works at the Tara lagoons including specific dumping station locations, bank stabilization and access road improvements.

It must be recognized that these improvements do not constitute a long-term plan to deal with all the septage generated in Arran-Elderslie.

8.0 CONCLUSIONS

1. On January 11, 2005 the MOE issued an amended Certificate of Approval for the Tara Sewage works that revoked and replaced the previous Certificate of Approval # 1-704-80-006 dated July 2, 1980.
2. Based on the information presented in this annual report, it is concluded that the Tara Wastewater treatment plant and the sewage pumping station were generally operated and maintained in accordance with the Certificate of Approval in 2005.
3. On September 29, 2005, the raw sewage flow meter was calibrated and the percentage error was found to be acceptable.
4. The Tara Sewage Works was operated at 64% of the design capacity (average day).
5. A grant application was made under COMRIF program in January 2005 for various improvements to the lagoon with a view to facilitate the receiving of septage.
6. The operator had all samples analyzed for BOD instead of CBOD₅.

9.0 RECOMMENDATIONS

1. Continue to operate in accordance with the Certificate of Approval and appropriate regulations.
2. Sampling of raw sewage, lagoon contents and effluent during discharge to the stream should continue to be done as required by the Certificate of Approval.
3. A standard recording form for responding to complaints should be used for recording any complaints relating to the Tara Sewage System.
4. The magnetic flow meter calibration should be done before September 2006.
5. Subject to the receipt of COMRIF grant funding, provide the planned improvements to the Tara Lagoons to facilitate the receipt of septage, as per the recommendations of the report entitled "Assessment of Wastewater Treatment Plants in the Municipality of Arran-Elderslie to Treat Septage" (HPA, January 2005).
6. All samples are to be analyzed for CBOD₅.

Respectfully submitted:

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Appendix A
Certificate of Approval (Sewage)

Appendix B
Flow Meter Calibration Report

Appendix C

Appendix D
Sample Maintenance Log Sheet

