

**Otter Lake Waste Processing and
Disposal Facilities**

Site Development and Operations Report

Annual Report

2017

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For: MIRROR Nova Scotia

1.0 Introduction

This document has been prepared by MIRROR Nova Scotia regarding the operation of all facilities at the Otter Lake Waste Resource Facility. The purpose of this report is to satisfy the requirements of Nova Scotia Environment Approval No. 2008-065580 and the Operations Plans contained therein.

The Otter Lake Solid Waste Management Facility has been in operation since acceptance testing during the summer of 1998. Subsequently, operations began on January 1st, 1999 with all processed wastes being disposed of in the Residual Disposal Facility (RDF) Cells #1 through #7.

2.0 Operations Overview

As per the Approval **Section 15 c) Annual Report**, we report the summary of information requested in Section 15 a).

- Section 15 a)i) Quantity, Type, Source and Carrier of Waste Received**
- ii) Quantity and type of recyclables removed from the FEP and Transfer Station**
 - iii) Quantity of material handled at each portion of the Facility including:**
 - 1) FEP**
 - 2) WSF**
 - 3) Waste Transfer Station**
 - 4) RDF**

The following tables summarize our Waste Received and Processing activities:

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Table 1 (Tonnes)

| OTTER LAKE LANDFILL SUMMARY 2017 | | | | | | | | | | | | | | | |
|----------------------------------|------|-----------|------------------------|---------------------|--------------------|------------------|-----------------|---------------|-------------------|-----------|------------|--------|----------------|--------------|--------------|
| MONTH | COMM | RES | SPECIAL Compost/Haz | SPECIAL Handling | RECEIVED TO FEP | DIRECT TO RDF | NET RECEIVED | FEP TO RDF | TRAILER TO RDF | IN WSF | OUT WSF | METAL | POP BOTTLES | PAPER C/B | RDF TOTAL |
| JAN | 0.00 | 3,714.55 | 0.00 | 11.47 | 3,726.02 | 129.25 | 3,726.02 | 629.48 | 1,903.67 | 1,192.87 | 952.44 | 0.00 | 0.57 | 0.00 | 3,614.84 |
| FEB | 0.00 | 2,518.36 | 0.00 | 6.95 | 2,525.31 | 56.84 | 2,525.31 | 321.02 | 1,327.51 | 876.78 | 515.34 | 179.29 | 0.45 | 29.99 | 2,220.71 |
| MARCH | 0.00 | 3,494.69 | 0.00 | 33.09 | 3,527.78 | 12.17 | 3,527.78 | 548.86 | 1,760.57 | 1,218.35 | 982.63 | 10.88 | 0.99 | 0.00 | 3,304.23 |
| APRIL | 0.00 | 3,660.11 | 0.25 | 10.16 | 3,670.52 | 2.09 | 3,670.52 | 599.49 | 1,721.10 | 1,349.93 | 891.39 | 0.00 | 0.33 | 0.00 | 3,214.07 |
| MAY | 0.00 | 4,388.91 | 0.38 | 8.95 | 4,398.24 | 16.91 | 4,398.24 | 983.77 | 1,959.09 | 1,455.38 | 1,123.69 | 0.00 | 0.45 | 0.00 | 4,083.46 |
| JUNE | 0.00 | 4,144.59 | 0.92 | 9.52 | 4,155.03 | 85.83 | 4,155.03 | 908.10 | 1,766.21 | 1,480.72 | 1,025.86 | 302.71 | 0.31 | 0.00 | 3,786.00 |
| JULY | 0.00 | 3,823.02 | 0.00 | 6.52 | 3,829.54 | 22.56 | 3,829.54 | 851.01 | 1,664.22 | 1,314.31 | 1,022.66 | 0.00 | 0.29 | 29.86 | 3,560.45 |
| AUG | 0.00 | 4,151.59 | 0.00 | 9.46 | 4,161.05 | 29.26 | 4,161.05 | 987.72 | 1,768.98 | 1,404.35 | 994.09 | 0.00 | 0.62 | 0.00 | 3,780.05 |
| SEPT | 0.00 | 3,898.90 | 0.00 | 5.80 | 3,904.70 | 36.89 | 3,904.70 | 890.85 | 1,759.30 | 1,254.55 | 852.95 | 214.54 | 0.56 | 0.00 | 3,539.99 |
| OCT | 0.00 | 4,025.29 | 0.26 | 6.80 | 4,032.35 | 52.70 | 4,032.35 | 911.44 | 1,936.09 | 1,184.82 | 894.93 | 0.00 | 0.54 | 0.00 | 3,795.16 |
| NOV | 0.00 | 3,955.78 | 0.00 | 10.90 | 3,966.68 | 10.60 | 3,966.68 | 874.06 | 1,937.22 | 1,155.40 | 637.55 | 0.00 | 0.54 | 48.90 | 3,459.43 |
| DEC | 0.00 | 3,485.64 | 0.00 | 8.58 | 3,494.22 | 15.84 | 3,494.22 | 703.51 | 1,759.58 | 1,031.13 | 773.72 | 199.61 | 0.30 | 0.00 | 3,252.65 |
| TOTALS | 0.00 | 45,261.43 | 1.81 | 128.20 | 45,391.44 | 470.94 | 45,391.44 | 9,209.31 | 21,263.54 | 14,918.59 | 10,667.25 | 907.03 | 5.95 | 108.75 | 41,611.04 |

RDF Received = 41,611.04
Less Metal Shipped = - 907.03

Material Landfilled = 40,704.01 Tonnes

Table 2

Transfer Station Activities (Tonnes)

| RECEIVED: | | | |
|-----------|-----------|------------------------|-------------------|
| 2017 | COMM | SPECIAL Compost/Haz | TOTAL RECEIVED |
| JAN | 4,849.40 | 18.85 | 4,868.25 |
| FEB | 4,219.84 | 17.66 | 4,237.50 |
| MARCH | 4,913.31 | 21.44 | 4,934.75 |
| APRIL | 4,734.26 | 9.38 | 4,743.64 |
| MAY | 5,569.68 | 16.47 | 5,586.15 |
| JUNE | 5,218.58 | 26.88 | 5,245.46 |
| JULY | 4,970.03 | 12.84 | 4,982.87 |
| AUG | 5,295.27 | 15.39 | 5,310.66 |
| SEPT | 5,103.66 | 23.58 | 5,127.24 |
| OCT | 5,085.47 | 13.22 | 5,098.69 |
| NOV | 5,011.51 | 19.68 | 5,031.19 |
| DEC | 4,607.57 | 22.40 | 4,629.97 |
| | | | |
| TOTALS | 59,578.58 | 217.79 | 59,796.37 |

Section 15 a) iv) Quantity, type and location of any stockpiled materials including daily, intermediate and final cover, feedstocks etc.

The following table summarizes use of Alternate Cover, Rock, Clay and Contaminated Soil Cover received during 2017.

The soil originated from Chebucto Ford that was received and reported in 2016. It was spread as intermediate cover on the surface of Cell 6 near the western berm.

Table 3 Daily Cover (Tonnes)

| 2017 | Alternate Cover | Rock | Cover | Soil | Totals |
|-----------|-----------------|----------|-------|----------|-----------|
| January | 666.92 | 352.84 | | | 1,019.76 |
| February | 500.27 | 185.26 | | | 685.53 |
| March | 727.79 | 213.85 | | | 941.64 |
| April | 736.04 | 276.89 | | 8,891.59 | 9,904.52 |
| May | 859.84 | 290.03 | | | 1,149.87 |
| June | 966.55 | 178.33 | | | 1,144.88 |
| July | 649.91 | 96.99 | | | 746.90 |
| August | 743.70 | 239.09 | | | 982.79 |
| September | 767.84 | 92.02 | | | 859.86 |
| October | 583.43 | 215.08 | | | 798.51 |
| November | 863.07 | 229.88 | | | 1,092.95 |
| December | 853.89 | 281.00 | | | 1,134.89 |
| Totals | 8,919.25 | 2,651.26 | 0.00 | 8,891.59 | 20,462.10 |

Section 15 a) v) Up-to-date inventory of dangerous/waste dangerous goods which are stored at the Facility, which shall consist of the informational requirements of Section 11(2) of the Dangerous Goods Management Regulations

As of December 31st, 2017, there were no waste Dangerous Goods stored on site as all material removed from the waste stream are removed from site every 14 days.

**Section 15 a) vi) Surface Monitoring Results
vii) Groundwater Monitoring Results**

Quarterly monitoring of Surface water and Groundwater at the site was conducted in 2017 by Dillon Consulting and was provided to HRM and the Nova Scotia Environment under a separate cover on a quarterly basis.

Further monitoring of surface water was conducted by MIRROR NS during discharges from the sedimentation ponds and during rain events. Results of these tests were provided to Nova Scotia Environment upon receipt of the results from the laboratory. Appendix B contains the surface Discharge Summary which includes the results for TSS and pH as well as the full analyses for the North and South Sedimentation Pond discharges.

The Leak Detection Layers were pumped weekly during our Nineteenth year of operation. All Leak Detection data is supplied in Appendix A.

Surface water analyses are shown in Appendix D. No exceedences in TSS in excess of 50 ppm were experienced throughout the year.

Surface water showed pH fluctuations again this year. Values ranged from 5 to 9 units. We understand that low pH is not uncommon in our area due to shallow water recharge and varying bedrock.

A summary of results from the Leak Detection Layers is located in Appendix A and Sediment Pond discharges are located in Appendix B.

Section 15 a) xiii) Details of any spills or releases at the Facility;

There were no reportable spills or releases at the Facility in 2017.

Section 15 a) ix) Any Complaints and Measures taken to resolve the Complaints;

Two registered complaints were received at the site in 2017. The first complaint was a result of excavation into old trash to install a landfill gas header pipe. The work was halted until it could be completed without an odor release. The second complaint was a result of a mechanical failure in the gas collection system. Upon recognition of the problem, the system was shut down and the back-up system was employed until the repair was completed that evening.

Section 15 a) x) Complete records of inspections, maintenance, repairs and any incidents of emergency response;

Records are maintained on site and are available upon request.

Section 15 a) xi) Records of any violations of the conditions of this Approval and actions taken by the Approval Holders to correct those violations.

No violations to the conditions of the Approval took place in 2017.

Section 15 a) xii) Training Certifications for all Staff as completed/Achieved/Received; and

Complete training records on all Staff are available upon request.

Section 15 a) xii) Any other information requested by the Department.

Information was requested by the Department in 2017 and is included in Appendix J.

Additional information required by the approval referenced by Section.

Section 9k) The Used Oil tank in the maintenance building shall be inspected regularly, as per Industry Standards. The liquid from the holding tank shall be disposed of through the services of a licensed used oil collector. The department shall be advised in writing of the collector and the final treatment for the liquid as part of the annual report.

The waste oil collector used in 2017 was Envirosystems. Final treatment of the oil is to be used as a fuel. Volumes are reported in Appendix I.

Section 16c)ii) *Quantity of Leachate Generated, a summary of findings of the remote video inspection of the leachate management system (applicable every second year) and an update on the long term management plan to deal with leachate produced at the Facility during the operating life and post closure phase of the operation.*

Leachate removed from site in 2017 is summarized in the Table 4. Video Inspection report is included in Appendix H with all recommendations completed.

Table 4 (Litres)

| 2017 | Leachate |
|-----------|------------|
| January | 9,123,822 |
| February | 6,587,154 |
| March | 8,428,284 |
| April | 6,668,982 |
| May | 7,691,832 |
| June | 4,500,540 |
| July | 5,196,078 |
| August | 3,682,260 |
| September | 5,155,164 |
| October | 4,132,314 |
| November | 5,646,132 |
| December | 8,387,370 |
| Totals | 75,199,932 |

A copy of the Video Inspection Report is attached in Appendix H.

Section 16c)iii) A summary of updates to the Operations & Maintenance Manual, Environmental Management Plan and Contingency Plan Documents, which shall include the dates of reviews, modifications and reasons for the modifications.

The Operations & Maintenance Manual, Environmental Management Plan and Contingency plan were all modified in early 2017 in order to commission the closure of Cell 6 and the operation of Cell 7a. This plan was accepted for both the activities. Modifications included mainly changes to material flow within the Facilities.

Section 16c)iv) A summary of contaminated soils/solids disposed of in the RDF, including the compliance testing, quantity, the generator and the location of source for the material.

Quantities of the contaminated solids that were disposed of directly to the landfill are summarized in the Table 1.

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The generator and location of source can be found in Appendix F with compliance testing included.

Section 16c)v) *A Summary of Construction and Demolition Debris mix used as daily cover, including compliance testing, quantity received and quantity used.*

All Construction & Demolition Debris used on site was weighed on our scale in volumes reported on Table 3. All materials were supplied by Halifax C&D Ltd. Compliance testing is reported in Appendix E. There is only about 1-2 days worth of debris mix kept on hand at any time throughout the year.

Section 16c)vi) *Any changes in procedure;*

No changes in procedure since for the start-up of the Transfer Station in 2016.

Section 16c)vii) *A summary of recommendations assembled by the Site Professionals, the Engineers, the Hydrogeologists and other consultants or authors of the Annual Report.*

Recommendations can be reviewed in the Dillon Annual Surface and Groundwater report.

3.0 *Future Work in 2018*

In early 2018, landfill operations will continue in first section of Cell 7A.

Fill Plan

For 2018, we anticipate filling Cell #7A primarily in the front portion of the cell then moving westward into new sections likely in late spring or early summer.

Major Construction

We do not anticipate any new construction in 2018.

4.0 *Flocculants*

Flocculant fish testing results are included in Appendix G. All samples passed.

5.0 *Statement of Compliance*

On a continuing basis, MIRROR NS and HRM have made all reasonable efforts to maintain compliance with our approval to operate and operating plans while communicating any issues relating to the approval to construct and operate from the Nova Scotia Environment.

6.0 Summary

This report has summarized the operational and developmental aspects of the Otter Lake Solid Waste Management Facility during 2017. This was the nineteenth year of operation of the facility. Incidents that did occur were managed and measures were put in place to minimize further occurrences.

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Appendix A Leak Detection Analysis Results

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Appendix B Surface Discharge Summary

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Appendix C Complaint Summary

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Appendix D NSP/SSP Full Analysis Summary

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Appendix E Alternate Cover Analysis Summary

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Appendix F Contaminated Solids Summary

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Appendix G Flocculent Fish Studies

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Appendix H Video Inspection Report

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Appendix I Waste Oil Report

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Appendix J Information requested by Nova Scotia Environment