



# 2025 Landfill Closure and Post-Closure Care Liability Estimates

Township of Strong Waste Management Sites  
Sundridge, Ontario

Prepared for:

**The Township of Strong**  
28 Municipal Lane  
Sundridge, Ontario P0A 1Z0

May 13, 2025

Pinchin File: 340133



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<b>Issued to:</b>	<b>Township of Strong</b>
<b>Issued on:</b>	<b>May 13, 2025</b>
<b>Pinchin file:</b>	<b>340133</b>
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## **1.0 INTRODUCTION**

Pinchin Ltd. (Pinchin) was retained by the Township of Strong (the Township) to complete a waste capacity assessment and an estimate of liabilities for the closure and post-closure care for two waste disposal sites (the Sites) owned and operated by the Township. The estimate of liabilities has been completed for the year 2025. The Sites and their status are as follows:

1. Landfill 1 – 483 Forest Lake Road (active waste disposal site); and
2. Landfill 2 – 950 Muskoka Road (active waste disposal site).

Pinchin has assessed the annual liabilities for each Site in accordance with accounting standards set out by the Public Sector Accounting Board (PSAB) Section PS 3280 Solid Waste Landfill Closure and Post-Closure Liability.

The reporting period is up to December 31, 2024, and the base year is 2025 (i.e., time zero for present value calculation is January 1, 2025).

### **1.1 Scope of Work**

The updated liability estimates include the following activities:

- Complete a topographic drone survey of each Site to support the completion of updated waste capacity estimates;
- Obtain other updated and/or additional information required to estimate the closure and post-closure care liability;
- Estimate the closure, post-closure care and contingency expenditures; and
- Provide additional information required by the Township for its financial statements.

## **2.0 BACKGROUND & WASTE CAPACITY ASSESSMENTS**

The Sites service residents in the municipalities of Sundridge, Strong and Joly. Site use is controlled through Landfill Access Cards purchased through the Township of Strong limited to one card per property, or possibly more pending the submission of a written lease agreement. Landfill 1 is open Friday through Tuesday from 9:00 am to 5:30 pm while Landfill 2 is open Wednesday through Thursday from 9:00 am to 5:30 pm. A general description of the Sites is provided in the following sections and a summary of the main features is provided in Table 1 (all tables are provided in Appendix I).



## 2.1 Landfill Site 1 – 483 Forest Lake Road

Landfill 1 is located at 483 Forest Lake Road in Sundridge, Ontario approximately 3.6 kilometers (km) northeast from the Sundridge town centre. The Universal Transverse Mercator (UTM) coordinates for Landfill 1 are 628,091 meters (m) Easting and 5,071,552 m Northing in Zone 17 relative to the North American Datum 1983 (NAD83). The location of Landfill 1 is provided on Figure 1 (all figures are provided in Appendix II).

Landfill 1 is reported to occupy a portion of a sand and gravel extraction pit and has been in operation since the early 1960s, however, was formally granted permission for landfilling on October 11, 1972, and subsequently re-certified on July 26, 1973, May 23, 1974, December 1, 1976, and March 13, 1980, when the current amended Ontario Ministry of Environment, Conservation and Parks (MECP) Certificate of Approval (CofA) Number A522702 was issued. Landfill 1 is currently operated under CofA Number A522702 which has been subject to successive known amendments; the second CofA amendment (Notice No. 2) was issued June 11, 2001; however, a copy of the first CofA amendment (Notice No. 1) was not available to Pinchin for review at the time of preparation of this report. The Notice No. 2 to the amended CofA approves the site for the receipt and transfer of specified classes of household hazardous waste. A blue box program has been in place for the Township since 2002.

The Landfill 1 site is approved for the use and operation of a 30-hectare (ha) landfill site for the disposal of domestic and commercial solid, non-hazardous wastes; however, the landfill reportedly currently only accepts domestic waste and does not currently accept commercial waste. Approximately 4.0 ha of land is utilized for the physical placement of landfill material with the remaining area set aside for buffer land and attenuation. Groundwater reportedly flows primarily to the northwest.

Based on a review of the report entitled “*Operations and Development Plan, Township of Strong Landfill, Lot 31, Concession X, Township of Strong (Sundridge), Ontario*” prepared by Trow Consulting Engineers Ltd. (Trow) dated March 12, 1992 (the 1992 Landfill 1 Design & Operations (D&O) Plan), the landfill was originally developed by infilling the former sand and gravel excavations in the pit base. At the time of this assessment, Trow estimated that landfill service population ranged between 2,618 and 3,234 residents in 1992. The 1992 Landfill 1 D&O Plan states that the landfill design required the excavation of the sandy overburden soils to an approximate local datum base elevation of 98 meters (m) which appears to correspond to an elevation of 340 meters above sea level (masl) with exception of the central area of the site where there was depression which was reportedly below the 340 masl base contour. The volume of interim cover materials from the landfill base preparation and re-grading efforts was estimated by Trow to be 59,500 cubic metres (m<sup>3</sup>), based on field observations and topographical survey data, with approximately 10,450 m<sup>3</sup> of wood waste and domestic waste used to infill the depressed central area and



bring to grade. The projected capacity of the landfill was estimated at 301,000 m<sup>3</sup>. Trow estimated the remaining lifespan to be between 11 to 28 years (or between 2003 and 2020) depending on potential diversion and waste generation scenarios.

The Township provided a copy of the memorandum entitled "*Landfill Reporting Requirements for 2001, Closure and Post Closure Plan*" prepared by INTEGRATED Earth & Environmental Limited (INTEGRATED) to identify closure and post-closure activities for the on-going operation of the landfill. However, it should be noted that the drawings referenced in the memo were not available for review. INTEGRATED estimated that the landfill service population was approximately 1,170 residents in 2002 based on the populations of Joly and Strong Townships. Based upon test pit and surveyed information carried out in April 2001 and March 2002, INTEGRATED estimated that the projected capacity of the landfill was actually 423,512 m<sup>3</sup>, and that 39,457 m<sup>3</sup> of volume was estimated to have been utilized between 1962 and 2001. Thus, INTEGRATED estimated that there was an estimated remaining volume of 384,055 m<sup>3</sup>, including waste, daily and interim cover and final cover as of March 2002. INTEGRATED also postulated that an additional 11,447.5 m<sup>3</sup> of domestic waste could be accepted at the site if final peak elevation is adjusted to conform with the adjacent land.

Pinchin retained the services of Unmanned Aerial Services Inc. (UAS) to complete a topographic drone survey of the site in October 2024. The results of the topographic survey for Landfill 1 are illustrated on Figure 2. The results of the survey indicate that the natural surface elevations surrounding the landfill are found to be above the grade of the reported prepared base elevation for the landfill footprint. The survey also revealed that there is a small area (approximately 1,683 square meters (m<sup>2</sup>)) within the northeast end of the fill area where waste is being landfilled outside the design waste limits. The total volume currently in place at the Site was estimated to be approximately 226,503 m<sup>3</sup> as of October 2024. Therefore, the Site is estimated to have approximately 197,009 m<sup>3</sup> of fill capacity to final grade as of October 2024. The proposed final contours for Landfill 1 are presented on Figure 3. It should be noted that comparing this recent in-place volume estimate with the 39,457 m<sup>3</sup> in-place volume estimation by INTEGRATED in March 2002 results in a difference of 180,880 m<sup>3</sup> or 8,283 m<sup>3</sup> per year which would be quite high for the serviced population. In 2021, the population of the village of Sundridge was 938, and the population of the Joly and Strong Townships was 293 and 1,566, respectively, for a total of 2,797 residents. Using an average per capita waste generation rate of 1 kg/person/day, an in-place density of 500 kg/m<sup>3</sup> and a 4:1 waste to cover ratio (including interim and final cover material) results in a fill rate of approximately 2,552 m<sup>3</sup> per year across both Sites according to 2021 population estimates. Based on the proportion that Landfill 1 is open relative to Landfill 2, it is further estimated that Landfill 1 would receive roughly 70% of the waste from the surrounding municipalities giving a consumption rate estimate of 1,786.4 m<sup>3</sup> per year. Due to the large disparity in the consumption rates, it is possible that this current in-place estimate may be slightly high, or that the in-place volume estimate from 2002 may have been



underestimated. Given the lack of regular/frequent surveys to compare against and the data gap presented by a large seasonal population influx, Pinchin has elected to average the volumetric and service population derived waste deposition rates in order to calculate the remaining Site life.

Assuming an average waste deposition rate (as determined between the two methods) of 5,035 m<sup>3</sup> per year remains constant and that the Site is developed to the proposed final contours within the current 4.0 ha footprint (remaining capacity of 197,009 m<sup>3</sup>), the remaining life span of the Site is therefore estimated to be approximately 39.1 years as of October 2024.

## **2.2 Landfill Site 2 – 950 Muskoka Road**

Landfill 2 is situated on a 20 hectare property at 950 Muskoka Road in Sundridge, Ontario approximately 8.3 km southwest from the Sundridge town centre. The landfill is situated on the north half of Lot 10, Concession III, Township of Strong. The UTM coordinates for Landfill 2 are 622,864 m Easting and 5,061,822 m Northing in Zone 17 relative to the NAD83. There is a single gated entrance from Muskoka Road at the north-east corner of the property that serves as the only public site access point. The location of Landfill 2 is provided on Figure 1.

Landfill 2 is currently operated under the amended Ontario MECP CofA Number A522703. Background information for Landfill 2 was provided in the “*The Township of Strong Landfill No.2 Development & Operations Report*” prepared by Pinestone Engineering Ltd. (Pinestone) dated April 23, 2012 (the 2012 Landfill 2 D&O Plan). The 2012 Landfill 2 D&O Plan states that a Conditional CofA Number 522703 was issued to the Township on November 8, 1973. At that time, waste was being disposed of along side Muskoka Road 3. A letter written to the Township by the MECP on September 23, 1976, indicated that a second CofA had been issued, but Pinestone indicates that no record was found. An MECP inspection report dated January 24, 1984, indicated that in 1982, site operations were moved over to the area designated for landfilling. A Provisional CofA was issued on March 13, 1980, for the disposal of domestic and commercial wastes. Landfill 2 accepts household waste; however, commercial items are not permitted; all recyclable waste is transferred to Landfill 1.

The Township provided a copy of the memorandum prepared by INTEGRATED outlining closure and post-closure needs for the on-going operation of the landfill. Based upon resident interviews and surveyed information carried out in March 2002, INTEGRATED estimated the projected capacity of the landfill footprint to be 93,150 m<sup>3</sup> based on the 1.4 ha footprint in 2002. An estimated 41,400 m<sup>3</sup> of volume was estimated to have been utilized between 1966 and 2001 and INTEGRATED estimated a remaining volume of 51,750 m<sup>3</sup> as of March 2002 within the historical 1.4 ha area.

A waste capacity assessment was included as part of the 2012 Landfill 2 D&O Plan. According to the 2012 Landfill 2 D&O Plan, the site has 44,000 m<sup>3</sup> of total landfill volume capacity (i.e., historic and future



fill area combined). Pinestone compared original ground elevations and topography from Ontario Base Mapping to topographic survey results from October 2011 and estimated approximately 28,000 m<sup>3</sup> of fill in place within a historical 1.5 ha waste footprint; notably quite a bit lower than the 41,400 m<sup>3</sup> already estimated to be in place by INTEGRATED in 2002. Of the 28,000 m<sup>3</sup> of fill in place, it was estimated that 12,000 m<sup>3</sup> was comprised of in-place compacted waste. Pinestone estimated that within the limits of a 0.9 ha future fill footprint, the total projected waste capacity as of October 2011 was to be approximately 6,600 m<sup>3</sup> not including interim and final cover estimates. The remaining operational life of the landfill was not estimated by Pinestone.

Pinchin retained the services of UAS to complete a topographic drone survey of Landfill 2 in October 2024 as illustrated on Figure 4. The 2011 and 2024 contours were compared in order to determine the volume of material landfilled over this period resulting in a difference of volume of approximately 22,183 m<sup>3</sup>, or an annual deposition rate of approximately 1,706 m<sup>3</sup> per year. In contrast to the Landfill 1 uncharacteristically high deposition estimate derived from survey results, the 1,706 m<sup>3</sup> per year survey estimate appears to be a more reasonable rate, and given that survey results are more typically accurate relative to population estimates, an average rate is not deemed appropriate for Landfill 2 estimates. The 2024 contours were also compared to the final design contours yielding a remaining volume estimate of 56,572 m<sup>3</sup> in contrast to the more conservative landfill volume estimates by Pinestone for the 2.4 ha landfilled area. The proposed final contours for Landfill 2 are presented on Figure 5.

In order to determine the cumulative capacity, Pinchin has elected to use the in-place volume estimate of 28,000 m<sup>3</sup> (as of the most recent estimate in 2011) and the estimated 22,183 m<sup>3</sup> between 2011 and 2024, for a cumulative in-place volume estimate of 50,183 m<sup>3</sup>. Based on the remaining capacity estimate of 56,572 m<sup>3</sup> and in-place volume estimate of 50,183 m<sup>3</sup>, Landfill 2 is estimated to have a total maximum capacity of approximately 106,755 m<sup>3</sup>, including waste, interim cover and final cover materials.

Assuming the waste deposition rate of 1,706 m<sup>3</sup> per year remains constant and that the Site is developed to the proposed final contours within the current 2.4 ha footprint (remaining capacity of 56,572 m<sup>3</sup>), the remaining life span of the Site is therefore estimated to be approximately 33.1 years as of October 2024.

## **2.3 Data Gap Evaluation**

As a result of long history of landfill operations and data gaps with regards to deposition volumes, there is a relative high degree of uncertainty with regards to the fill volume estimates. Variable waste deposition rates result in changes to the average annual deposition rate used to calculate remaining site life. The remaining site lifespan estimate assumes that the waste deposition rate remains constant, and that the Site is developed to the maximum capacity assumptions of this assessment. It is recommended that regular topographic surveys of the waste disposal area continue to be undertaken in order to more





accurately estimate the average annual waste deposition rate if additional accuracy pertaining to the Site life estimates are required.

Additionally, Ontario Regulation 232/98 (O.Reg.232/98) under the *Environmental Protection Act* which came into effect on August 1, 1998, describes the regulatory and approval requirements for the design, operation, closure and post-closure care of new or expanding municipal (i.e., non-hazardous) waste landfilling sites. As a result of the 1992 Landfill 1 D&O Plan being prepared prior to O.Reg.232/98 coming into effect, it is recommended that a revised Design and Operations Plan be prepared for the landfill facility at 483 Forest Lake Road.

### 3.0 COLLECTION AND REVIEW OF CURRENT INFORMATION

The following information was used to calculate the liability estimates:

1. The remaining Site capacities were estimated using the most recent data available from previous investigations for each of the Sites. Additional surveys and intrusive investigations utilized to compile formal updated Waste Capacity Assessments would be required to increase the level of accuracy needed in order to refine these estimates.
2. Monitoring/reporting costs are estimated using the unit prices provided in the active Pinchin contract.

The contingency amount was estimated using the following equation:

$$F = \$0.50 \times W \times I_2/I_1$$

Where:

F = the amount of financial assurance

W = the number of tonnes of waste that have been deposited in the landfilling site at the time the amount of financial assurance is calculated.

$I_1$  = the 2017 Annual Average Non-residential Building Construction Price Index for Ontario (based on Toronto and Ottawa-Gatineau (Ontario part) data) as published by Statistics Canada under the authority of the Statistics Act (Canada).

$I_2$  = the most recent Annual Average Non-residential Building Construction Price Index for Ontario (based on Toronto and Ottawa-Gatineau (Ontario part) data) available at the time the amount of financial assurance is calculated as published by Statistics Canada under the authority of the Statistics Act (Canada)

This is identical to the method of calculation Financial Assurance for contingency plans described in the MECP Landfill Standards Guideline with the exception of using average Ontario Non-Residential Building Construction Price indices instead of Toronto only indices.



The Non-residential Building Construction Price Index data for Ontario (based on the average of Toronto and Ottawa-Gatineau (Ontario part)) is summarized as follows:

	Average Non-residential Building Construction Price Index (NRBCPI) for Toronto, Ontario <sup>1</sup>	Average Non-residential Building Construction Price Index (NRBCPI) for Ottawa-Gatineau, Ontario <sup>1</sup>
First Quarter 2024	157.6	160.1
Second Quarter 2024	159.6	160.8
Third Quarter 2024	Not Available	Not Available
Fourth Quarter 2024	Not Available	Not Available
Annual Average	158.6	160.45
2017 Base Value	100	100
Ontario NRBCPI Average <sup>1</sup>	159.53	

Notes:

- The base year for the 2024 NRBCPI values published by Statistics Canada was 2017 (i.e., 2017 = 100).

## 4.0 INFLATION AND DISCOUNT RATES

### 4.1 Inflation Rate

The unit costs were updated to 2025 costs by applying an average inflation rate of 2.35% based on a ten-year average (from 2015 to 2024) of the Core Consumer Price Index (CPI) change over 12-month periods (see Appendix III). The Core CPI is a Consumer Price Index of all-products considered in the calculation of the Total CPI excluding the eight most volatile components (fruit, vegetables, gasoline, fuel oil, natural gas, mortgage interest, inter-city transportation and tobacco products), as well as the effect of changes in indirect taxes on the remaining components.

The Consumer Price Index change from one year to the other is commonly used to determine the inflation rate; however, the ten-year average was assumed more appropriate than the one-year change.

### 4.2 Discount Rate

A real discount rate of 1.40% was used to complete the cost estimate calculations based on discount rates reported by other municipalities..



## 5.0 CHANGE IN LIABILITY AND ANNUAL EXPENDITURES

The change in liability was calculated using the equation presented below:

$$G = (A \times E) - F$$

Where:

G = Change in Liability

A = Estimated Total Expenditure

E = Capacity Factor

F = Expenditures Previously Recognized

For each waste management Site, the change in liability associated with the Estimated Total Expenditure was determined by applying a capacity factor for the estimated fraction of the total landfill capacity used to date (i.e., for closed sites the factor is 1.0). For expenditures previously realized, Pinchin used the recommended liability estimates completed by INTEGRATED in 2002 for the two Sites.

Assumptions used to estimate the capacity factors are noted in the Tables 1 through 3B provided in Appendix I

The estimated liability amounts for 2025 are summarized in the following table:

Site	2002 Liability Estimate (F) (\$)	2025 Liability Estimate (A X E) (\$)	Change in Liability (G) (\$)
Landfill Site 1 – 483 Forest Lake Road	\$2,128,980	\$1,405,031	-(723,949)
Landfill Site 2 – 950 Muskoka Road	\$116,800	\$656,074	\$539,274
<b>Total</b>	<b>\$2,245,780</b>	<b>\$2,061,105</b>	<b>(\$184,675)</b>

**6.0 ADDITIONAL INFORMATION**

The notes to the financial statements require the information included in the following table:

Information Required	Comment
1. The nature and source of landfill closure and post-closure care requirements.	The information sources and assumptions are noted in the attached Tables in Appendix I.
2. The basis of recognition and measurement of the liability for closure and post-closure care.	The method used to determine the liability is presented in the attached Tables in Appendix I.
3. The remaining capacity of the Site, and the estimated remaining Site life in years.	The remaining Site capacity and the estimated remaining Site life, including the basis for this estimation, are noted in the attached Tables in Appendix I.
4. How any requirements for closure and post-closure care financial assurance are being met.	See item 5.
5. The amount of any assets designated for settling closure and post-closure care liabilities.	<p>The following assets were identified by the Township for closure and post-closure care liabilities:</p> <ul style="list-style-type: none"><li>• The Township has a total reserve of \$259,078.45 for both Landfill 1 and 2 combined.</li></ul>
6. The estimated length of time needed for post-closure care.	The minimum period for post-closure monitoring required by the MECP is 25 years. A 25-year period was assumed for post-closure care activities at all Sites.



## **7.0 CLOSURE**

This report was prepared for the exclusive use of the Township. We trust that the information presented in this report meets your current requirements. Should you have any questions, or concerns, please contact the Project Manager, Alana Valle, at 705.521.0560, or email [avalle@pinchin.com](mailto:avalle@pinchin.com).

Yours truly,

**Pinchin Ltd.**

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Template: Groundwater Monitoring Report Template, EDR, July 23, 2024

## **APPENDIX I**

### **Site Specific 2025 Closure and Post Closure Care Cost Estimate Tables**

**TABLE 1**  
**Summary of Site Features**  
**2025 CLOSURE & POST-CLOSURE CARE COST ESTIMATE**

Site (status)	Surface Area	Type of Cover	Leachate Management System Components	No. of Groundwater Monitoring Wells	Surface Water Controls	In-place Volume (m <sup>3</sup> )	Permitted Volume (m <sup>3</sup> )
Landfill 1 (active)	4.0 hectare (ha) waste disposal area within 30 ha total property area	Low Permeable Soil	Monitored Natural Attenuation	8	Surface water controls included a perimeter drainage ditch and a sedimentation pond. One surface water monitoring location.	226,503	423,512
Landfill 2 (active)	2.4 ha disposal footprint within 20 ha total property area	Low Permeable Soil	Monitored Natural Attenuation	1	Two surface water monitoring locations.	50,183	106,755

**Notes:**

<sup>1</sup> The basis for the permitted volumes are presented in Tables 2 through 5.

<sup>2</sup> Information to Landfill 1 obtained from the *Operations and Development Plan, Township of Strong Landfill, Lot 31, Concession X, Township of Strong (Sundridge), Ontario*, March 2002

<sup>3</sup> Information for Landfill 2 obtained from *The Township of Strong Landfill No.2 Development & Operations Report, April 23, 2012*

TABLE 2A  
Landfill 1 – 483 Forest Lake Road  
2025 Closure Cost Estimate

Item	Unit	Quantity	Unit Cost 2024 \$	Unit Cost 2025 \$	Cost 2025 \$	Expected Closure Year	Present Value Factor	Present Value Cost	Comment (source)
Final Cover and Vegetation:									
Grading of Waste Cell	m <sup>2</sup>	40,178	\$8.87	\$9.08	\$364,894	2064	0.58	\$212,239	Approximate 4.0 ha area from D&O Plan
Levelling Layer	m <sup>2</sup>	40,178	\$8.12	\$8.31	\$333,820	2064	0.58	\$194,165	4.0 ha area
Landfill Cap and Vegetation	m <sup>2</sup>	40,178	\$38.94	\$39.85	\$1,601,183	2064	0.58	\$931,322	750 mm thick soil cap (600 mm low permeability soil, 150 mm topsoil)
Miscellaneous	m <sup>2</sup>	40,178	\$10.28	\$10.52	\$422,602	2064	0.58	\$245,805	Dust control, silt fence, import topsoil
Drainage Control Facilities Completion:									
Ponds and Ditches	m <sup>3</sup>	20,800	\$25.86	\$26.47	\$550,548	2064	0.58	\$320,224	Construction of drainage control pond and perimeter ditches per design in D&O Plan. Roughly 800 m of perimeter ditches not yet constructed with assumed 1X1m dimensions. Pond with approximate area of 15,750 m2 (225x70m) multiplied by average depth (1.25m).
Leachate Monitoring Facilities Completion:									
Monitoring Wells	each	0	See comment					\$0	Monitoring well network established. Features assumed to already be in place at closure.
Water Quality Monitoring Facilities Completion:									
Monitoring Wells	each	0	See comment					\$0	Monitoring well network established. Features assumed to already be in place at closure.
Other:									
Roads	m	0	See comment					\$0	Maintenance costs associated with ongoing Site operation.
Fencing/Gate	m	0	See comment					\$0	Maintenance costs associated with ongoing Site operation.
Additional Buffer Land	m <sup>2</sup>	0	\$1.37	\$1.40	\$0	See comment		\$0	Construction/maintenance costs associated with ongoing landfill operation.
Subtotal Closure Costs					\$3,273,047			\$1,903,756	
15 % Contingency					\$490,957			\$285,563	
Total Closure Costs (annual)					\$3,764,004			\$2,189,319	



TABLE 2B  
Landfill 1 – 483 Forest Lake Road  
2025 Post-Closure Care Cost Estimate

Item	Unit	Quantity	Unit Cost 2024 \$	Unit Cost 2025 \$	Cost (Annual) 2025\$	Year Starting	Year Ending	PV Factor Equal Payments	PV Factor Single Payment	Present Value Cost	Comment / Source <sup>1</sup>
Final Cover and Vegetation Inspection/Maintenance	1	Allowance	\$12,030	\$12,313	\$12,313	2064	2089	20.97	0.58	\$150,206	Annual allowance based on assumed 1% of estimated capital cost for 4.01 ha soil cap at \$300,000/ha
Roads Inspection and Maintenance	1	Allowance	\$4,207	\$4,306	\$4,306	2064	2089	20.97	0.58	\$52,526	Assume 5% of estimated capital cost (assume 800 m @ \$105.17/m = \$84,136)
Fence/Gate Inspection/Maintenance	–	–	–	–	–	–	–	–	–	–	Included in roads inspection/maintenance.
Water Quality Monitoring Facilities Inspection/Maintenance	1	Allowance	\$245	\$251	\$251	2064	2089	20.97	0.58	\$3,059	Annual allowance based on assumed 1% of estimated capital cost for replacement of seven (7) wells at approximately \$24,500
Monitoring/Reporting Program	1	Allowance	\$10,000	\$10,235	\$10,235	2064	2089	20.97	0.58	\$124,859	Monitoring/Reporting Program costs as reported by the Client <sup>2</sup>
Contingency (e.g. future impacts to surface water/groundwater, acquisition of additional buffer lands, etc.)	–	–	–	–	–	–	–	–	–	\$107,137	Calculated using Landfill Standards Guideline for Financial Assurance for Contingency Plans (226,503 m3x 0.5931t/m3x\$0.50/t*inflation adjustment of 159.53/100)
Total Post-Closure Costs					\$27,104					\$437,787	
ESTIMATED TOTAL EXPENDITURE										\$2,627,106	A - Sum of discounted future closure and post-closure costs
TOTAL ESTIMATED SITE CAPACITY (m³)										423,512	B -From Design and Operations Report
REMAINING CAPACITY (m³)										197,009	C - Remaining capacity of 197,009 m³ as of October 2024
CUMULATIVE CAPACITY USED (m³)										226,503	D = B - C
CAPACITY FACTOR										53%	E =( D / B ) x 100%
FACTORED EXPENDITURES										\$1,405,031	A x E
EXPENDITURES PREVIOUSLY RECOGNIZED										\$2,128,980	F - From 2002 audit by INTEGRATED Earth & Environmental Limited
CHANGE IN LIABILITY										-\$723,949	G = A x E - F

**Notes**

Inflation Rate (%)	2.35
Discount Rate (%)	1.40
Base Year	2025
Expected Closure Year	2064
Remaining Landfill Life (years)	39
Period of Post-Closure Care (years)	25

**References:**

- 1 - Assumptions and allowance amounts are corrected annually and originally estimated based on 2024 costs at other waste disposal sites.
- 2 - 2024 monitoring and reporting costs estimates as reported by Derek Hnatiuk (Township of Strong Treasurer/Tax Collector) in an e-mail response on May 6, 2025

TABLE 3A  
Landfill 2 – 950 Muskoka Road  
2025 Closure Cost Estimate

Item	Unit	Quantity	Unit Cost 2024 \$	Unit Cost 2025 \$	Cost 2025 \$	Expected Closure Year	Present Value Factor	Present Value Cost	Comment (source)
Final Cover and Vegetation:									
Grading of Waste Cell	m²	24,000	\$8.87	\$9.08	\$217,966	2058	0.63	\$137,802	Approximate 2.4 ha area from D&O Plan
Levelling Layer	m²	24,000	\$8.12	\$8.31	\$199,405	2058	0.63	\$126,067	2.4 ha area
Landfill Cap and Vegetation	m²	24,000	\$38.94	\$39.85	\$956,454	2058	0.63	\$604,685	750 mm thick soil cap (600 mm low permeability soil, 150 mm topsoil)
Miscellaneous	m²	24,000	\$10.28	\$10.52	\$252,438	2058	0.63	\$159,595	Dust control, silt fence, import topsoil
Drainage Control Facilities Completion:									
Ditches	m	0	See comment					\$0	Construction/maintenance costs associated with ongoing landfill operation.
Leachate Monitoring Facilities Completion:									
Monitoring Wells	each	0	See comment					\$0	Monitoring well network established. Features assumed to already be in place at closure.
Water Quality Monitoring Facilities Completion:									
Monitoring Wells	each	0	See comment					\$0	Monitoring well network established. Features assumed to already be in place at closure.
Other:									
Roads	m	0	See comment					\$0	Maintenance costs associated with ongoing Site operation.
Fencing/Gate	m	0	See comment					\$0	Maintenance costs associated with ongoing Site operation.
Additional Buffer Land	m²	0	\$1.37	\$1.40	\$0	See comment		\$0	Construction/maintenance costs associated with ongoing landfill operation.
Subtotal Closure Costs					\$1,626,263			\$1,028,149	
15 % Contingency					\$243,939			\$154,222	
Total Closure Costs (annual)					\$1,870,202			\$1,182,371	

TABLE 3B  
Landfill 2 – 950 Muskoka Road  
2025 Post-Closure Care Cost Estimate

Item	Unit	Quantity	Unit Cost 2024 \$	Unit Cost 2025 \$	Cost (Annual) 2025\$	Year Starting	Year Ending	PV Factor Equal Payments	PV Factor Single Payment	Present Value Cost	Comment / Source <sup>1</sup>
Final Cover and Vegetation Inspection/Maintenance	1	Allowance	\$7,200	\$7,369	\$7,369	2058	2083	20.97	0.63	\$97,715	Annual allowance based on assumed 1% of estimated capital cost for 2.4 ha soil cap at \$300,000/ha
Roads Inspection and Maintenance	–	Allowance	\$1,578	\$1,615	\$1,653	2058	2083	20.97	0.63	\$21,913	Assume 5% of estimated capital cost (assume 300 m @ \$105.17/m = \$31,551)
Fence/Gate Inspection/Maintenance	–	–	–	–	–	–	–	–	-	–	Included in roads inspection/maintenance.
Water Quality Monitoring Facilities Inspection/Maintenance	1	Allowance	\$35	\$36	\$37	2058	2083	20.97	0.63	\$486	Annual allowance based on assumed 1% of estimated capital cost for replacement of one (1) well at approximately \$3,500
Monitoring/Reporting Program	1	Allowance	\$5,000	\$5,118	\$5,238	2058	2083	20.97	0.63	\$69,453	Monitoring/Reporting Program costs as reported by the Client <sup>2</sup>
Contingency (e.g. future impacts to surface water/groundwater, acquisition of additional buffer lands, etc.)	–	–	–	–	–	–	–	–	–	\$23,737	Calculated using Landfill Standards Guideline for Financial Assurance for Contingency Plans (50,183 m3x 0.5931t/m3x\$0.50/t*inflation adjustment of 159.53/100)
Total Post-Closure Costs					\$14,296					\$213,303	
ESTIMATED TOTAL EXPENDITURE										\$1,395,675	A - Sum of discounted future closure and post-closure costs
TOTAL ESTIMATED SITE CAPACITY (m³)										106,755	B -From Design and Operations Report
REMAINING CAPACITY (m³)										56,572	C - Remaining capacity of 56,572 m³ as of October 2024
CUMULATIVE CAPACITY USED (m³)										50,183	D = B - C
CAPACITY FACTOR										47%	E =( D / B ) x 100%
FACTORED EXPENDITURES										\$656,074	A x E
EXPENDITURES PREVIOUSLY RECOGNIZED										\$116,800	F - From 2002 audit by INTEGRATED Earth & Environmental Limited
CHANGE IN LIABILITY										\$539,274	G = A x E - F

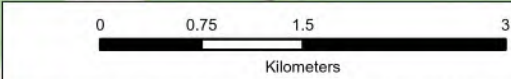
**Notes**

Inflation Rate (%)	2.35
Discount Rate (%)	1.40
Base Year	2025
Expected Closure Year	2058
Remaining Landfill Life (years)	33
Period of Post-Closure Care (years)	25

**References:**

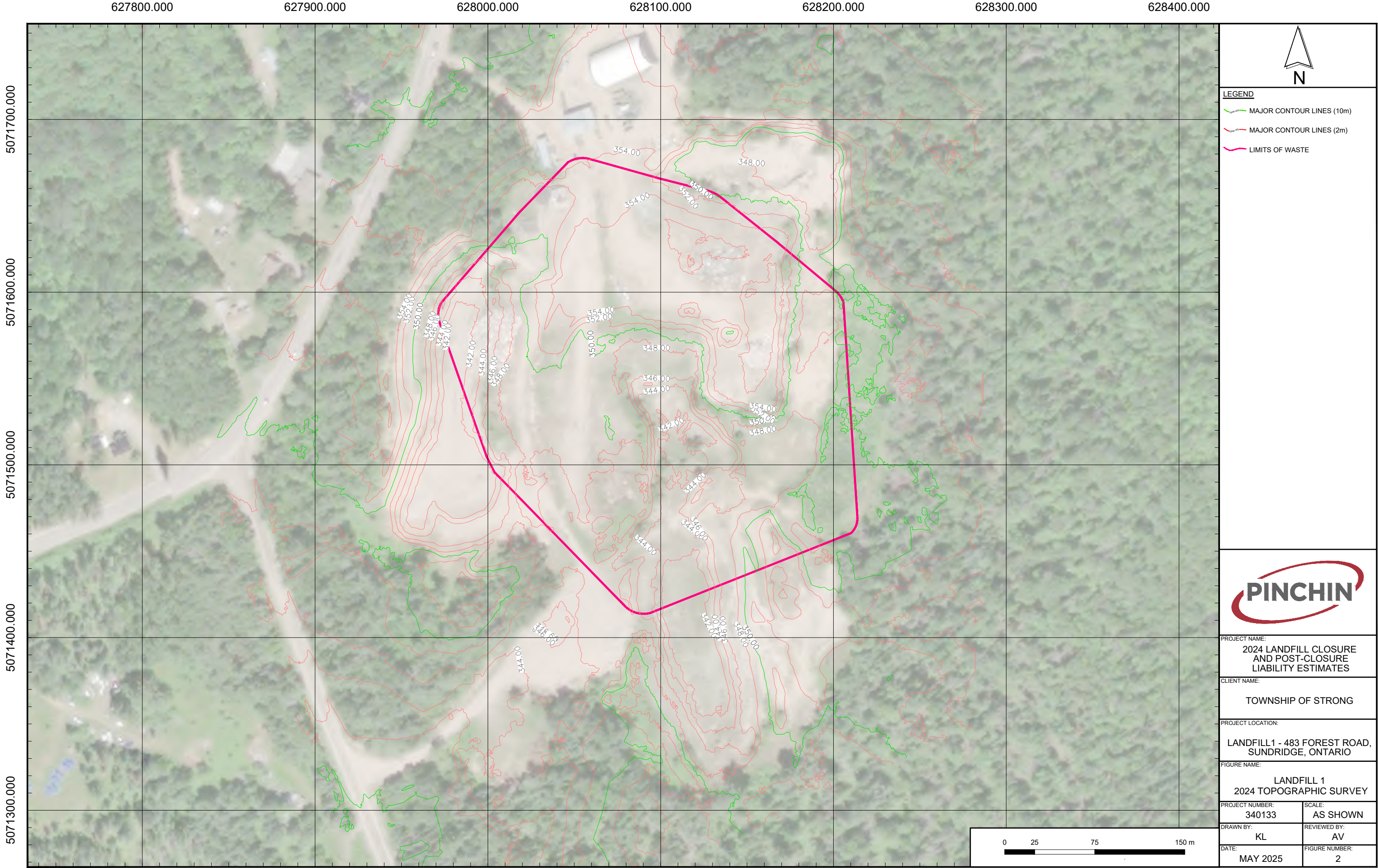
- 1 - Assumptions and allowance amounts are corrected annually and originally estimated based on 2024 costs at other waste disposal sites.  
2 - 2024 monitoring and reporting costs estimates as reported by Derek Hnatiuk (Township of Strong Treasurer/Tax Collector) in an e-mail response on May 6, 2025

**APPENDIX II**  
**Figures**



PROJECT NAME: 2024 LANDFILL CLOSURE AND POST-CLOSURE LIABILITY ESTIMATES					
CLIENT NAME: TOWNSHIP OF STRONG					
PROJECT LOCATION: 483 FOREST LAKE ROAD (LANDFILL 1) AND 1950 MUSKOKA ROAD (LANDFILL 2), SUNDRIDGE					
FIGURE NAME: KEY MAP				FIGURE NUMBER	
PROJECT NUMBER: 340133	SCALE: AS SHOWN	DRAWN BY: CF	REVIEWED BY: GW	DATE: MAY 2025	1





LEGEND

- MAJOR CONTOUR LINES (10m)
- MAJOR CONTOUR LINES (2m)
- LIMITS OF WASTE



PROJECT NAME:  
2024 LANDFILL CLOSURE  
AND POST-CLOSURE  
LIABILITY ESTIMATES

CLIENT NAME:  
TOWNSHIP OF STRONG

PROJECT LOCATION:  
LANDFILL1 - 483 FOREST ROAD,  
SUNDRIDGE, ONTARIO

FIGURE NAME:  
LANDFILL 1  
2024 TOPOGRAPHIC SURVEY

PROJECT NUMBER:  
340133

SCALE:  
AS SHOWN

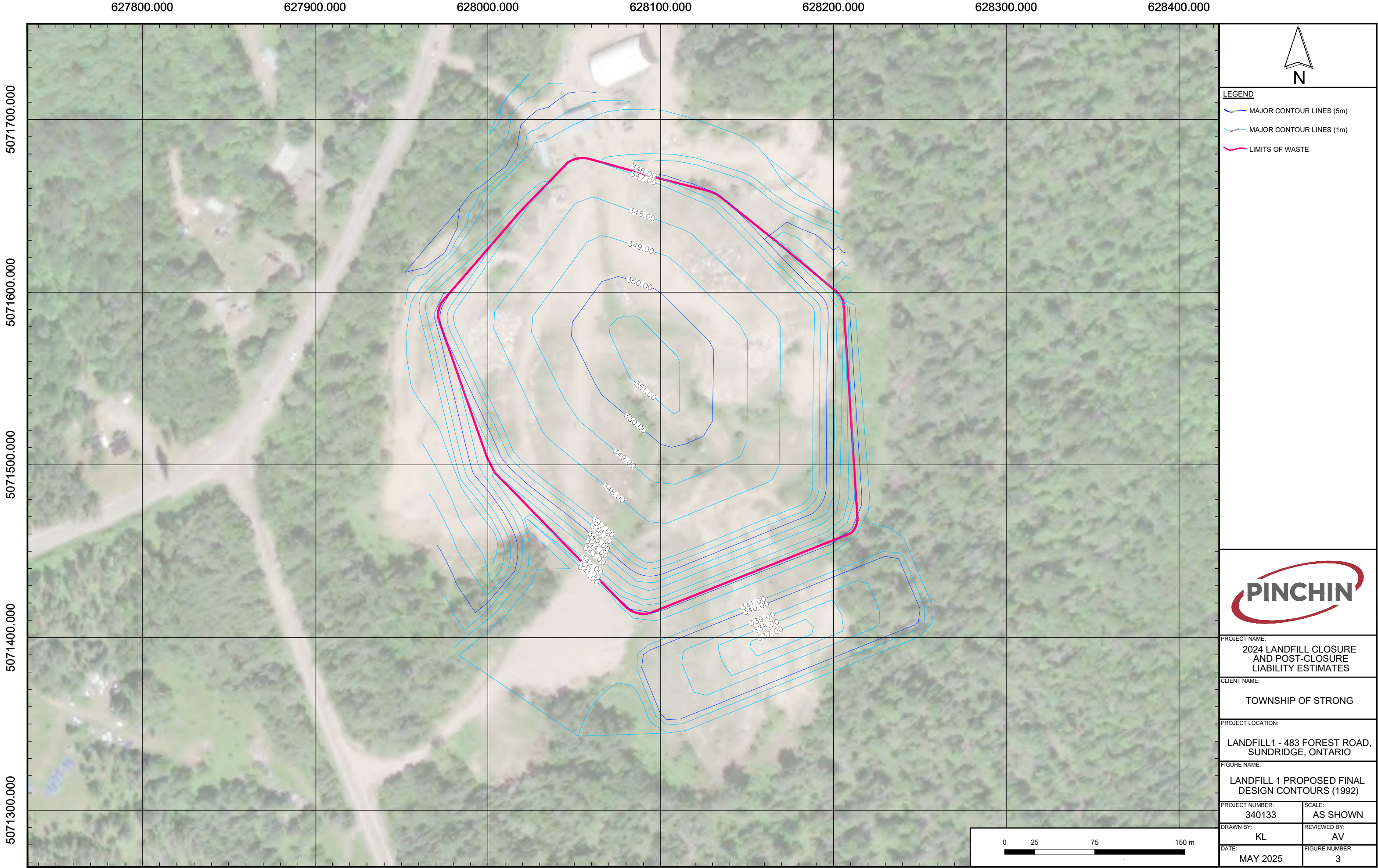
DRAWN BY:  
KL

REVIEWED BY:  
AV

DATE:  
MAY 2025

FIGURE NUMBER:  
2







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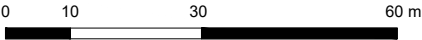
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- LEGEND**
- MAJOR CONTOUR LINES (10m)
  - MAJOR CONTOUR LINES (2m)
  - LIMITS OF WASTE



PROJECT NAME: 2024 LANDFILL CLOSURE AND POST-CLOSURE LIABILITY ESTIMATES	
CLIENT NAME:  TOWNSHIP OF STRONG	
PROJECT LOCATION:  LANDFILL2 - 950 MUSKOKA ROAD, SUNDRIDGE, ONTARIO	
FIGURE NAME:  LANDFILL 2 2024 TOPOGRAPHIC SURVEY	
PROJECT NUMBER: 340133	SCALE: AS SHOWN
DRAWN BY: KL	REVIEWED BY: AV
DATE: MAY 2025	FIGURE NUMBER: 4





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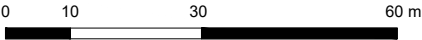
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- LEGEND**
- MAJOR CONTOUR LINES (5m)
  - MAJOR CONTOUR LINES (1m)
  - LIMITS OF WASTE



PROJECT NAME: 2024 LANDFILL CLOSURE AND POST-CLOSURE LIABILITY ESTIMATES	
CLIENT NAME:  TOWNSHIP OF STRONG	
PROJECT LOCATION:  LANDFILL2 - 950 MUSKOKA ROAD, SUNDRIDGE, ONTARIO	
FIGURE NAME:  LANDFILL 2 PROPOSED FINAL DESIGN CONTOURS (2011)	
PROJECT NUMBER: 340133	SCALE: AS SHOWN
DRAWN BY: KL	REVIEWED BY: AV
DATE: MAY 2025	FIGURE NUMBER: 5



**APPENDIX III**  
**Consumer Price Index 2015 – 2024**

**Consumer Price Index Data (2015-2024)**  
**2025 Closure and POST-CLOSURE CARE COST ESTIMATE**

Date	Total CPI <sup>1</sup>		Percentage change over previous year	
	not Seasonally Adjusted	Seasonally Adjusted	(not seasonally adjusted)	
			Total CPI	Core CPI <sup>2</sup>
Dec-24	161.2	162.3	1.8	1.8
Nov-24	161.8	162.0	1.9	1.6
Oct-24	161.8	161.7	2.0	1.7
Sep-24	161.1	161.3	1.6	1.6
Aug-24	161.8	161.3	2.0	1.5
Jul-24	162.1	161.2	2.5	1.7
Jun-24	161.4	160.7	2.7	1.9
May-24	161.5	160.6	2.9	1.8
Apr-24	160.6	160.2	2.7	1.6
Mar-24	159.8	159.9	2.9	2.0
Feb-24	158.8	159.6	2.8	2.1
Jan-24	158.3	159.4	2.9	2.4
Dec-23	158.3	159.4	3.4	2.6
Nov-23	158.8	159.0	3.1	2.8
Oct-23	158.6	158.5	3.1	2.7
Sep-23	158.5	158.6	3.8	2.8
Aug-23	158.7	158.2	4.0	3.3
Jul-23	158.1	157.2	3.3	3.2
Jun-23	157.2	156.5	2.8	3.2
May-23	157.0	156.1	3.4	3.7
Apr-23	156.4	156.0	4.4	4.1
Mar-23	155.3	155.4	4.3	4.3
Feb-23	154.5	155.2	5.2	4.7
Jan-23	153.9	154.9	5.9	5.0
Dec-22	153.1	154.3	6.3	5.4
Nov-22	154.0	154.4	6.8	5.8
Oct-22	153.8	153.9	6.9	5.8
Sep-22	152.7	153.0	6.9	6.0
Aug-22	152.6	152.4	7.0	5.8
Jul-22	153.1	152.3	7.6	6.1
Jun-22	152.9	152.1	8.1	6.2
May-22	151.9	151.3	7.7	6.1
Apr-22	149.8	149.7	6.8	5.7
Mar-22	148.9	148.4	6.7	5.5
Feb-22	146.8	146.9	5.7	4.8
Jan-22	145.3	145.8	5.1	4.3

**Consumer Price Index Data (2015-2024)**  
**2025 Closure and POST-CLOSURE CARE COST ESTIMATE**

Date	Total CPI <sup>1</sup>		Percentage change over previous year	
	not Seasonally Adjusted	Seasonally Adjusted	(not seasonally adjusted)	
			Total CPI	Core CPI <sup>2</sup>
Dec-21	144.0	144.9	4.8	4.0
Nov-21	144.2	144.4	4.7	3.6
Oct-21	143.9	143.9	4.7	3.8
Sep-21	142.9	143.1	4.4	3.7
Aug-21	142.6	142.3	4.1	3.5
Jul-21	142.3	141.6	3.7	3.3
Jun-21	141.4	140.8	3.1	2.7
May-21	141.0	140.5	3.6	2.8
Apr-21	140.3	140.0	3.4	2.3
Mar-21	139.6	139.2	2.2	1.4
Feb-21	138.9	139.0	1.1	1.2
Jan-21	138.2	138.8	1.0	1.6
Dec-20	137.4	138.2	0.7	1.5
Nov-20	137.7	138.0	1.0	1.5
Oct-20	137.5	137.6	0.7	1.0
Sep-20	136.9	137.2	0.5	1.0
Aug-20	137.0	136.9	0.1	0.8
Jul-20	137.2	136.8	0.1	0.7
Jun-20	137.2	136.9	0.7	1.1
May-20	136.1	135.6	-0.4	0.7
Apr-20	135.7	135.4	-0.2	1.2
Mar-20	136.6	136.3	0.9	1.6
Feb-20	137.4	137.6	2.2	1.8
Jan-20	136.8	137.4	2.4	1.8
Dec-19	136.4	137.3	2.2	1.7
Nov-19	136.4	136.9	2.2	1.9
Oct-19	136.6	136.7	1.9	1.9
Sep-19	136.2	136.3	1.9	1.9
Aug-19	136.8	136.4	1.9	1.9
Jul-19	137.0	136.5	2.0	2.0
Jun-19	136.3	135.9	2.0	2.0
May-19	136.6	136.0	2.4	2.1
Apr-19	136.0	135.6	2.0	1.5
Mar-19	135.4	135.2	1.9	1.6
Feb-19	134.5	134.7	1.5	1.5
Jan-19	133.6	134.2	1.4	1.5

**Consumer Price Index Data (2015-2024)**  
**2025 Closure and POST-CLOSURE CARE COST ESTIMATE**

Date	Total CPI <sup>1</sup>		Percentage change over previous year	
	not Seasonally Adjusted	Seasonally Adjusted	(not seasonally adjusted)	
			Total CPI	Core CPI <sup>2</sup>
Dec-18	133.4	134.3	2.0	1.7
Nov-18	133.5	133.9	1.7	1.5
Oct-18	134.1	134.2	2.4	1.6
Sep-18	133.7	133.8	2.2	1.5
Aug-18	134.2	133.9	2.8	1.7
Jul-18	134.3	133.7	3.0	1.6
Jun-18	133.6	133.1	2.5	1.3
May-18	133.4	132.9	2.2	1.3
Apr-18	133.3	132.8	2.2	1.5
Mar-18	132.9	132.7	2.3	1.4
Feb-18	132.5	132.6	2.2	1.5
Jan-18	131.7	132.4	1.7	1.2
Dec-17	130.8	131.7	1.9	1.2
Nov-17	131.3	131.5	2.1	1.3
Oct-17	130.9	130.8	1.4	0.9
Sep-17	130.8	130.6	1.6	0.8
Aug-17	130.5	130.4	1.4	0.9
Jul-17	130.4	130.1	1.2	0.9
Jun-17	130.4	129.9	1.0	0.9
May-17	130.5	129.9	1.3	0.9
Apr-17	130.4	130.1	1.6	1.1
Mar-17	129.9	129.6	1.6	1.3
Feb-17	129.7	129.9	2.0	1.7
Jan-17	129.5	130.3	2.1	1.7
Dec-16	128.4	129.4	1.5	1.6
Nov-16	128.6	128.8	1.2	1.5
Oct-16	129.1	129.0	1.5	1.7
Sep-16	128.8	128.7	1.3	1.8
Aug-16	128.7	128.5	1.1	1.8
Jul-16	128.9	128.6	1.3	2.1
Jun-16	129.1	128.6	1.5	2.1
May-16	128.8	128.3	1.5	2.1
Apr-16	128.3	128.0	1.7	2.2
Mar-16	127.9	127.7	1.3	2.1
Feb-16	127.1	127.4	1.4	1.9
Jan-16	126.8	127.6	2.0	2.0

**Consumer Price Index Data (2015-2024)**  
**2025 Closure and POST-CLOSURE CARE COST ESTIMATE**

Date	Total CPI <sup>1</sup>		Percentage change over previous year	
	not Seasonally Adjusted	Seasonally Adjusted	(not seasonally adjusted)	
			Total CPI	Core CPI <sup>2</sup>
Dec-15	126.5	127.4	1.6	1.9
Nov-15	127.1	127.3	1.4	2.0
Oct-15	127.2	127.1	1.0	2.1
Sep-15	127.1	126.9	1.0	2.1
Aug-15	127.3	127.1	1.3	2.1
Jul-15	127.3	127.1	1.3	2.4
Jun-15	127.2	126.8	1.0	2.3
May-15	126.9	126.3	0.9	2.2
Apr-15	126.2	125.8	0.8	2.3
Mar-15	126.3	125.9	1.2	2.4
Feb-15	126.4	125.5	1.0	2.1
Jan-15	12.3	125.2	1.0	2.2

**Notes:**

<sup>1</sup> CPI: Consumer Price Index. Data source: <http://www.bankofcanada.ca/rates/price-indexes/cpi/>

<sup>2</sup> The CPI excluding the eight most volatile components (fruit, vegetables, gasoline, fuel oil, natural gas, mortgage inter-city interest, tobacco products), as well as the effect of changes in indirect taxes on the remaining components.

<sup>3</sup> Not available at the time of submission of this report.

**Average Core CPI percentage change (2015-present)** **2.351**