

December 17, 2024

Ms. Donna Maitland  
CAO/Clerk/Treasurer  
Municipality of Calvin  
1355 Peddlers Drive  
Mattawa, Ontario P0H 1V0  
Canada

**Knight Piésold Ltd.**  
200-1164 Devonshire Avenue  
North Bay, Ontario P1B 6X7  
Canada  
T +1 705 476 2165  
E northbay@knightpiesold.com  
www.knightpiesold.com

Dear Donna,

## RE: Calvin Township - Updated Landfill Capacity Review 2024

### 1.0 INTRODUCTION

Knight Piésold (KP) was contracted by the Municipality of Calvin to update the capacity estimate of the landfill site from the last update provided in 2018 (KP, 2018). This letter documents the updated capacity of the landfill site and provides an estimate for remaining life.

### 2.0 SITE DESCRIPTION

The Township of Calvin Landfill site is located at 111 Adams Road, Calvin, Ontario near the community of Eau Clair. Calvin Township receives their waste from a total of 263 private dwellings and 227 dwellings are occupied by permanent residents (Statistics Canada, 2021). The landfill site operates under Provisional Certificate of Approval No. A530901 (C of A), issued by the Ministry of Environment Ontario on March 25, 1980 (MOE, 1980) (Appendix A). The C of A states that the total area for use and operation of the landfill site facility is 2.025 ha. The current landfill site configuration is shown on Figure 1.

The Landfill is accessed from Adams Road through an entrance gate. When the landfill is closed, the gate is locked. There are a few small buildings on site for use in sorting recycling. Waste compaction is completed using a mobile compactor.

The Calvin Landfill has been in operation since 1972. The Landfill is open to receiving waste from the public on Tuesday's and Saturday's throughout the year. The Landfill accepts solid, non-hazardous commercial and residential waste generated in the Township.

### 3.0 LANDFILL CAPACITY UPDATE

The following outlines the historic landfilling rates that were calculated:

2005 and 2006: 1,120 m<sup>3</sup>/year (KP, 2006)

2007: 1,300 m<sup>3</sup>/year (KP, 2007)

2008: 1,035 m<sup>3</sup>/year (KP, 2008)

2009: 1,035 m<sup>3</sup>/year (KP, 2010)

2018: 1,079 m<sup>3</sup>/year (KP, 2018)

A survey of the site was completed on October 2<sup>nd</sup>, 2024. This survey was completed using a highly accurate Spectra SP85 base station and rover, by Spectra Geospatial, with a Trimble TSC7 controller that uses a GPS based system with Real-Time Kinematic Position (RTK).

Based on this survey, the volume of landfilled waste added since 2018 was calculated to be 7,020 m<sup>3</sup>. This is equivalent to an average annual landfilling rate of about 1,170 m<sup>3</sup> which is slightly higher than the 2018 landfilling rate of 1,079 m<sup>3</sup>/year.

The October 2, 2024 survey determined that the area of landfilled material covers approximately 1.44 ha. Based on the C of A, the approved area for waste disposal is 2.025 ha (Appendix A), approximately 0.58 ha of area remains as of October 2, 2024. The existing landfill footprint is shown on Figure 1.

#### 4.0 ESTIMATED REMAINING LANDFILL LIFE

Based on the C of A and the October 2, 2024 survey, there is approximately 0.58 hectares of area remaining for landfilling. Assuming an average continued lift thickness of 5 meters, the remaining landfill volume would be 29,000 m<sup>3</sup>. Using the latest average landfilling volume rate of 1,170 m<sup>3</sup>/year, the landfill would be expected to reach capacity in approximately 2048 (25 years).

As noted in the 2018 landfill capacity review, it may be possible to increase the life of the landfill beyond this date if additional lifts of waste are placed on the landfill. The C of A for the landfill does not specify the height of the waste (Appendix A). Increasing the final height of the waste would need to be assessed and may be limited due to slope stability and off-site visual impacts.

#### 5.0 CLOSING

We trust this update meets your current requirements. Please do not hesitate to contact us if you have any questions or require further information.

#### 6.0 REFERENCES

- Knight Piésold Ltd. (KP), 2006. Letter to: Mr. Ken Brewitt, Municipality of Calvin. Re. *2006 Landfill Capacity Review*. January 4. North Bay, Ontario. Ref. No. NB06-01258 (NB102-192/3).
- Knight Piésold Ltd. (KP), 2008. Letter to: Mr. Ken Brewitt, Municipality of Calvin. Re. *2008 Landfill Capacity Review*. January 4. North Bay, Ontario. Ref. No. NB08-01236 (NB102-192/5).
- Knight Piésold Ltd. (KP), 2010. Letter to: Mr. Ken Brewitt, Municipality of Calvin. Re. *2009 Landfill Capacity Review*. January 4. North Bay, Ontario. Ref. No. NB10-00004 (NB102-192/6).
- Knight Piésold Ltd. (KP), 2018. Letter to: Jacob Grove, Municipality of Calvin. Re. *2018 Landfill Capacity Review*. December 6. North Bay, Ontario. Ref. No. NB18-00838 (NB102-192/13).
- Ministry of the Environment (MOE), 1980. *Ministry of the Environment, Ontario, Provisional Certificate of Approval Waste Disposal Site (Calvin Landfill Site) No. 530901*. March 25
- Statistics Canada, 2021. Census Profile, 2021 Census of Population. Statistics Canada. Retrieved from: <https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/page.cfm?Lang=E&SearchText=East%20Ferris&DGUIDlist=2021A00053548034&GENDERlist=1,2,3&STATISTIClist=1&HEADERlist=0> (accessed December 16, 2024)

Yours truly,  
Knight Piésold Ltd.

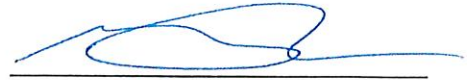


Prepared:



Mackenzie Aiken, B.Sc.  
Junior Scientist

Reviewed:



Steven R. Aiken, P.Eng.  
Manager, Environmental Services

Approval that this document adheres to the Knight Piésold Quality System:



**Attachments:**

Figure 1 Rev 0

Calvin Landfill - 2024 Survey

Appendix A

Calvin Landfill - Provisional Certificate of Approval Waste Disposal Site

/msa



5,121,300 N

5,121,250 N

5,121,200 N

5,121,150 N

5,121,100 N

661,060 E

661,100 E

661,150 E

MW7 - GRND

280

MALL

WASTE CAN

SHED

GARAGE

SEACAN

RECYCLING

SHINGLES PILE

TIRES

FURNITURE

MW4 - GRND

275

MW8 - GRND

MW5D - GRDN

MW6 - GRND

MW5S - GRND

GATE

MW3 - GRND

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REV	DATE	DESCRIPTION	MSA DESIGNED	AS DRAWN	SRA REVIEWED
0	17DEC'24	ISSUED WITH LETTER			

## APPENDIX A

### Calvin Landfill - Provisional Certificate of Approval Waste Disposal Site

(Page A-1)

December 17, 2024

Donna Maitland  
CAO/Clerk/Treasurer  
Municipality of Calvin  
1355 Peddlers Drive  
RR#2  
Mattawa, Ontario P0H 1V0  
Canada

**Knight Piésold Ltd.**  
200-1164 Devonshire Avenue  
North Bay, Ontario P1B 6X7  
Canada  
T +1 705 476 2165  
E northbay@knightpiesold.com  
www.knightpiesold.com

Dear Donna,

## **RE: Municipality of Calvin Landfill - Updated Closure Liability Costs**

### **1.0 INTRODUCTION**

Knight Piésold (KP) was contracted by the Municipality of Calvin to update the closure liability cost associated with the Calvin Township Landfill Site. This letter summarizes the capacity of the landfill site and provides a cost estimate for its closure.

### **2.0 SITE DESCRIPTION**

The Municipality's Landfill Site (the Site) is located at 111 Adams Road, Calvin Ontario, near the community of Eau Clair, Ontario. The Landfill operates under the Provisional Certificate of Approval (C of A) No. A350901 issued by the Ministry of the Environment on March 25, 1980 (MOE, 1980) (provided in Appendix A). The Landfill is approved for the landfilling of municipal waste (generated in the Municipality of Calvin) and is confined to a 2.025 ha waste disposal area.

The Landfill is accessed from Adams Road through an entrance gate. When the landfill is closed, the gate is locked. There are a few small buildings on site for use in sorting recycling. Waste compaction is completed using a mobile compactor. See Figure 1 for Landfill Plan.

The Calvin Landfill has been in operation since 1972. The Landfill is open to receiving waste from the public on Tuesday's and Saturday's throughout the year. The Landfill accepts solid, non-hazardous commercial and residential waste generated in the Municipality.

### **3.0 LANDFILL CAPACITY**

A survey completed on October 2, 2024 determined that the area of landfilled material covered approximately 1.44 ha. Based on the C of A's approved area of 2.025 ha, approximately 0.58 ha of area remains. Using the latest average landfilling volume rate of 1,170 m<sup>3</sup>/year, the landfill is expected to reach capacity in approximately 2048 (25 years).

### **4.0 LANDFILL CLOSURE CONFIGURATION**

Upon final closure of the landfill site, all buildings and equipment will be decommissioned. This will involve removing all equipment from site for resale or recycling. The building (shed) will be demolished and landfilled at the site or recycled.

The waste disposal area will be contoured and then covered with natural overburden materials compacted to a minimum thickness of 0.6 m. A 0.15 m thick layer of topsoil provided from local topsoil removal (or an off-site source) will be placed over the cover to provide a medium for vegetation of the surface. The vegetation will primarily comprise native grasses.

All site roads will be scarified and revegetated.

The gate at the entrance to the landfill site will remain in place to restrict access until there is sufficient vegetation growing on the site.

The planned configuration of the landfill site at closure is as shown on Figure 2.

## 5.0 POST-CLOSURE MONITORING

Monitoring of the site will continue after the landfill is closed until the monitoring results provide a basis for discontinuing the program. For planning purposes, the contaminating lifespan for the landfill site was previously determined to be less than 25 years (KP, 2018). However, the minimum 25-year period required by the Landfill Regulations (O. Reg. 232/98) for post closure activities (such as groundwater monitoring) will be used for the purposes of this closure liability calculation.

## 6.0 ESTIMATED CLOSURE COSTS

The estimated total cost to close the landfill site in 2024 Canadian dollars is approximately \$972,393 and is shown in detail on Table 1. No discounting or escalation of costs has been applied. Periodic updates of the closure costs will be required to ensure the cost presented reflects the remaining work to be completed.

## 7.0 REFERENCES

Knight Piésold Ltd. (KP), 2018. Letter to: Jacob Grove, Municipality of Calvin. Re. *2018 Landfill Capacity Review*. December 6. North Bay, Ontario. Ref. No. NB18-00838 (NB102-192/13).

Ministry of the Environment (MOE), 1980. *Ministry of the Environment, Ontario, Provisional Certificate of Approval Waste Disposal Site (Calvin Landfill Site) No. 530901*. March 25.

O.Reg. 232/98: *Environmental Protection Act, Landfilling Sites, Ontario Regulations 232.98*.


Yours truly,  
Knight Piésold Ltd.



Prepared:

  
Mackenzie Aiken, B.Sc.  
Junior Scientist

Reviewed:

  
Steven R. Aiken, P.Eng.  
Manager, Environmental Services

Approval that this document adheres to the Knight Piésold Quality System:



**Attachments:**

Table 1 Rev 0	Estimated Closure Costs
Figure 1 Rev 0	Calvin Landfill 2024 Survey
Figure 2 Rev 0	Conceptual Closure Site Configuration
Appendix A	Provisional Certificate of Approval

/msa





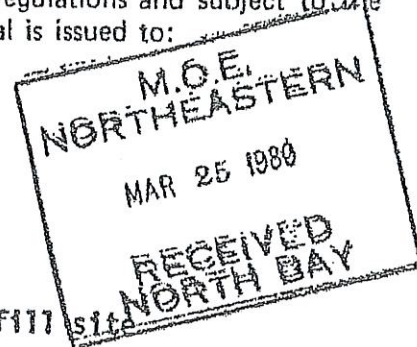
Ministry  
of the  
Environment

Provisional Certificate No. A 530901

## PROVISIONAL CERTIFICATE OF APPROVAL WASTE DISPOSAL SITE

Under The Environmental Protection Act, 1971 and the regulations and subject to the limitations thereof, this Provisional Certificate of Approval is issued to:

Township of Calvin  
R.R. # 2  
Mattawa, Ontario  
POH 1V0



for the use and operation of a 2.025 hectare landfill site

all in accordance with the following plans and specifications:

Located: Lot 21, Concession 3  
Township of Calvin  
District of Nipissing

which includes the use of the site only for the receiving and disposal of the following categories of waste (NOTE: Use of the site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval) domestic and commercial wastes.

and subject to the following conditions:

1. No operation shall be carried out at the site after sixty days from this condition becoming enforceable unless this Certificate including the reasons for this condition has been registered by the applicant as an instrument in the appropriate Land Registry Office against title to the site and a duplicate registered copy thereof has been returned by the applicant to the Director.

TABLE 1  
MUNICIPALITY OF CALVIN  
MUNICIPALITY OF CALVIN LANDFILL SITE  
UPDATED CLOSURE LIABILITY COSTS  
ESTIMATED CLOSURE COSTS

Print Dec-17-24 13:39:34

Description	Quantity	Unit	2024 Unit Rate	Amount
<b>Closure Measures (Year 2049)</b>				
Mobilization and Demobilization (5% of Subtotal Cost)	1	L.S.	\$24,245	\$24,245
Remove attendant's shed, outbuildings, scrap steel, gate, and signs	1	L.S.	\$7,000	\$7,000
Contour waste disposal area	20,250	sq. m.	\$0.50	\$10,125
Cover waste disposal area with 0.6 m of overburden	12,150	cu.m.	\$30.00	\$364,500
Cover waste disposal area with 0.15 m of topsoil and organics	3,100	cu.m.	\$6.00	\$18,600
Scarify site roads and accesses	2,400	sq.m.	\$0.45	\$1,080
Revegetate landfill site and access roads - hydroseed	20,250	sq. m.	\$0.75	\$15,188
Decommissioning of groundwater wells after post-closure monitoring period	13	each	\$1,800	\$23,400
Engineering - Periodic supervision during closure, and as-built survey and documentation	1	L.S.	\$45,000	\$45,000
<b>Subtotal</b>				<b>\$484,893</b>
<b>Post Closure Monitoring (Years 2049 to 2074)</b>				
Groundwater sampling (17 samples per sampling event, 2 sampling events per year)	1	year	\$8,000	\$8,000
Laboratory testing (17 samples per sampling event, 2 sampling events per year)	1	year	\$7,000	\$7,000
Water Quality Report (Every 2 years)	0.5	year	\$9,000	\$4,500
<b>Annual Cost</b>				<b>\$19,500</b>
<b>Total Cost for 25 years of Post Closure Monitoring</b>				<b>\$487,500</b>
<b>TOTAL ESTIMATED CLOSURE COST</b>				<b>\$972,393</b>

I:\1102\00192\16\A\Correspondence\NB24-01399 - Calvin Township - Updated Liability Closure Costs\Table 1 - Landfill Closure Liability Costs - 2024\_sra.xlsm]Table 1

**NOTES:**

1. UNIT RATES HAVE BEEN DETERMINED BY KNIGHT PIÉSOLD AND ARE BASED ON RECENT EXPERIENCE ON SIMILAR PROJECTS IN NORTHERN ONTARIO.
2. NO ADJUSTMENTS HAVE BEEN APPLIED TO THE ESTIMATED COSTS. THEY ARE PRESENTED IN 2024 DOLLARS.
3. POST CLOSURE MONITORING UNIT RATES WERE DETERMINED BY KNIGHT PIÉSOLD 2024/2025 ENVIRONMENTAL MONITORING AND REPORTING PROPOSAL COSTS.
4. LABORATORY COSTS HAVE BEEN DETERMINED USING THE 2024 SGS CANADA QUOTE.

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REV	DATE	DESCRIPTION	PREP'D	RW'D



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661,100 E

661,150 E

MW7 - GRND

MALL

WASTE CAN

SHED

RECYCLING

SHINGLES PILE

GARAGE

SEACAN

TIRES

FURNITURE

MW4 - GRND

MW8 - GRND

MW5D - GRND

MW6 - GRND

MW5S - GRND

MW3 - GRND

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0	17DEC'24	ISSUED WITH LETTER			



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661,150 E

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## **APPENDIX A**

### **Provisional Certificate of Approval**

(Page A-1)



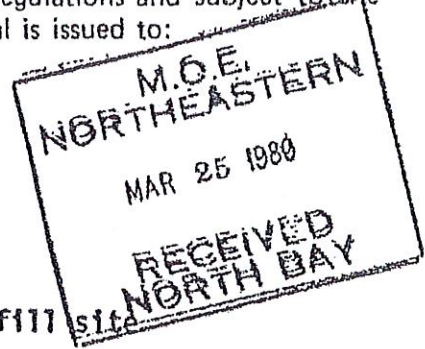
Ministry  
of the  
Environment

Provisional Certificate No. A 530901

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POH 1V0



for the use and operation of a 2.025 hectare landfill site

all in accordance with the following plans and specifications:

Located: Lot 21, Concession 3  
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which includes the use of the site only for the receiving and disposal of the following categories of waste (NOTE: Use of the site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval) domestic and commercial wastes.

and subject to the following conditions:

1. No operation shall be carried out at the site after sixty days from this condition becoming enforceable unless this Certificate including the reasons for this condition has been registered by the applicant as an instrument in the appropriate Land Registry Office against title to the site and a duplicate registered copy thereof has been returned by the applicant to the Director.



**Knight Piésold Ltd.**

200 - 1164 Devonshire Avenue  
North Bay, Ontario P1B 6X7  
Canada

**Invoice No: 18028**

Telephone: +1 705 476 2165  
Facsimile: +1 705 474 8095  
Email: CanadaAR@knightpiesold.com

**P/A No: NB102-00192/16**

Municipality of Calvin  
1355 Peddlers Drive  
RR#2  
Mattawa, Ontario P0H 1V0  
Canada

Date: Nov 30, 2024


Attention: Donna Maitland

Re: Municipality of Calvin Landfill Site  
Municipality of Calvin Landfill Site - 2024/2025 Landfill Environmental Monitoring and Reporting

For: Professional Services for the period Nov 01, 2024 - Nov 30, 2024

SUMMARY OF THIS INVOICE		
Total Fees	\$	645.00
Total Disbursements	\$	251.32
HST (13%) #R102864493	\$	116.52
<b>TOTAL DUE THIS INVOICE</b>	<b>\$</b>	<b>(CAD) 1,012.84</b>

ACCOUNTS RECEIVABLE SUMMARY (CAD) AS OF Dec 05, 2024					
Total	0-30	31-60	61-90	91-120	120+
1,012.84	1,012.84				

Authorized:   
Steven Aiken

Date: Dec 06, 2024

Attachments: Table 1 - Invoice Summary  
Table 2 - Work Summary  
Table 3 - Billing Backup

*Detailed time sheets and back up for disbursements available upon request.  
Payment due on receipt. Interest will be charged at 1.5% per month on overdue accounts not paid within 30 days of invoice date.*



**TABLE 1**  
**INVOICE SUMMARY**

MONTH	INVOICE NO	FEES	DISB. CHARGES	SUB TOTAL	HST	TOTAL INVOICE
Jun-24	17622	2,160.00	448.84	2,608.84	339.15	2,947.99
Jul-24	17700	0.00	681.22	681.22	88.56	769.78
Aug-24	17778	180.00	14.40	194.40	25.27	219.67
Sep-24	17870	585.00	46.80	631.80	82.13	713.93
Oct-24	17939	4,271.25	1,183.11	5,454.36	709.07	6,163.43
Nov-24	18028	645.00	251.32	896.32	116.52	1,012.84
<b>TOTAL</b>		7,841.25	2,625.69	10,466.94	1,360.70	11,827.64
<b>BUDGET</b>		32,527.00	5,623.00	38,150.00		
<b>REMAINING BUDGET</b>		24,685.75	2,997.31	27,683.06		



## TABLE 2 WORK SUMMARY

### Task 00500 - LANDFILL CAPACITY ASSESSMENT

- Landfill Capacity Survey - reviewing survey data and plotting
- Courier fee to ship survey equipment back to supplier

**TABLE 3  
BILLING BACKUP**

**A). FEES**

**00500 - LANDFILL CAPACITY ASSESSMENT**

	<b>Hrs</b>	<b>Site Days</b>	<b>Rate</b>	<b>Amount</b>
Amanda Simpson	3.00		215.00	645.00
<b>Sub-Total</b>	3.00	0.00		645.00
<b>Total Hrs &amp; Fees</b>	3.00	0.00		645.00

**B). DISBURSEMENTS**

	<b>Cost</b>	<b>Markup</b>	<b>Amount</b>
<b>Reimbursable Expenses</b>			
Purolator Inc.	181.56		
<b>Total Reimbursable Expenses</b>	181.56	10%	199.72

Normal Disbursements (8% of Fees) 51.60

**Total Disbursements** **251.32**

Total Fees 645.00

Total Disbursements 251.32

Total this invoice (excluding HST) \$ (CAD) 896.32

## Contract Addendum 1

**Project:** Municipality of Calvin Landfill Site

**Assignment:** Municipality of Calvin Landfill Site - 2024/2025 Landfill Environmental Monitoring and Reporting

**Knight Piésold Reference Number:** NB102-00192/16-A.00

**The Following Items of Work:**

**Landfill Capacity Surveying:**

Budget to cover the Landfill Capacity surveying - time and disbursements. Work was completed in October 2024.

- Time included one site day (10hours) for Mackenzie Aiken to survey the Landfill site.
- Disbursements included the Cansel survey instrument rental, travel costs and misc. field expenses.

Budget for this work was not included in the original contract form (indicated in the contract),

Budget provided does not include taxes.

**Was Requested By:** Donna Maitland

**Of:** Municipality of Calvin

**By:** Email

**Billing Terms:** Standard Local Rates

**Time Charges:** \$ 2,300.00 (CAD)

**Disbursements:** \$ 1,600.00 (CAD)

**The Estimated Cost of the Work is:** \$ 3,900.00 (CAD)

Contract History	Date	Time Charges	Disbursements	Sub-Total
Original Contract	Feb 01, 2024	\$32,527.00	\$ 5,623.00	\$38,150.00
Addendum 1	Jan 15, 2025	\$ 2,300.00	\$ 1,600.00	\$ 3,900.00
New Totals		\$34,827.00	\$ 7,223.00	\$42,050.00

Prepared By:



Steven Aiken

Date: Jan 14, 2025

Approved by:

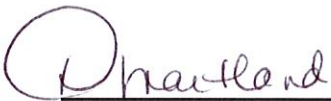


Craig Hall

Date: Jan 15, 2025

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On behalf of Municipality of Calvin I hereby direct Knight Piésold to proceed with the work described above in accordance with and subject to the terms and conditions set out in the above referenced contract.

Signed:\* 

Date: Jan 16/25

Position: CAO / CLERK TREASURER

\* Please sign and return this form to the originating Knight Piésold office.