Contamination Overview Study – Highway 401 Planning Study East of Brockville, GWP 4111-22-00

Final Report

November 27, 2024

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Executive Summary

The Ontario Ministry of Transportation (MTO) has retained Stantec Consulting Ltd. to undertake a Preliminary Design, and Class Environmental Assessment (Class EA) Study on Highway 401 for the replacement and rehabilitation of one bridge and one culvert, and identifying the future Highway 401 footprint for an interim six lanes and ultimate eight lanes, from 0.75 km east of North Augusta Road to 3.3 km west of Maitland Road (approximately 2.6 km), in the Township of Elizabethtown-Kitley, east of Brockville, in the United Counties of Leeds and Grenville. There is a total of one bridge and one structural culvert within the study limits. The location of the Project Area is depicted on **Figure No.1, Appendix A**.

Stantec has completed a Contamination Overview Study (COS) for the proposed Project Area to inform future planning for excess soil management. The objective of the COS was to determine if Areas of Potential Environmental Concern (APECs) exist at the Project Area, which may be present as a result of current and/or past Potentially Contaminating Activities (PCAs) within the Project Area or on adjacent/neighbouring properties within at least 200 m of the perimeter of the Project Area (the "study area").

To fulfill the objective of the COS, historical records and documentation available for the Project Area and the surrounding areas were reviewed, and a site reconnaissance was completed on June 6, 2024. Following the review of available information, PCAs in or near the Project Area were identified and were evaluated to determine if they contributed to APECs at the Project Area. The following is a summary of the identified APECs:

Table 1: Summary of Areas of Potential Environmental Concern

APEC #	Location of APEC	Description of PCA	Approximate Distance of PCA from the Project Area	Contaminant(s) of Potential Concern
1	Central portion of the Project Area, between historical apple orchards and north of the Brockville Quarry, approximately 90 m west of the Sharpes Lane overpass	PCA #40 - Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) PCA #35 - Mining, Smelting and Refining; Ore Processing; Tailings Storage	Historical orchards: north and south adjacent to the Project Area Brockville Quarry: 70 m south of the Project Area	PHC F1-F4, BTEX, Metals, including As, Sb, Se, OCPs

APEC #	Location of APEC	Description of PCA	Approximate Distance of PCA from the Project Area	Contaminant(s) of Potential Concern
2	Eastern portion of the Project Area, south of a historical apple orchard, approximately 160 m east of the Sharpes Lane overpass	PCA #40 - Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications	North adjacent to the Project Area	Metals, As, Sb, Se, OCPs
3	Eastern-most portion of the Project Area, south of an apple orchard	PCA #40 - Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications	North adjacent to the Project Area	Metals, As, Sb, Se, OCPs
4	All roadways throughout the Project Area	PCA #30 - Importation of Fill Material of Unknown Quality	On-Site	PHC F1-F4, BTEX, Metals, As, Sb, Se, PAHs, EC, SAR
5	Mile marker 699 in the western portion of the Project Area	PCA Undefined – Diesel Spill	On-Site	PHC F1-F4, BTEX, PAHs
6	Western-most portion of the Project Area, southeast of [redacted] (a commercial trucking terminal) [redacted] (garden centre and weed control operation) and [redacted] (a truck repair centre)	[redacted]: PCA #11 - Commercial Trucking and Container Terminals PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks [redacted]: PCA Undefined – Hazardous Waste Generation PCA #40 - Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications	[redacted]: 110 m northwest of the Project Area [redacted]: 100 m northwest of the Project Area [redacted] 50 m northwest of the Project Area	PHC F1-F4, BTEX, VOCs, Metals, As, Sb, Se, PAHs, OCPs

APEC #	Location of APEC	Description of PCA	Approximate Distance of PCA from the Project Area	Contaminant(s) of Potential Concern
		PCA #58 - Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners [redacted]: PCA #27 - Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles		
7	Central portion of the Project Area, south of 2803 Old Sharpe's Lane, approximately 50 m west of the Sharpes Lane overpass	PCA Undefined – Furnace Oil Spill	Approximately 100 m north of the Project Area	PHC F1-F4, BTEX, PAHs
8	All roadways throughout the Project Area	Unspecified PCA – Application of De-Icing Compounds for the Purposes of Winter Safety	On-Site	EC, SAR

Note(s):

PHC F1-F4 - Petroleum hydrocarbons fractions 1 to 4, BTEX - Benzene, toluene, ethylbenzene, and xylenes

PAHs - Polycyclic aromatic hydrocarbons, EC - Electrical Conductivity, SAR - Sodium Adsorption Ratio

VOCs - Volatile Organic Compounds, As – Arsenic, Sb – Antimony, Se - Selenium

OCPs – Organochlorine Pesticides

Based on the above, the following recommendations are provided:

- A Preliminary Site Screening (PSS), Phase I ESA and Phase II ESA (if recommended as part of the PSS or Phase I ESA) should be completed for any property that will be acquired by MTO in accordance with the requirements of the MTO documents *Environmental Guide for Contaminated Property Identification and Management* (MTO, 2006) and *Environmental Reference for Highway Design* (MTO, 2013). If building demolition will be required, designated substance surveys should be completed for buildings or structures prior to demolition.
- Ontario Regulation (O.Reg.) 406/19 and the associated document *Rules for Soil Management and Excess Soil Quality Standards* referenced by O.Reg. 406/19 should be followed for soil that is excavated and managed on-site or off-site during construction. This includes sampling soil that is intended to be excavated prior to or during construction that may require off-site management as excess soil. The soil sampling program will be undertaken according to a sampling and analysis plan, and analyses will be performed for the specific contaminants of potential concern, as described in the APEC summary table. Sampling programs should be developed and undertaken under the supervision of a qualified person as defined in O.Reg. 406/19 and sample selection should take into consideration the presence of anthropogenic substances such as debris/waste, and unusual odours or staining.
- Stockpiling and transport of excavated soil and sediment during construction should be done in accordance with the requirements specified in O.Reg. 406/19.

The statements made in this Executive Summary text are subject to the limitations included in **Section 5.0** and are to be read in conjunction with the remainder of this report.

1.0 INTRODUCTION

The Ontario Ministry of Transportation (MTO) has retained Stantec Consulting Ltd. to undertake a Preliminary Design, and Class Environmental Assessment (Class EA) Study on Highway 401 for the replacement and rehabilitation of one bridge and one culvert, and identifying the future Highway 401 footprint for an interim six lanes and ultimate eight lanes, from 0.75 km east of North Augusta Road to 3.3 km west of Maitland Road (approximately 2.6 km), in the Township of Elizabethtown-Kitley, east of Brockville, in the United Counties of Leeds and Grenville. The study limits include the following segments:

- Highway 401 from 0.75 km east of North Augusta Road Interchange to 3.3 km west of Maitland Road Interchange
- The Sharpes Lane overpass
- Sharpes Lane from the intersection of Sharpes Road and 2nd Concession Road to approximately 300 m south of the Sharpes Lane overpass
- Two small parcels of Old Sharpes Lane (each approximately 50 m by 20 m in area) that are situated north and south of Highway 401.

These limits are considered herein as the “Project Area” and have a total length of approximately 2.6 km. The location of the Project Area is depicted on **Figure No.1, Appendix A**. The Project Area and the adjacent/neighbouring properties within at least 200 m of the perimeter of the Project Area, except north of Sharpes Lane (perimeter is 60 m from the Project Area) and north of the northern parcel extending along Old Sharpes Lane (perimeter is 150 m from the Project Area) (the “study area”) are illustrated on **Figure No.2, Appendix A**.

The current land use of the Project Area is as a Provincial Highway (401). Land use within the study area includes agricultural, residential, commercial, and industrial uses. It is understood that the land use at the Project Area will not change from Highway 401. Stantec is not aware of any Environmental Compliance Approvals (ECAs), by-laws, permits, Records of Site Condition (RSCs) or risk assessments that apply to the Project Area.

The MTO is understood to be the Project Leader. Contact information for the Project Leader and the Qualified Person overseeing the completion of this COS is as follows:

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1.1 OBJECTIVE

The objective of the COS is to determine if Areas of Potential Environmental Concern (APECs) exist at the Project Area, which may be present as a result of current and/or past Potentially Contaminating Activities (PCAs) on the Project Area or study area. This will allow for a preliminary determination of the likelihood that one or more contaminants have affected soil in a location where soil is to be excavated within the Project Area, and for the identification of contaminants of potential concern (COPCs) to consider in a sampling and analysis plan, should APECs be identified within the planned areas of excavation. This document meets the requirements of an Assessment of Pasts Uses as described in O. Reg. 406/19.

1.2 SCOPE OF WORK

The scope of work completed to fulfill the objective of the COS was as follows:

- Review of historical records and documentation available for the Project Area and study area that included the following:
  - Publicly available aerial photographs, geological, and topographic maps.
  - An Environmental Risk Information Services (ERIS) report consisting of a search of all databases within a 250 m search radius from the centre line of Highway 401 along the length of the Project Area.
- Completion of a site reconnaissance of the Project Area and study area.
- Evaluation of information from records reviewed, interviews, and site reconnaissance, including a conceptual site model.
- Review of historical environmental reports provided by MTO, if available.
- Preparation of this COS Report.

The COS did not include municipal directory searches or land title record searches, and requests were not directly made to Opta for Fire Insurance Plans nor to the Ontario Ministry of the Environment, Conservation and Parks (MECP) for information they have on file for the properties that comprise the Project Area. Much of this information was obtained through a database search completed by ERIS or was not considered to provide significant additional information beyond the other sources reviewed for the purposes of identifying soil APECs. The absence of this information is not considered to have impacted the conclusions of the APU.

A COS does not include sampling or testing of air, soil, ground water, surface water or building materials. This assessment did not include a review or audit of compliance with any environmental legislation applicable to the Project Area, or of any environmental management systems which may exist for the Project Area.

2.0 METHODS

This section describes the methods used to complete the historical records review and the site reconnaissance activities. The COS followed the guidance as provided in Ontario Regulation (O.Reg.) 406/19, *On-Site and Excess Soil Management*, as amended to conduct the investigation.

2.1 RECORDS REVIEW

The records review consisted of a review of information available from government, public, and other agencies or parties, and information on file at Stantec. In addition, topographic mapping and geological reference maps were reviewed to develop a conceptual understanding of Project Area physiography and hydrogeology. Information was reviewed from the following sources:

- Aerial/Satellite Imagery:
  - Historical Aerial Photographs (1958, 1963, 1974, 1981, 1994, 2023).
  - Google Earth Images (2009, 2013, 2018).
- ERIS Database Report – The ERIS report documented the database search for the Project Area and study area. The ERIS report, including full references for each database searched, is provided in **Appendix B**, and included searches of federal, provincial, and private databases relating to storage tanks, hazardous materials generation or storage, landfills, environmental approvals and orders, landfills, and other listings.
- Topographic/Geologic/Physiographic Mapping:
  - Ontario Geological Survey. Surficial geology of Southern Ontario; Ontario Geological Survey, Miscellaneous Release–Data 128-REV (OGS, 2010).
  - Ontario Geological Survey. 1:250 000 scale bedrock geology of Ontario; Ontario Geological Survey, Miscellaneous Release---Data 126-Revision 1 (OGS, 2011).
  - Ontario Ministry of Natural Resources and Forestry, 2023. Make a Topographic Map, accessed on May 14, 2024 (MNRF, 2023).

2.2 INTERVIEWS

Persons familiar with the Project Area history were not available during the COS; therefore, no interviews were completed.

2.3 SITE RECONNAISSANCE

A windshield site reconnaissance was conducted by Cori Linetsky, of Stantec on June 6, 2024. The Project Area was readily visible and publicly accessible portions of neighbouring properties in the study area were observed for PCAs. Selected photographs from the site reconnaissance are included in **Appendix C**.

3.0 RESULTS

3.1 RECORDS REVIEW

This section presents the findings of the records review.

3.1.1 Aerial and Satellite Imagery

Aerial photographs and satellite imagery were reviewed to provide adequate timeline coverage of the Project Area and study area. **Table 2**, below, provides a summary of pertinent information obtained from the aerial photographs and satellite imagery.

Table 2: Summary of Aerial and Satellite Imagery

Year	Summary
1958	Highway 401 appeared to be under construction along the length of the Project Area. 2nd Concession Road and Sharpes Lane were visible. The Sharpes Lane overpass appeared to be under construction. The surrounding study area was occupied by agricultural land including orchards, and undeveloped forested land. Orchards were present north and south adjacent to the Project Area's central portion, and north of the Project Area's eastern portion. The presence of historical orchards adjacent to the Project Area represents a PCA (PCA #40 - Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications) contributing to APECs at the Project Area (**APEC #1, APEC #2, and APEC #3**).
1963	Highway 401 appeared to be completed across the Project Area. The Sharpes Lane overpass did not appear to be completed. Kelly Road was visible north of the Project Area. A residential neighbourhood was observed southwest of the Project Area, and buildings that appeared to be industrial were present northwest of the Project Area. An area of soil disturbance was observed northwest of the Project Area, possibly for use as a parking lot. There appeared to be an aera of soil disturbance south adjacent to the central portion of the Project Area consistent with the present-day location of the Brockville Quarry. The presence of the quarry adjacent to the Project Area represents a PCA (PCA #35 - Mining, Smelting and Refining; Ore Processing; Tailings Storage) contributing to an APEC at the Project Area (**APEC #1**).
1974	The Sharpes Lane overpass appeared to have been completed. The residential neighbourhood southwest of the Project Area appeared to be expanding east. Disturbed soil was observed in this area, likely for development purposes. A long, narrow area of ground disturbance was observed running parallel to Highway 401, south of the Project Area. A roadway was not visible in subsequent aerial photographs. This may indicate that there is a mining or utility roadway in this location that is unpaved, or that a utility such as a pipeline was installed in this location. The quarry appeared to be expanded east and the orchard south of the Project Area was no longer present. The area of soil disturbance observed in the 1963 aerial photograph northwest of the Project Area did not appear to have changed significantly.
1981	No significant changes to the Project Area were observed. Residential houses were present north of the Project Area along 2nd Concession Road. The Brockville Quarry appeared to have been expanded south. The orchard west of Sharpes Lane was no longer visible. Two industrial or commercial buildings were observed northwest of the Project Area, at approximately [redacted]. A large building was observed north of Highway 401 at approximately [redacted] consistent with the current location and orientation of a church.

Year	Summary
1994	No significant changes to the Project Area were observed. Additional residential properties were observed north of the Project Area along 2nd Concession Road, and the orchard west of Sharpes Lane was no longer visible. The building at [redacted] appeared to have been expanded east. The industrial building at approximately [redacted] appeared to have been expanded to the south.
2009 - 2023	No significant changes to the Project Area or study area were observed. In the 2009 satellite imagery, the industrial building northwest of the Project Area at approximately [redacted] appeared to have been replaced by a larger building, and the industrial building at approximately [redacted] appeared to have been expanded to the west. The orchard north of the eastern portion of the Project Area was visible in the 2023 satellite imagery.

3.1.2 Physiographic Setting

According to the Quaternary Geology of Ontario map published by the Ontario Geologic Survey, the surficial soil in the vicinity of the Site generally consists of either silt and clay, basin and quiet water deposits in the western portion of the Project Area, or undifferentiated, predominantly sand silt to silt matrix in the eastern portion of the Project Area.

The study area spans across the physiographic regions defined by Chapman and Putnam (2007) as the Smiths Falls Limestone Plain.

Records for 79 wells within the Project Area were provided by ERIS and were described mostly as domestic water supply wells. These records generally identified clay and sand overlaying limestone and sandstone to a maximum depth of approximately 17 m below ground surface (BGS).

According to bedrock geology mapping published by the Ontario Geologic Survey (2011), bedrock is classified as conglomerate, sandstone, shale, and dolostone of the Potsdam Group, Nepean Formation, and Covey Hill Formation in the western portion of the Project Area, and dolostone and sandstone of the Beekmantown Group in the eastern portion of the Project Area. According to available borehole and water well records described in the ERIS report, limestone, granite, and sandstone bedrock were encountered in the area at depths ranging from 0.3 m to 17 m BGS.

3.1.3 Topography and Hydrogeological Setting

The elevation of the Project Area is generally at a higher elevation than the study area. The surfaces of the Project Area consisted of roadways traversing forested and residential land. One bridge, the Sharpes Lane overpass, is present at the Project Area.

Ground surface topography across the study area is relatively flat sloping upwards toward the Sharpes Lane overpass from both the east and west. Regional topography generally slopes to the south toward the St. Lawrence River.

Based on a review of available mapping (MNRF, 2023), the study area does not intersect any Provincially Significant Wetlands (PSWs) or Areas of Natural and Scientific Interest (ANSIs).

Based on a review of available maps and the topography observed in the vicinity of the Project Area, the inferred regional groundwater flow is to the south toward the St. Lawrence River, approximately 2.1 km from the Project Area. The elevation of the local groundwater table can generally mimic the local topography and may not reflect the regional trend in drainage. Two watercourses (i.e., Butlers Creek and an unnamed creek) were observed to flow in a north-south direction through the Project Area, as illustrated on **Figure No. 2, Appendix A**. The local shallow groundwater flow pattern can also be influenced by subsurface structures in the vicinity, such as building foundations, weeping tiles, and utility trenches.

3.1.4 ERIS Historical Database Review

The ERIS report identified the following relevant records for the Project Area and the surrounding study area. The ERIS report covers a 250 m radius around Highway 401 from approximately North Augusta Road to approximately 870 m east of Sharpes Lane.

3.1.4.1 Highway 401 – [redacted]

A spill of 300 US gallons of diesel fuel was reported on Highway 401 westbound at mile marker 699 due to a tanker truck collision in 2019, in the western portion of the Project Area. The spill was considered a PCA (PCA Undefined – Diesel Spill) contributing to an APEC on the Project Area (**APEC #5**).

3.1.4.2 [redacted] - Motor Coils Manufacturing Co.

A summary of the environmentally significant records associated with this property, approximately 160 m northwest of the Project Area, is provided below:

- Motor Coils Manufacturing Co. was a manufacturing facility with Environmental Compliance Approvals (ECAs) for air discharges in 2003 and 2020.
- Sixteen generator records were registered to Motor Coils Manufacturing Co. for various hazardous wastes including aromatic solvents, alkaline wastes, emulsified oils, petroleum distillates, and waste oils and lubricants from 1986 to 2022. The industry description was railroad rolling stock manufacturing and other transportation equipment manufacturing.
- Motor Coils Manufacturing Co. was listed on Scott's Manufacturing Directory for railroad equipment, industrial supplies, motor and generator manufacturing, and railroad stock manufacturing.
- 700 L of wash water was reportedly spilled from an aboveground tank in 2018.

Based on the distance from the Project Area in the inferred cross-gradient direction, manufacturing activities on this property are not considered a PCA contributing to an APEC on the Project Area.

3.1.4.3 [redacted] - Canada Transport Group Ltd.

An underground fuel tank with a capacity of 22,700 L was registered to Canada Transport Group Ltd. at [redacted], located approximately 110 m northwest of the Project Area.

Based on the proximity to the Project Area in the inferred upgradient direction, trucking activities and a fuel tank were considered PCAs (PCA #11 - Commercial Trucking and Container Terminals, PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks) contributing to an APEC on the Project Area (**APEC #6**).

3.1.4.4 [redacted]

A summary of the environmentally significant records associated with this property, approximately 100 m northwest of the Project Area, is provided below:

- One waste generator record was registered to Auto Pak at [redacted]. This property was generating unspecified waste in 2004. Based on the industry description, Auto Pak was a wholesaler-distributor of plumbing, heating, and air-conditioning equipment and supplies.
- Two waste generator records were registered to Garden World at [redacted]. This property was generating waste oils and lubricants from 1992 to 2001.
- Garden World and Gord's Weed Control were registered as pesticide operators at the property.
- The property was registered as a transfer station for various hazardous wastes including oil skimmings and sludges, photoprocessing wastes, and waste oils and lubricants from 1992 to 1996.

Based on the proximity to the Project Area in the inferred upgradient direction, waste generation, pesticide use, and use of the property as a waste transfer station were considered PCAs (PCA Undefined – Hazardous Waste Generation, PCA #40 - Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications, PCA #58 - Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners) contributing to an APEC on the Project Area (**APEC #6**).

3.1.4.5 [redacted] – Private Residence

A spill of 25 L of furnace oil to the ground from a storage tank at [redacted] was reported in 1999, approximately 70 m northwest of the Project Area. Based on the distance from the Project Area in the inferred downgradient direction, the spill was not considered to represent a PCA contributing to an APEC at the Project Area.

3.1.4.6 Intersection of Parkedale Avenue and Oxford Avenue

A spill of 400 L of diesel fuel from a truck in 2019 at the intersection of Parkedale Avenue and Oxford Avenue was reported, approximately 150 m north of the Project Area.

Based on the distance from the Project Area, the spill was not considered a PCA contributing to an APEC on the Project Area.

3.1.4.7 [redacted]

A summary of the environmentally significant records associated with this property, approximately 120 m north of the Project Area, is provided below:

- One generator record was registered to 1112185 Ontario Inc. at [redacted]. This property was generating light fuels in 2005. Based on the industry description, the property was a used merchandise store.
- One generator record for unspecified waste was registered to [redacted] in 2004.

Based on the distance from the Project Area and anticipated limited waste generation, waste generation at the property was not considered a PCA contributing to an APEC on the Project Area.

3.1.4.8 [redacted] – Private Residence

A spill of 100 L of furnace oil to the ground due to a container overfill at [redacted] in 2000 was reported, approximately 100 m north of the Project Area.

Based on the proximity to the Project Area in the inferred upgradient direction, the spill was considered a PCA (PCA Undefined – Furnace Oil Spill) contributing to an APEC on the Project Area (**APEC #7**).

3.1.4.9 Brockville Quarry

The Brockville Quarry was a limestone mine approximately 70 m south of the Project Area at its closest point. The quarry represents a PCA (PCA #35 - Mining, Smelting and Refining; Ore Processing; Tailings Storage) contributing to an APEC at the Project Area (**APEC #4**).

3.1.4.10 Additional Records Within the Study Area

The ERIS report also included records of 11 boreholes and 79 water wells on the Project Area.

The remainder of the listings within the Project Area and study area were not considered to contribute to an APEC at the Project Area based on the nature of their activity or distance from the Project Area. The complete ERIS report is included in **Appendix B**.

3.1.5 Previous Environmental Reports

Stantec was not provided with previous environmental reports.

3.2 SITE RECONNAISSANCE

The results of the site reconnaissance conducted on June 6, 2024 are summarized in the following sections. Pertinent photographs of the Project Area are provided in **Appendix C**, and the Project Area details are indicated on **Figure No.2**, **Appendix A**.

3.2.1 General Layout and Observations

The Project Area was located along an approximately 2.6 km stretch of Highway 401, from 0.75 km east of the North Augusta Road Interchange to 3.3 km west of the Maitland Road Interchange.

The elevation of the Project Area was generally higher than the surrounding areas. Fill was likely placed to construct the Sharpes Lane overpass in the central portion of the Project Area. The potential placement of fill material during construction of Highway 401 and the Sharpes Lane overpass is considered a PCA (PCA 30 – Importation of Fill Material of Unknown Quality) contributing to an APEC across the entire Project Area (**APEC #4**).

Since the Project Area consists of Highway 401 and Sharpes Lane, it is understood that application of salt and/or other deicing compounds occurs during the winter months for deicing purposes; these activities represent a PCA and associated APEC for the Project Area. It should be noted that the requirements for management of any future excavated salt-impacted soil are considered to apply throughout the Project Area, as outlined in the Soil Rules. The application of salt on the Project Area represents a PCA (Unspecified PCA – Application of De-Icing Compounds for the Purposes of Winter Safety) contributing to an APEC across the entire Project Area (**APEC #8**).

3.2.2 Project Area Services

The Project Area along Highway 401 did not appear to be serviced by utilities, however MTO has indicated that subsurface utilities are present at the Project Area. The ERIS report indicated multiple domestic water supply wells within the study area. No other evidence of utilities was observed during the site reconnaissance.

3.2.3 Storage Tanks

No underground storage tanks or fill or vent pipes that could be associated fuel storage tanks were observed on the Project Area.

3.2.4 Polychlorinated Biphenyls

No observations of any transformers or other equipment potentially containing polychlorinated biphenyls (PCBs) were made during the site reconnaissance at the Project Area.

An electrical substation was observed at [redacted], approximately 200 m north of the Project Area. Based on the distance from the Project Area, it was not considered to represent a PCA contributing to an APEC on the Project Area.

3.2.5 Chemical Storage

Chemical storage was not observed at the Project Area during the site reconnaissance.

3.2.6 Waste Generation and Disposal

No waste was observed to be generated or disposed at the Project Area.

3.2.7 Surficial Staining, Fill, Debris and Vegetation Observations

No stressed vegetation was observed at the Project Area. Fill material is assumed have been used beneath the roadways and overpass within the Project Area.

The possibility of fill of unknown quality across the roadways was considered a PCA (PCA 30 – Importation of Fill Material of Unknown Quality) contributing to an APEC for the Project Area **(APEC #4)**.

3.2.8 Neighbouring Properties

Neighbouring properties within the study area are identified on **Figure No.2, Appendix A**.

The land south of the Project Area was largely forested and undeveloped with residential houses along Sharpes Lane and Oxford Avenue. The entrance to the Brockville Quarry was observed south of the Project Area (**Photograph #3, Appendix C**). An apple orchard was present north of the eastern portion of the Project Area. Residential houses were observed along 2nd Concession Road. Fruit trees were observed at the southern end of Old Sharpes Lane consistent with the location of a historical orchard (**Photograph #4, Appendix C**). Buildings used for religious purposes were observed along 2nd Concession Road, north of the western portion of the Project Area. Industrial buildings and businesses were observed northwest of the Project Area.

A truck repair centre was observed at [redacted], approximately 50 m northwest of the Project Area. The property represents a PCA (PCA #27 - Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles) contributing to an APEC at the Project Area (**APEC #6, Photograph #6, Appendix C**).

Motor Coils Manufacturing was observed at [redacted]. Based on the distance from the Project Area in the inferred cross-gradient direction, manufacturing activities on this property are not considered a PCA contributing to an APEC on the Project Area.

4.0 SUMMARY OF ENVIRONMENTAL CONCERNS

4.1 AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

APECs were identified along the Project Area and are summarized in Error! Reference source not found. below, along with the identified COPCs in soil that may be present.

Table 3: Summary of Areas of Potential Environmental Concern

APEC #	Location of APEC	Description of PCA	Approximate Distance of PCA from the Project Area	Contaminant(s) of Potential Concern
1	Central portion of the Project Area, between historical apple orchards and north of the Brockville Quarry, approximately 90 m west of the Sharpes Lane overpass	PCA #40 - Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) PCA #35 - Mining, Smelting and Refining; Ore Processing; Tailings Storage	Historical orchards: north and south adjacent to the Project Area Brockville Quarry: 70 m south of the Project Area	PHC F1-F4, BTEX, Metals, including As, Sb, Se, OCPs
2	Eastern portion of the Project Area, south of a historical apple orchard, approximately 160 m east of the Sharpes Lane overpass	PCA #40 - Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications	North adjacent to the Project Area	Metals, As, Sb, Se, OCPs
3	Eastern-most portion of the Project Area, south of an apple orchard	PCA #40 - Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications	North adjacent to the Project Area	Metals, As, Sb, Se, OCPs
4	All roadways throughout the Project Area	PCA #30 - Importation of Fill Material of Unknown Quality	On-Site	PHC F1-F4, BTEX, Metals, As, Sb, Se, PAHs, EC, SAR
5	Mile marker 699 in the western portion of the Project Area	PCA Undefined – Diesel Spill	On-Site	PHC F1-F4, BTEX, PAHs

Summary of Environmental Concerns
November 27, 2024

APEC #	Location of APEC	Description of PCA	Approximate Distance of PCA from the Project Area	Contaminant(s) of Potential Concern
6	Western-most portion of the Project Area, southeast of [redacted] (a commercial trucking [redacted] (garden centre and weed control operation) and [redacted] (a truck repair centre)	[redacted]: PCA #11 - Commercial Trucking and Container Terminals PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks [redacted]: PCA Undefined – Hazardous Waste Generation PCA #40 - Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications PCA #58 - Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners [redacted]e: PCA #27 - Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	[redacted] 110 m northwest of the Project Area [redacted]: 100 m northwest of the Project Area [redacted]: 50 m northwest of the Project Area	PHC F1-F4, BTEX, VOCs, Metals, As, Sb, Se, PAHs, OCPs
7	Central portion of the Project Area, south of [redacted], approximately 50 m west of the Sharpes Lane overpass	PCA Undefined – Furnace Oil Spill	Approximately 100 m north of the Project Area	PHC F1-F4, BTEX, PAHs

APEC #	Location of APEC	Description of PCA	Approximate Distance of PCA from the Project Area	Contaminant(s) of Potential Concern
8	All roadways throughout the Project Area	Unspecified PCA – Application of De-Icing Compounds for the Purposes of Winter Safety	On-Site	EC, SAR

Note(s):
PHC F1-F4 - Petroleum hydrocarbons fractions 1 to 4, BTEX - Benzene, toluene, ethylbenzene, and xylenes
PAHs - Polycyclic aromatic hydrocarbons, EC - Electrical Conductivity, SAR - Sodium Adsorption Ratio
VOCs - Volatile Organic Compounds, As – Arsenic, Sb – Antimony, Se - Selenium
OCPs – Organochlorine Pesticides

4.2 SUMMARY OF PAST USES

The current activities on the Project Area at the time of the site reconnaissance, and a summary of historical information gathered through the review of records dating back to 1958, confirm that the Project Area has historically been occupied by Highway 401, Old Sharpes Lane, and Sharpes Lane.

Table 4: Table of Current and Past Uses

Year	Name of Owner	Description of Property Use	Property Use	Other Observations from Aerial Photographs, ERIS, etc.
1958	Ontario Ministry of Transportation	Highway 401, Sharpes Lane	Community	Highway 401 was under construction across the Project Area. Sharpes Lane was present. Highway 401 appeared to transverse Old Sharpes Lane. The Sharpes Lane overpass was under construction.
1963	Ontario Ministry of Transportation	Highway 401, Sharpes Lane	Community	Highway 401 was completed across the Project Area. The Sharpes Lane overpass was under construction. Highway 401 appeared to transverse Old Sharpes Lane.
1974 - present	Ontario Ministry of Transportation	Highway 401, Sharpes Lane	Community	Highway 401 was present across the Project Area. The Sharpes Lane overpass was completed. Highway 401 appeared to divide Old Sharpes Lane into northern and southern portions, each ending in a crescent.

4.3 CONCEPTUAL SITE MODEL

In developing the Conceptual Site Model, the following physical characteristics/pathways were evaluated to assess whether PCAs have contributed to an APEC at the Project Area:

Table 5: Conceptual Site Model

Physical Characteristics/ Pathways	Description
Subsurface Soils	According to the Quaternary Geology of Ontario map published by the Ontario Geologic Survey, the surficial soil in the vicinity of the Site generally consists of either silt and clay, basin, and quiet water deposits in the western portion of the Project Area, or undifferentiated, predominantly sand silt to silt matrix in the eastern portion of the Project Area. The study area spans across the physiographic regions defined by Chapman and Putnam (2007) as the Smiths Falls Limestone Plain. Records for 79 wells within the Project Area were provided by ERIS and described mostly as domestic water supply wells. These records generally identified topsoil and clay overlaying limestone and sandstone to a maximum depth of 17 m below ground surface (BGS).
Bedrock	According to bedrock geology mapping published by the Ontario Geologic Survey (2011), bedrock in the vicinity of the Project Area is classified as conglomerate, sandstone, shale, and dolostone of the Potsdam Group, Nepean Formation, and Covey Hill Formation in the western portion of the Project Area. Bedrock is classified as dolostone and sandstone of the Beekmantown Group in the eastern portion of the Site. According to available borehole and water well records described in the ERIS report, limestone, granite, and sandstone bedrock was encountered in the area at depths ranging from 0.3 m to 17 m BGS.
Inferred Groundwater Flow Direction	Based on a review of available maps and the topography observed in the vicinity of the Project Area, the inferred regional groundwater flow is to the south toward the St. Lawrence River, approximately 2.1 km from the Project Area. The elevation of the local groundwater table can generally mimic the local topography and may not reflect the regional trend in drainage. The local shallow groundwater flow pattern can also be influenced by localized creeks, or subsurface structures in the vicinity such as building foundations, weeping tiles, and utility trenches.
Underground Utilities	The Project Area along Highway 401 did not appear to be serviced by utilities, however MTO has indicated that subsurface utilities are present at the Project Area. The ERIS report indicated multiple domestic water supply wells within the study area. No other evidence of utilities was observed during the site reconnaissance.
Contaminant(s) of Potential Concern	Based on the presence of the PCAs identified within the COS Project Area and study area related to fill material of unknown quality, spills, mining activities, pesticide use, commercial trucking, vehicle maintenance, hazardous waste generation, waste disposal, and the application of de-icing compounds, the COPCs were considered to be PHCs F1 - F4/BTEX, PAHs, VOCs, Metals, As, Sb, Se, OCPs, EC and SAR.

The figures provided in **Appendix A** include features and details in relation to the Project Area and the surrounding areas. In general, the figures illustrate the following, where applicable: road names and existing buildings and structures, water bodies, locations of areas of natural significance, adjoining property usage types, PCAs, APECs, and the inferred direction of groundwater flow in the vicinity of the Project Area.

4.4 UNCERTAINTY

The past use of the Project Area is well understood based on historical information sources obtained and reviewed during the COS. The physical characteristics of the land area comprising the Project Area are inferred from available regional mapping, historical borehole and water well records, and a site reconnaissance. No other potential uncertainties or missing information were encountered during completion of the COS.

4.5 RECOMMENDATIONS

Based on the APECs identified in Section **4.1.**, the following recommendations are provided:

- A Preliminary Site Screening (PSS), Phase I ESA and Phase II ESA (if recommended as part of the PSS or Phase I ESA) should be completed for any property that will be acquired by MTO in accordance with the requirements of the MTO documents *Environmental Guide for Contaminated Property Identification and Management* (MTO, 2006) and *Environmental Reference for Highway Design* (MTO, 2013). If demolition activities will be required, designated substance surveys should be completed for buildings or structures prior to demolition.
- O.Reg. 406/19 and the associated document *Rules for Soil Management and Excess Soil Quality Standards* referenced by O.Reg. 406/19 should be followed for soil that is excavated and managed on-site or off-site during construction. This includes sampling soil that is intended to be excavated prior to or during construction that may require off-site management as excess soil. The soil sampling program will be undertaken according to a sampling and analysis plan, and analyses will be performed for the specific contaminants of potential concern, as described in the APEC summary table. Sampling programs should be developed and undertaken under the supervision of a qualified person as defined in O.Reg. 406/19 and sample selection should take into consideration the presence of anthropogenic substances such as debris/waste, and unusual odours or staining.
- Stockpiling and transport of excavated soil and sediment during construction should be done in accordance with the requirements specified in O.Reg. 406/19.

5.0 LIMITATIONS

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential liabilities associated with the identified property.

This report provides an evaluation of selected environmental conditions associated with the identified portion of the property that was assessed at the time the work was conducted and is based on information obtained by and/or provided to Stantec at that time. There are no assurances regarding the accuracy and completeness of this information. All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

The opinions in this report can only be relied upon as they relate to the condition of the portion of the identified property that was assessed at the time the work was conducted. Activities at the property subsequent to Stantec's assessment may have significantly altered the property's condition. Stantec cannot comment on other areas of the property that were not assessed.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report and are based solely on the scope of work described in the report, the limited data available and the results of the work. They are not a certification of the property's environmental condition. This report should not be construed as legal advice.

This report has been prepared for the exclusive use of the client identified herein and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities or claims, howsoever arising, from third party use of this report.

This report is limited by the following:

- It was determined that some of the requirements in Schedule D of O.Reg 153/04 were not required to meet the objectives of the COS, as specified in this report. The information provided by the sources used in this report were considered sufficient to achieve the objectives of the COS.
- The site reconnaissance was conducted from within a vehicle.
- The ERIS report covers a 250 m radius from the centre-line of Highway 401 from approximately North Augusta Road to approximately 870 m east of Sharpes Lane. The remainder of the study area was assessed using aerial photographs and through the site reconnaissance only.

The locations of any utilities, buildings and structures, and property boundaries illustrated in or described within this report, if any, including pole lines, conduits, water mains, sewers and other surface or sub-surface utilities and structures are not guaranteed. Before starting work, the exact location of all such utilities and structures should be confirmed and Stantec assumes no liability for damage to them.

Limitations
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The conclusions are based on the site conditions encountered by Stantec at the time the work was performed at the specific testing and/or sampling locations, and conditions may vary among sampling locations. Factors such as areas of potential concern identified in previous studies, site conditions (e.g., utilities) and cost may have constrained the sampling locations used in this assessment. In addition, analysis has been carried out for only a limited number of chemical parameters, and it should not be inferred that other chemical species are not present. Due to the nature of the investigation and the limited data available, Stantec does not warrant against undiscovered environmental liabilities nor that the sampling results are indicative of the condition of the entire site. As the purpose of this report is to identify site conditions which may pose an environmental risk; the identification of non-environmental risks to structures or people on the site is beyond the scope of this assessment.

Should additional information become available which differs significantly from our understanding of conditions presented in this report, Stantec specifically disclaims any responsibility to update the conclusions in this report.

This report was prepared by Cori Linetsky, B.Eng., E.I.T., and reviewed by Randy Sinukoff, M.A.Sc., P.Eng., $QP_{ESA.}$

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For the COS described herein, the qualified person declares that the Project Leader (i.e., MTO) has provided the necessary information and access to the Project Area and has authorized the qualified person, or individuals supervised by them, to make inquiries of the Project Leader and operator's employees and agents, for the purpose of assisting the qualified person in preparing and overseeing the preparation of this document.

The qualified person named herein has prepared or overseen the preparation of the document and declares that it is complete and accurate to meet the requirements of O.Reg. 406/19 and the Soil Rules, to the best of the qualified person's knowledge.

All of which is respectfully submitted,

STANTEC CONSULTING LTD.

Digitally signed by Linetsky, Cori
Date: 2026.05.21 10:48:34 -04'00'

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