TRANSPORTATION ENVIRONMENTAL STUDY REPORT

HIGHWAY 15 AND COUNTY ROAD 42
INTERSECTION IMPROVEMENTS
TOWNSHIP OF RIDEAU LAKES, UNITED COUNTIES OF LEEDS AND GRENVILLE
(G.W.P. 4315-06-00)

VOLUME 1

prepared for:

Ontario

Ministry of Transportation
Eastern Region

prepared by:

LGL LIMITED
environmental research associates

HDR

JULY 2017

TRANSPORTATION ENVIRONMENTAL STUDY REPORT

HIGHWAY 15 AND COUNTY ROAD 42
INTERSECTION IMPROVEMENTS
TOWNSHIP OF RIDEAU LAKES, UNITED COUNTIES OF LEEDS AND GRENVILLE
(G.W.P. 4315-06-00)

CLASS ENVIRONMENTAL ASSESSMENT FOR PROVINCIAL TRANSPORTATION FACILITIES
GROUP "B" PROJECT

prepared by:

Constance J. Agnew, B.Sc.
Consultant Environmental Planner
LGL Limited
22 Fisher Street, PO Box 280
King City, Ontario L7B 1A6

Katherine Bibby, MCIP, RPP
Environmental Planner
LGL Limited
22 Fisher Street, PO Box 280
King City, Ontario L7B 1A6

Joseph Arcaro, P. Eng.
Consultant Project Manager
HDR Corporation
100 York Boulevard, Suite 300
Richmond Hill, Ontario L4B 1J8

reviewed by:

Grant N. Kauffman, M.E.S.
Vice President, Ontario Region
LGL Limited
22 Fisher Street, PO Box 280
King City, Ontario L7B 1A6

JULY 2017
LGL Project# TA8484

THE PUBLIC RECORD

This document is available for public review at the following locations:

Ministry of Transportation
Eastern Region
1355 John Counter Blvd
Kingston, Ontario K7L 5A3
Office Hours:
8:30 a.m. to 4:30 p.m. Monday to Friday

Township of Rideau Lakes
1439 County Road 8
Chantry, Ontario K0E 1G0
Office Hours:
8:30 a.m. to 4:30 p.m.
Monday to Friday

Rideau Lakes Public Library
Portland Branch
2792 Highway 15
Portland, Ontario K0G 1V0
Branch Hours:
Monday: 4:00 p.m. to 7:00 p.m.
Tuesday and Thursday: closed.
Wednesday: 2:00 p.m. to 5:00 p.m.
Friday: 9:30 a.m. to 12:30 p.m.
Saturday: 1:00 p.m. to 4:00 p.m.
Sunday: closed.

Rideau Lakes Public Library
Elgin Branch
47 Main Street
Elgin, Ontario K0G 1E0
Branch Hours:
Monday: 5:00 p.m. to 8:00 p.m.
Tuesday: 1:00 p.m. to 8:00 p.m.
Wednesday: 10:00 a.m. to 4:00 p.m.
Thursday: 1:00 p.m. to 8:00 p.m.
Friday: 1:00 p.m. to 4:00 p.m.
Saturday: 9:30 a.m. to 12:30 p.m.
Sunday: 1:00 p.m. to 4:00 p.m.

The TESR has also been sent to the Ministry of the Environment and Climate Change, Eastern Region for their records. This office is not a review location for this project.

French Language Services Act

Ce document hautement specialize n'est disponsible qu'en anglais en virtue du règlement 411/97, qui en exempte l'application de la Loi sur les services en français. Pour de l'aide en français, veuillez communiquer avec le ministère des Transports, Bureau des services en français au: 905-704-2045 ou 905-704-2046.

Alternate Format

MTO endeavours to demonstrate leadership for accessibility in Ontario. This document is available in an alternate format upon request. Please contact Joseph Arcaro, Consultant Project Manager, HDR Corporation at 1-888-860-1116, should you require this document in an alternative format.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

1.0 OVERVIEW OF THE UNDERTAKING

This chapter provides an overview of the proposed project including its location, purpose and setting, a description of the Study Team, and the purpose of the Transportation Environmental Study Report.

1.1 Summary Description of the Undertaking

The Ministry of Transportation (MTO) has conducted a preliminary design study for improvements to the intersection of Highway 15 and County Road 42 in the Township of Rideau Lakes, United Counties of Leeds and Grenville (G.W.P. 4315-06-00). The study area is presented in **Figure 1**.

The purpose of this study is to determine a solution for the intersection of Highway 15 and County Road 42. This study is following the approved planning process for Group "B" projects under the *Class Environmental Assessment for Provincial Transportation Facilities* (MTO 2000) and requires the submission of a Transportation Environmental Study Report (TESR) for public and external agency review.

1.2 Study Team

This is a total project management (TPM) assignment, where a single consultant delivers all aspects of project design on behalf of MTO. The TPM consultant HDR was backed by a team of engineering and environmental specialists. The Ministry has an internal team that provides direct oversight throughout the project. The Study Team members and their roles in the environmental investigation are described below:

- HDR Corporation – total project management and engineering; and,
- LGL Limited – socio-economic assessment, aquatic and terrestrial ecosystems assessment, land use, and environmental planning.

1.3 Purpose of the TESR

The TESR is prepared in compliance with the requirements of the *Class Environmental Assessment for Provincial Transportation Facilities* (MTO 2000), which has been accepted and approved under the Ontario *Environmental Assessment Act*. The TESR documents the environmentally significant aspects of the planning, design, construction and operation of specific Group "B" projects which fall within the definition of the Class. It includes a description of the project and its purpose, specific environmental effects and environmental protection measures, and commitments to monitoring procedures associated with the implementation of the project.

Other aspects of this class of undertaking, such as the environmental assessment process, are contained in the *Class Environmental Assessment for Provincial Transportation Facilities* (MTO 2000). Readers interested in these matters are encouraged to refer to that document.

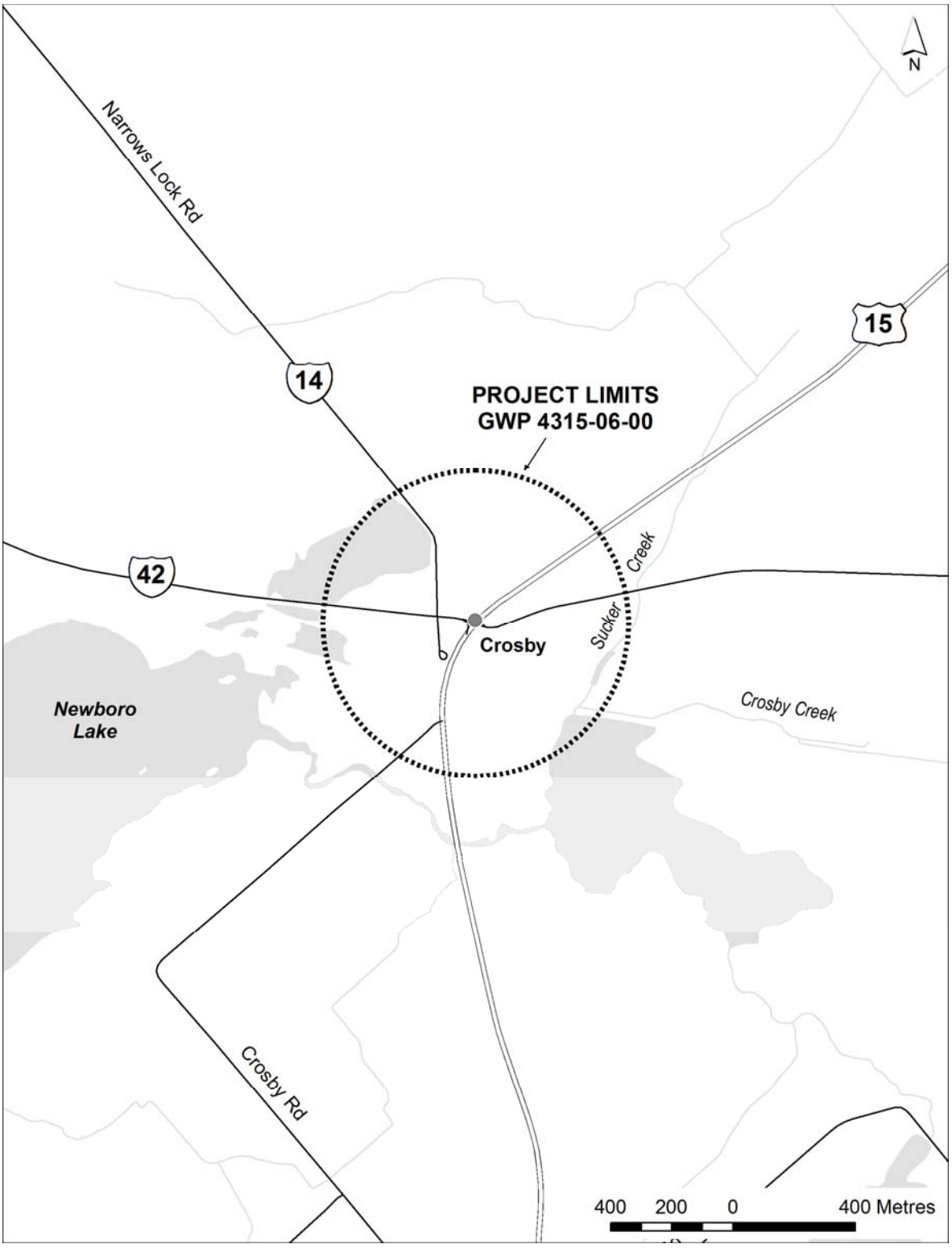


FIGURE 1. KEY PLAN OF STUDY AREA

Additional background information for this project is contained in MTO's environmental study file and in the following supporting documents:

- Design Criteria (HDR 2017);
- Culvert Inspection Report (HDR 2016);
- Geometric Condition Memo (HDR 2015);
- Collision Assessment Memo (HDR 2015);
- Existing Traffic Operations Memo (HDR 2015);
- Roadside Safety Memo (HDR 2015);
- Summary of Environmental Conditions Report (LGL Limited 2015);
- Terrestrial Ecology Existing Conditions Report (LGL Limited 2015);
- Terrestrial Ecology Existing Conditions Technical Memorandum (LGL Limited 2016);
- Terrestrial Ecology Impact Assessment Memorandum (LGL Limited 2017);
- Fish and Fish Habitat Technical Memo (LGL Limited 2015);
- Land Use Factors Existing Conditions Report (LGL Limited 2015); and,
- Land Use Factors Impact Assessment Report (LGL Limited 2017).

The following background reports were prepared for the related project, for improvements to Highway 15 from 1.07 km south of Leeds and Grenville Road 42 northerly to 0.25 km south of Young's Hill Road improvements in the vicinity of the County Road 42 intersection (G.W.P. 4315-06-00):

- Summary of Environmental Conditions Report (LGL Limited 2006);
- Fish and Fish Habitat Impact Assessment Report (LGL Limited 2012);
- Secondary Source Groundwater Investigation (Golder Associates 2008);
- Contaminated Property and Waste Management Assessment (Golder Associates 2009);
- Terrestrial Ecosystems Report (LGL Limited 2008);
- Land Use Factor Impact Assessment Report (LGL Limited 2011);
- Noise Report (Valcoustics 2009);
- Stage 1 and Stage 2 Archaeological Assessment (The Central Archaeology Group 2009); and,
- Built Heritage Resources and Cultural Heritage Landscape Assessment (The Central Archaeology Group 2009).

The Transportation Environmental Study Report (TESR) will be available on **August 1, 2017**, for a 30-day public review period. Interested persons are encouraged to review this document and provide comments by **August 31, 2017**. If, after consulting with the Ministry's consultants and staff, you have serious unresolved concerns, you have the right to request the Minister of the Environment (in writing to: **Ferguson Block, 11th Floor, 77 Wellesley Street West, Toronto, Ontario M7A 2T5**) to "bump-up" (i.e. make a Part II Order for) this project. A Part II Order may lead to preparation of an individual environmental assessment. A copy of the "bump-up" request should be forwarded to the Ministry of Transportation at the address listed below. If there are no outstanding concerns after **August 31, 2017**, the project will be considered to have met the requirements of the Class EA.

The MTO Project Manager, Consultant Project Manager and Consultant Environmental Planner may be contacted at the addresses noted below to further discuss this project.

Mr. Joseph Arcaro, P. Eng.
Consultant Project Manager
HDR Corporation
100 York Boulevard, Suite 300
Richmond Hill, ON L4B 1J8
Tel: 1-888-860-1116
Fax: 289-695-4601
E-mail: joseph.arcaro@hdrinc.com

Ms. Constance Agnew, B.Sc.
Consultant Environmental Planner
LGL Limited
22 Fisher Street, P.O. Box 280
King City, ON L7B 1A6
Tel: 905-833-1244 (collect)
Fax: 905-833-1255
E-mail: cagnew@lgl.com

Mr. Glenn Higgins
MTO Project Manager
Ministry of Transportation, Eastern Region
1355 John Counter Boulevard
Postal Bag 4000
Kingston, ON K7L 5A3
Tel: 1-800-267-0295 ext. 4806
Fax: 613-540-5106
E-mail: glenn.higgins@ontario.ca

2.0 OUTLINE OF ENVIRONMENTAL ASSESSMENT PROCESS

This chapter provides a description of the overall environmental assessment process and the project-specific Class EA study process and describes the consultation process undertaken during preliminary design.

2.1 Provincial Environmental Assessment Process

This project is subject to the requirements of the Ontario *Environmental Assessment Act* (EAA). The project is following the "Class Environmental Assessment for Provincial Transportation Facilities" (MTO 2000).

2.1.1 Class Environmental Assessment Process

MTO's "Class Environmental Assessment for Provincial Transportation Facilities" (Class EA) was approved under the Ontario *Environmental Assessment Act* (EAA) in 1999 and amended in 2000. This document defines the group of projects and activities and the environmental assessment process that MTO has committed to follow for these projects. Provided that this process is followed, projects and activities included under the Class EA do not require formal review and approval under the Ontario EAA.

The goal of all projects and activities covered by the "Class Environmental Assessment for Provincial Transportation Facilities" is to provide a safe and effective transportation system while avoiding or minimizing negative environmental effects. As a result, MTO's Class EA process is principle-based and includes transportation engineering principles, environmental protection principles, external consultation principles, evaluation principles, documentation principles, bump-up principles and environmental clearance principles. The Class EA process for Group "B" projects is presented in **Figure 2**.

2.1.2 Canadian Environmental Assessment Act

The updated *Canadian Environmental Assessment Act* (CEAA) came into effect in July 2012. CEAA 2012 applies only to projects described in the *Regulations Designating Physical Activities*. CEAA 2012 does not apply to the Highway 15/County Road 42 intersection improvements study because this type of project is not a designated project described in the *Regulations Designating Physical Activities* and the project is not anticipated to cause significant adverse environmental effects or elicit public concerns about such effects.

2.1.3 Project-Specific Study Process

The study process for improvements to the intersection of Highway 15 and County Road 42 is shown in **Figure 3**. A Preliminary Design Report will be prepared by HDR before the completion of preliminary design to document the preliminary design phase of the study. This TESR has been prepared to document the Class EA and preliminary design study and to provide details of the project, the EA process, the consultation process, the existing environmental conditions, the transportation needs assessment, the identification and evaluation of preliminary design alternatives, the selection of the technically preferred preliminary design alternative and the recommended preliminary design, environmental effects and recommended environmental protection/mitigation measures, and the work that will be required during detail design (including the requirement for any environmental approvals/authorizations/permits).

During this study, a Municipal Advisory Committee (MAC) was established to provide input to the study team on key aspects of the Class EA and Preliminary Design Study. **Figure 3** also presents the MAC meetings that were held during the phases of the Class EA process, and the purpose of these meetings.

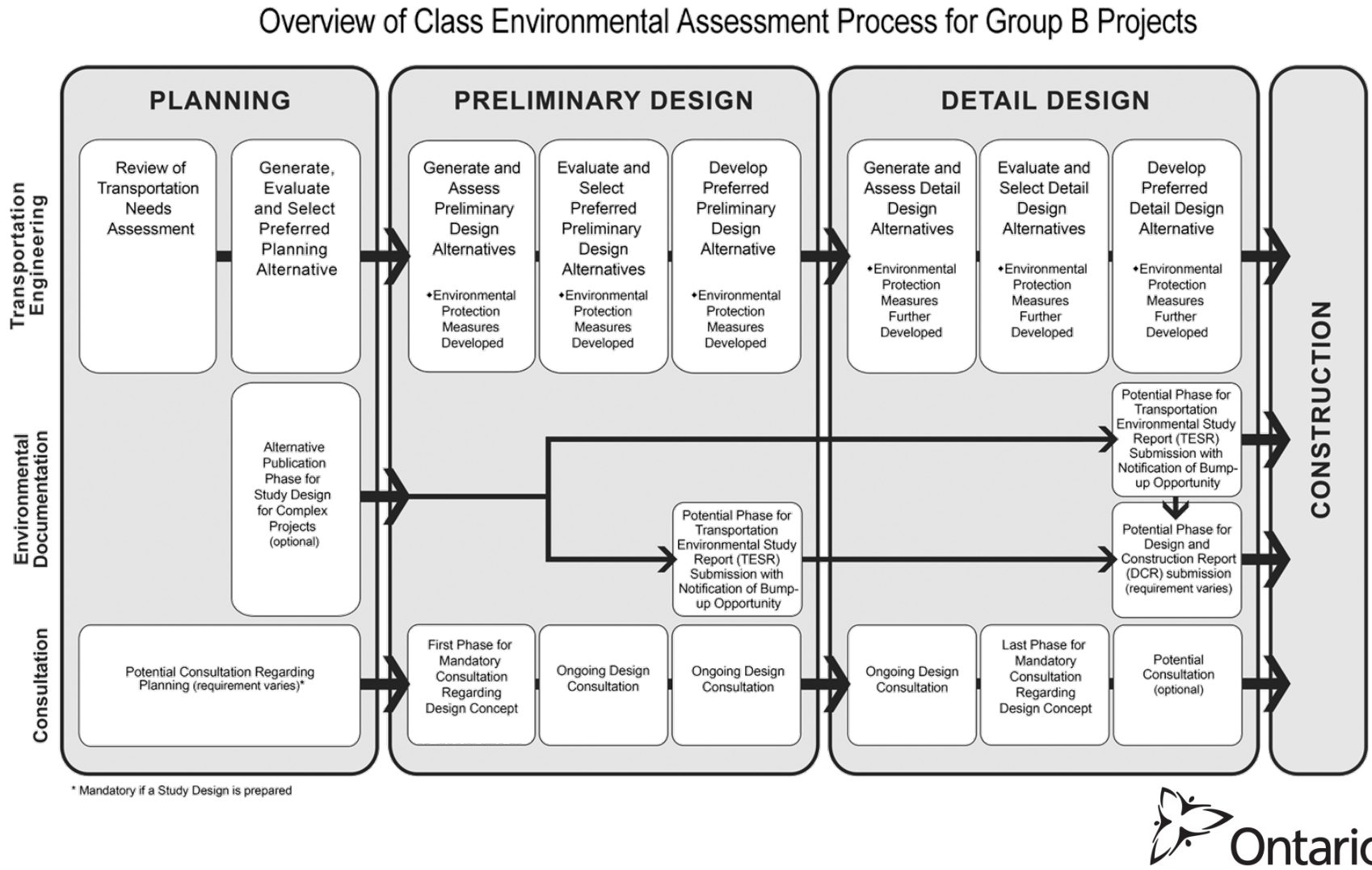


FIGURE 2. CLASS ENVIRONMENTAL ASSESSMENT PROCESS FOR GROUP "B" PROJECTS

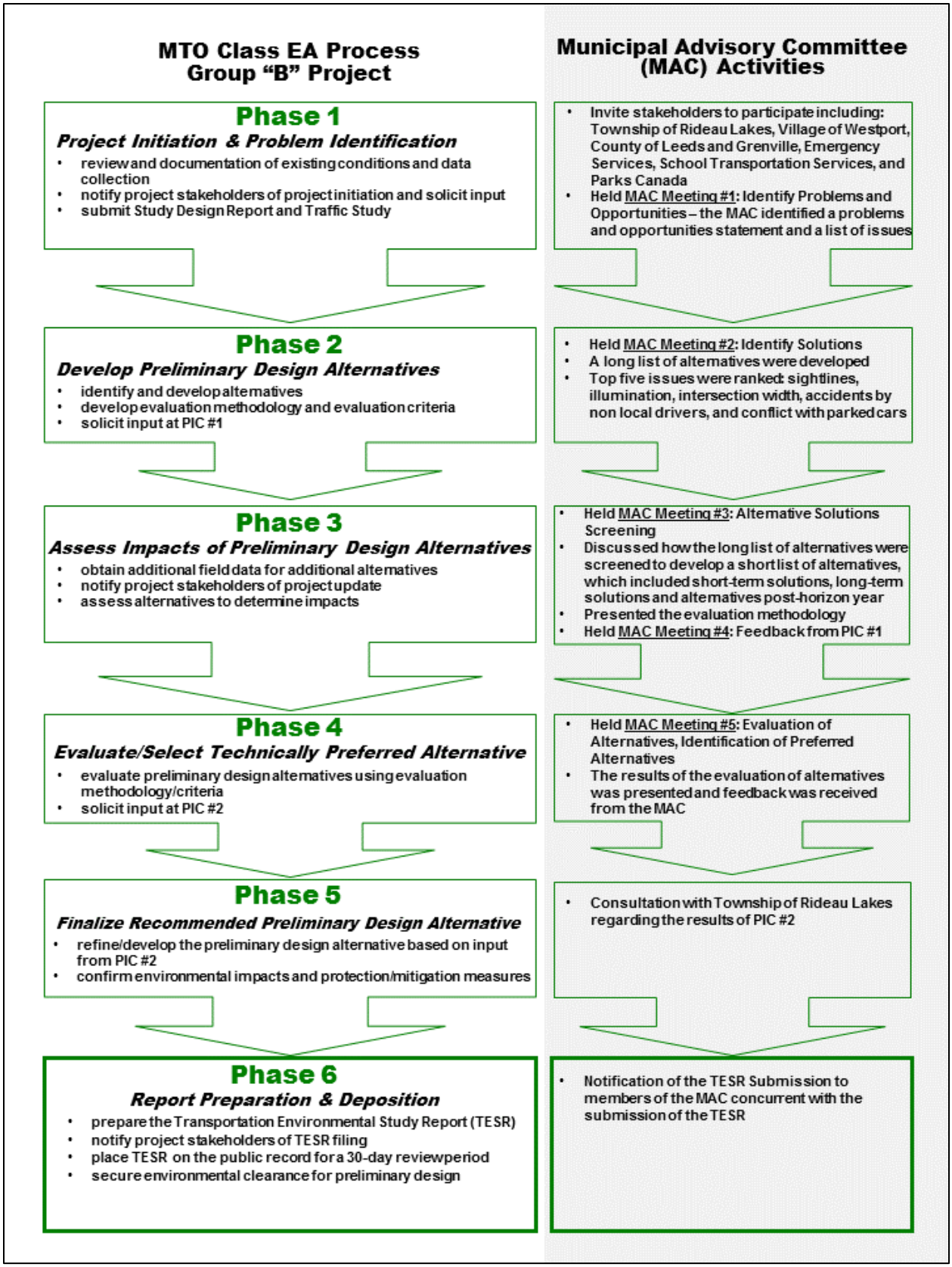


FIGURE 3. STUDY PROCESS AND MUNICIPAL ADVISORY COMMITTEE ACTIVITIES

3.0 CONSULTATION

A consultation program was conducted throughout the preliminary design study. The purpose of the consultation program was to solicit input on the preliminary design and to identify potential impacts/concerns and environmental protection/mitigation measures. Key components of the consultation program to date have included:

- formal notices in local newspapers;
- establishment and consultation with a Municipal Advisory Committee (MAC);
- correspondence/meetings with external agencies/stakeholders;
- correspondence with Aboriginal communities; and,
- correspondence and/or meetings with members of the public, including two Public Information Centres (PICs).

Consultation with external agencies/stakeholders, the MAC, Aboriginal communities, and members of the public has been conducted consistent with the requirements of a Group "B" Class EA project.

3.1 Study Notices

A 'Notice of Study Commencement', 'Notice of PIC#1', 'Notice of Project Update – December 2015', 'Notice of PIC #2', and 'Notice of Study Completion/TESR Submission' were or will be placed in local newspapers during this study.

Notice of Study Commencement

The 'Notice of Study Commencement' was published in the *Kingston Whig Standard* on February 25, 2015 and in the *Gananoque Reporter* and in the *Westport Review Mirror* on February 26, 2015. The 'Notice of Study Commencement' described the project and the Class Environmental Assessment process, requested public involvement and identified contact persons for submitting comments. A copy of the Ontario Government Notice is provided in **Appendix A**.

Notice of Public Information Centre #1

The 'Notice of Public Information Centre #1' was published in the *Kingston Whig Standard* on June 13, 2015 and in the *Gananoque Reporter* and in the *Westport Review Mirror* on June 11, 2015. The 'Notice of PIC #1' described the project and the Class EA process, outlined the details of the PIC, described the Municipal Advisory Committee, requested public involvement, and identified contact persons for submitting comments. A copy of the Ontario Government Notice is provided in **Appendix A**.

Notice of Project Update – December 2015

The information contained in the 'Notice of Project Update – December 2015' was presented in an article published in the Westport Review Mirror in mid-December 2015 and was posted on the website for the Township of Rideau Lakes. The Notice was also circulated in mid-December 2015 to the project stakeholders including members of the public, PIC attendees, cottage associations, the local MPP, Aboriginal communities, and the members of the MAC. The 'Notice of Project Update – December 2015' provided an update on the status of the project, a summary of the next steps timelines, and identified contact persons for submitting comments. A copy of the Ontario Government Notice is provided in **Appendix A**.

Notice of Public Information Centre #2

The 'Notice of Public Information Centre #2' was published in the *Kingston Whig Standard* on March 11, 2017 and in the *Smiths Falls Record News* and in the *Westport Review Mirror* on March 16, 2017. The 'Notice of PIC #2' described the project and the Class EA process, explained that the evaluation of the preliminary design alternatives had been completed, outlined the details of the PIC, requested public

involvement, and identified contact persons for submitting comments. A copy of the Ontario Government Notice is provided in **Appendix A**.

Notice of Study Completion

The 'Notice of Study Completion' will be placed in the *Kingston Whig Standard, Smiths Falls Record News* and *Westport Review Mirror* concurrent with submission of this TESR. The 'Notice of Study Completion' will provide details on the recommended preliminary design and the Class EA process, and will identify locations where copies of the TESR are available for review, the closing date for submission of comments, and the persons to contact for further information.

3.2 Correspondence with External Agencies/Stakeholders

Correspondence with external agencies/stakeholders was carried out throughout the preliminary design study. **Table 2** summarizes the external agencies/stakeholders contacted, describes the comments/concerns identified by external agencies/stakeholders throughout the study and outlines the study team's responses to these concerns. Any comments received were taken into account during the preliminary design study. Formal responses were provided as necessary to the comments received from external agencies/stakeholders during this preliminary design study. All correspondence with external agencies/stakeholders is presented in **Appendix B**.

Notification of Study Commencement

External agencies and stakeholders, including elected officials, were notified of study commencement through initial contact letters sent on February 20, 2015. These letters introduced the study, requested background information and asked the external agencies/stakeholders to identify any issues or concerns related to the study. A comment form was provided for external agencies/stakeholders to fill out and return to the study team. A copy of the initial contact letter and the initial external agency/stakeholder contact list is presented in **Appendix B**.

Municipal Advisory Committee

A Municipal Advisory Committee (MAC), a stakeholder advisory group, was established in order to review environmental documents and provide advice to the Study Team during the Preliminary Design and Class EA Study. A Terms of Reference for the role of the MAC was reviewed at the first meeting, and is presented in **Appendix C**. The MAC had a total of nine representatives from the following external agencies: the United Counties of Leeds and Grenville (2), Township of Rideau Lakes (2), Ontario Provincial Police, Student Transportation of Eastern Ontario, Village of Westport, Rideau Heritage Route Tourism Association, and Ontario Waterways, Parks Canada.

The Study Team hosted meetings with the MAC members at key project milestones. A summary of the timing and purpose of the MAC meetings during the Class EA process is presented in **Figure 3**. The purpose and items discussed at these meetings are presented in **Table 1**.

TABLE 1.
SUMMARY OF MUNICIPAL ADVISORY COMMITTEE MEETINGS

Meeting Number and Purpose	Description
Meeting #1: Problem and Opportunity	The MAC identified a problems and opportunities statement and a list of issues for the study.

TABLE 1.
SUMMARY OF MUNICIPAL ADVISORY COMMITTEE MEETINGS

Meeting Number and Purpose	Description
Meeting #2: Identify Solutions	The issues list was reviewed, and the MAC members identified alternative solutions that could mitigate, minimize, or eliminate the problem statement. A long list of alternative solutions were developed. The top five issues were ranked: • sightlines • illumination • intersection width • accidents by non-local drivers • conflict with parked cars The MAC members provided input/suggestions regarding the additional consultation activities that were being planned in the local community.
Meeting #3: Alternative Solutions Screening	The long list of alternatives generated to date were screened using the screening criteria with input from the MAC. The criteria used to screen the long list included: • traffic operations • traffic safety • natural environment • socio-economic environment • MTO policies and warrants • cost sharing/future maintenance The evaluation methodology for the short listed alternatives was presented to the MAC. A pair-wise alternative comparison was undertaken with the MAC.
Meeting #4: Feedback from PIC #1	The members of the MAC reviewed the comments received during PIC #1 and provided input to the refinements of the alternatives to address these comments.
Meeting #5: Evaluation of Alternatives, Identification of Preferred Alternatives	The study team presented the results of the evaluation of the alternatives, and the MAC members provided their input and comments.

The results of these meetings were documented in meeting minutes, which are available in **Appendix C**. The study team presented information on the progress of the study, and solicited input from the MAC members. The MAC members provided local knowledge and expertise that influenced the development of key issues for the study area, the weighting given to the evaluation criteria, and general comments on the local specific issues and concerns. The feedback received from the MAC were documented and taken into consideration throughout the study.

Public Information Centres

Two Public Information Centres were held in association with this study. External agencies/stakeholders, including elected officials, municipal staff, government agency representatives, school boards/ transportation services and local/regional interest groups, were invited by letter to attend each PIC. Invitations were sent by mail on April 17, 2015 for PIC #1 and on March 9, 2017 for PIC #2 with a copy of the PIC Brochure (and in the case of the MPP a copy of the 'Notice of PIC'). Presentations were made to the Council of the Township of Rideau Lakes prior to the Public Information Centres.

The following representatives from external agencies attended the Public Information Centres:

Public Information Centre #1

- MPP Steve Clark;
- the Mayor of Westport;
- the Mayor of the Township of Rideau Lakes;
- seven Township of Rideau Lakes Councillors;
- two staff representatives from the Township of Rideau Lakes (Chief Administrative Officer/MAC member and Roads Coordinator & Drainage Superintendent);
- County of Leeds and Grenville (Director of Works, Planning Services and Asset Management/MAC member); and,
- a representative/MAC member from the Leeds County Ontario Provincial Police (OPP).

Public Information Centre #2

- one staff representative from Cataraqui Region Conservation Authority;
- one staff representative from Parks Canada;
- three Township of Rideau Lakes Councillors;
- one staff representative from the United Counties of Leeds and Grenville;
- representative from Lanark County; and,
- the Mayor of Westport/Elected Warden of the United Counties of Leeds and Grenville.

Comments made by the agencies are summarized in **Table 2** and in the PIC #1 Summary Report (**Appendix F**) and PIC #2 Summary Report (**Appendix G**). Responses to agency comments were provided following each Public Information Centre and are summarized in **Table 2**.

Additional Consultation

The Study Team conducted additional consultation activities on July 25, 2015 including participation at the Crosby Flea Market and visits at points of interest to leave project posters and informational postcards. The intent of this additional consultation was to reach out to community members during the summer high recreational season to ensure that seasonal residents and community members were aware of the project and could submit comments. Further information is presented under **Section 3.4** (Consultation with Members of the Public).

Notification of TESR Submission

A final contact letter will be sent to external agencies/stakeholders (including the MPP and Aboriginal communities) concurrent with the release of the TESR for public review. The letter will provide details on the recommended preliminary design and the Class EA process, and will identify locations where copies of the TESR are available for review, the closing date for submission of comments, and the persons to contact for further information. The 'Notice of Study Completion' will be attached to the letter.

TABLE 2.
SUMMARY OF CONTACTS WITH EXTERNAL AGENCIES/STAKEHOLDERS DURING PRELIMINARY DESIGN

Agency	Date Contacted	Comments/Concerns	Conclusions
Member of Provincial Parliament – Leeds-Grenville	Initial contact letter mailed on February 20, 2015. PIC #1 invitation letter mailed on June 9, 2015. In a letter mailed November 26, 2015 to the MPP, the study team thanked him for his comments. It was explained that an evaluation of the alternatives would be conducted and that a technically preferred alternative would be selected and presented at PIC #2. Notice of Study Update was mailed in mid-December 2015. PIC #2 invitation letter mailed on March 9, 2017. Final contact letter will be mailed concurrent with the release of the TESR on the public record.	At PIC #1 the MPP provided comments on a comment form. The MPP supported Alternative 4 as he believes that some realignment of the corner based on the feedback received from the Mayor of the Township of Rideau Lakes. He indicated that this alternative provides the best compromise and is in the best interest of the community.	The MPP comments were responded to and taken into consideration during the evaluation of the alternatives for this study.
Environment Canada, Canadian Wildlife Service	Initial contact letter mailed on February 20, 2015. PIC #1 invitation letter mailed on June 9, 2015. Notice of Study Update was mailed in mid-December 2015.	No comments/concerns received.	No issues or concerns identified.

TABLE 2.
SUMMARY OF CONTACTS WITH EXTERNAL AGENCIES/STAKEHOLDERS DURING PRELIMINARY DESIGN

Agency	Date Contacted	Comments/Concerns	Conclusions
	PIC #2 invitation letter mailed on March 9, 2017. Final contact letter will be mailed concurrent with the release of the TESR on the public record.		
Ministry of the Environment and Climate Change, Kingston District Office • Regional EA Coordinator	Initial contact letter mailed on February 20, 2015. PIC #1 invitation letter mailed on June 9, 2015. A response letter was mailed on November 26, 2015 indicating that they would be notified of all future study updates, the TESR would be provided on CD, and that the MOECC would not be identified as a public review location for the TESR. It was noted that all of the MOECC Areas of Interest identified in their letter will be addressed during this study. Notice of Study Update was mailed in mid-December 2015. PIC #2 invitation letter mailed on March 9, 2017. Final contact letter will be mailed concurrent with the release of the TESR on the public record.	A letter was received on May 22, 2015 from the Regional EA Coordinator with comments on the study commencement notice. Copies of all future notices and a copy of the TESR on CD (not hard copy) was requested. It was asked that their office not be identified as a review location for the TESR. A number of issues were identified that should be addressed during the study, including: noise impacts (permanent and temporary); impacts to surface water due to construction in or near a watercourse, erosion, spills or highway operation; impacts to wells due to spills, extensive dewatering or highway operation; and management of surplus materials, waster or contaminated soil. Additional information was provided with respect to these issues.	The issues identified by the MOECC were addressed during this study, and a copy of this TESR will be submitted to the MOECC upon study completion.

TABLE 2.
SUMMARY OF CONTACTS WITH EXTERNAL AGENCIES/STAKEHOLDERS DURING PRELIMINARY DESIGN

Agency	Date Contacted	Comments/Concerns	Conclusions
Ministry of Natural Resources and Forestry, Kemptville District • Resource Management Technician	Initial contact letter mailed on March 31, 2015. Information Request Form e-mailed on April 30, 2015. PIC #1 invitation letter mailed on June 9, 2015. A response letter was mailed on November 26, 2015 to the MNRF indicating that the information provided would assist the study team in completing the natural sciences and fish and fish habitat assessments for this study. Notice of Study Update was mailed in mid-December 2015. PIC #2 invitation letter mailed on March 9, 2017. Final contact letter will be mailed concurrent with the release of the TESR on the public record.	On May 25, 2015 an e-mail response to the Information Request was received. The letter provided information regarding natural heritage features and values located within the study area, fish species present, issues related to water, timing restriction periods for various aquatic thermal regimes and hibernating turtles, wetland issues, *Fisheries Act* approvals/permits, and potential species at risk issues. It was noted that the advice in the letter may become invalid under certain circumstances.	The issues identified were addressed during this study.
Ministry of Tourism, Culture and Sport • Heritage Planner	Initial contact letter mailed on February 20, 2015. PIC #1 invitation letter mailed on June 9, 2015. A response letter was mailed on November 26, 2015 to MTCS and	A letter was received by e-mail on February 27, 2015 in response to the Notice of Study Commencement. It was requested that the study team clarify the nature of the improvements at the intersection. It was noted that all Ontario government ministries must comply with the *Standards and Guidelines for Conservation of Provincial Heritage Properties*. Comments	The issues identified have been addressed during this study.

TABLE 2.
SUMMARY OF CONTACTS WITH EXTERNAL AGENCIES/STAKEHOLDERS DURING PRELIMINARY DESIGN

Agency	Date Contacted	Comments/Concerns	Conclusions
	provided a summary of the previous archaeological and built heritage and cultural heritage landscape assessments that were completed. It was explained that any areas that were not assessed that will be affected by this project will be addressed. Information regarding the evaluation of the alternatives was provided. Notice of Study Update was mailed in mid-December 2015. PIC #2 invitation letter mailed on March 9, 2017. A response letter was mailed on July 13, 2017 providing information regarding the previous archaeological and built heritage/cultural heritage landscape assessments that were completed. Final contact letter will be mailed concurrent with the release of the TESR on the public record.	were provided related to cultural heritage considerations, archaeological resources, built heritage and cultural heritage landscapes and environmental assessment reporting. It was requested that the MTCS continue to be circulated on the project. A letter was received on April 28, 2017 in response to the PIC #2 invitation. The letter noted the MTCS's interests on the study, and requested that any technical studies be submitted to MTCS prior to issuing a study completion notice.	
Ministry of Agriculture, Food and Rural Affairs	Initial contact letter mailed on February 20, 2015. PIC #1 invitation letter mailed on June 9, 2015. Notice of Study Update was mailed in mid-December 2015.	No comments/concerns received.	No issues or concerns identified.

TABLE 2.
SUMMARY OF CONTACTS WITH EXTERNAL AGENCIES/STAKEHOLDERS DURING PRELIMINARY DESIGN

Agency	Date Contacted	Comments/Concerns	Conclusions
	PIC #2 invitation letter mailed on March 9, 2017. Final contact letter will be mailed concurrent with the release of the TESR on the public record.		
Infrastructure Ontario	Initial contact letter mailed on February 20, 2015. PIC #1 invitation letter mailed on June 9, 2015. A response letter was mailed on November 26, 2015 to IO indicating that the evaluation of alternatives for this study will be undertaken, and at that time it will be determined if any IO lands will be impacted. It was noted that IO would be invited to PIC#2 where the results of the evaluation of the alternatives would be available. Notice of Study Update was mailed in mid-December 2015. PIC #2 invitation letter mailed on March 9, 2017. Final contact letter will be mailed concurrent with the release of the TESR on the public record.	The initial contact letter form was received on February 26, 2015 indicating that IO has no concerns about the study. It was requested that these requests continue to be sent. IO determined that there are no assets, however, IO owns land within the project limits. On March 3, 2015 a letter was received from the Environmental Advisor. It indicated that the proponent is responsible for conducting a title search to determine the extent of MOI land ownership, and to determine whether the project will negatively impact IO tenants and/or lands. A summary of the types of negative impacts were described. A summary of the triggers related to the MOI Class EA was provided. It was requested that IO be removed from the project circulation list if MOI owned lands are not anticipated to be impacted. It was requested that if the project will impact IO managed lands, any future notices be sent electronically to: Keith.Noronha@infrastructureontario.ca	The issues identified have been addressed during this study.

TABLE 2.
SUMMARY OF CONTACTS WITH EXTERNAL AGENCIES/STAKEHOLDERS DURING PRELIMINARY DESIGN

Agency	Date Contacted	Comments/Concerns	Conclusions
Cataraqui Region Conservation Authority • Resource Planner	Initial contact letter mailed on February 20, 2015. PIC #1 invitation letter mailed on June 9, 2015. An e-mail was sent to the Resource Planner on August 10, 2015 providing a copy of the display panels from PIC #1. A response letter was mailed to the CRCA on November 26, 2015 indicating that the contact list has been updated and that the CRCA will be notified of project updates. The information provided in the CRCA's letter will be included in the natural science and fish and fish habitat assessments. The comments received on the PIC #1 panels will be incorporated into the evaluation of the alternatives.	An e-mail was received from the Resource Planner on March 11, 2015. It was requested that the contact information for the Resource Planner be updated on the study contact list. It was explained that CRCA has interest in the following features: Sucker Creek and Crosby Creek, Newboro Lake, and the Bog Marsh Provincially Significant Wetland. It was noted that adequate stormwater management and sediment and erosion controls be provided. Any alteration of watercourses including culvert upgrades will need to be designed to ensure no increased risk of flooding and erosion upstream and downstream of the alterations, and no impact to fish habitat. An e-mail was received from the Resource Planner on July 29, 2015 indicating that the Notice of PIC#1 had been received. Since comments were previously provided, no further comments were made. However, a copy of the PIC #1 panels were requested.	The issues identified have been addressed during this study.

TABLE 2.
SUMMARY OF CONTACTS WITH EXTERNAL AGENCIES/STAKEHOLDERS DURING PRELIMINARY DESIGN

Agency	Date Contacted	Comments/Concerns	Conclusions
	Notice of Study Update was mailed in mid-December 2015. PIC #2 invitation letter mailed on March 9, 2017. Final contact letter will be mailed concurrent with the release of the TESR on the public record.	An e-mail was received on March 24, 2017 indicating that they appreciated the information received while attending PIC #2. The CRCA support the preferred alternatives as they would have little to no impacts on the natural features in the area.	
United Counties of Leeds and Grenville • Economic Development Officer • Director of Public Works, Planning Services and Asset Management	Initial contact letter mailed on February 20, 2015. PIC #1 invitation letter mailed on June 9, 2015. Notice of Study Update was mailed in mid-December 2015. PIC #2 invitation letter mailed on March 9, 2017. Final contact letter will be mailed concurrent with the release of the TESR on the public record.	The Economic Development Officer and Director of Works, Planning Services and Asset Management were members of the Municipal Advisory Committee. All issues and concerns identified during MAC meetings are summarized in **Appendix C**.	All issues/concerns raised during participation in the MAC were addressed during this study.

TABLE 2.
SUMMARY OF CONTACTS WITH EXTERNAL AGENCIES/STAKEHOLDERS DURING PRELIMINARY DESIGN

Agency	Date Contacted	Comments/Concerns	Conclusions
Township of Rideau Lakes • Mayor • Councillors • CAO • Manager of Development Services	Initial contact letter mailed on February 20, 2015. An e-mail was sent to the Manager of Development Services on March 26, 2015 thanking her for the completed initial contact letter form and the additional resource materials. PIC #1 invitation letter mailed on June 9, 2015. A response letter was mailed by MTO to the Manager of Development Services on November 25, 2015 in response to the letter received on March 25, 2015. It was explained that the Crosby Community Improvement Plan has been reviewed by the study team and is being considered as part of the evaluation of the alternatives. The former gas station as a site of concern, and interest of the local community in the local cemetery were highlighted as issues by the Township and the study team will evaluate any impacts to these sites during the study. Indicated that the results of the evaluation of the alternatives would be presented at PIC #2. The Township will continue to receive any project updates, and will continue to be involved in the study through the MAC.	The CAO and Fire Chief were members of the Municipal Advisory Committee. All issues and concern identified during MAC meetings are summarized in **Appendix C**. A letter was received on March 25, 2015 from the Manager of Development Services. It explained that Council reviewed the study commencement notice and expressed concerns with the safety of the intersection and prefers a realignment of Highway 15. A copy of the Community Improvement Plan was attached to the letter. The CIP discusses the benefits of a highway realignment to future economic development in Crosby. With respect to sensitivities in the study area, a map of the former gas station in Crosby was provided. Concerns were identified with respect to possible contamination of groundwater and surrounding soils. Concerns regarding the impact of the project on the local cemetery were also identified. The letter explained the Township vision for Crosby to be a tourist commercial hub, and the importance of this project to provide safety improvements to support this vision. The initial contact letter form was attached to the letter, indicating that the Township would be commenting on the study and providing background information.	Consultation was conducted with the Township of Rideau Lakes throughout this study. All issues/concerns raised during participation in the MAC were addressed during this study.

TABLE 2.
SUMMARY OF CONTACTS WITH EXTERNAL AGENCIES/STAKEHOLDERS DURING PRELIMINARY DESIGN

Agency	Date Contacted	Comments/Concerns	Conclusions
	A PIC #1 response letter was mailed by MTO to the Mayor of the Township on November 25, 2015 indicating that the study team is undergoing an evaluation of the alternatives. The Mayor's feedback as well as the feedback received by the MAC will be considered during the evaluation process. The technically preferred alternative will be presented at PIC #2. The Councillors all indicated on their PIC #1 comment forms that they do not require a written response to their comments. Notice of Study Update was mailed in mid-December 2015. PIC #2 invitation letter mailed on March 9, 2017.	Comment Form from the Mayor at PIC #1: • Alternative 4 is the only safe and long term solution • Any other option does not allow for a future roundabout or traffic lights based on super elevation Comments Submitted on Comment Forms by Township Councillors During PIC #1: • Indicated preference for Alternative #2 (best visibility, ease of use, not invasive to other properties, include flashing red light) • Indicated that Alternative #3 would be their second choice, but explained that the design may be confusing for drivers • Suggested refinement of Alternative #3 to provide brighter sight lines, and that through traffic not be slowed despite low turning numbers. • Suggestion to revise Alternative #3 to further distance the approach on County Road 42 east at Highway 15 and move the curve on Highway 15 so that the slope of the highway is flatter to improve visibility. It was also recommended that an off ramp from Highway 15 to County Road 42 be established for safety.	

TABLE 2.
SUMMARY OF CONTACTS WITH EXTERNAL AGENCIES/STAKEHOLDERS DURING PRELIMINARY DESIGN

Agency	Date Contacted	Comments/Concerns	Conclusions
	A response letter was mailed on July 13, 2017 providing information regarding the history of the project and acknowledging the comments provided on the alternatives. A letter was mailed by MTO to the CAO of the Township of Rideau Lakes on May 3, 2017 to provide an overview of the input that was received from members of the public. A PIC #2 Summary Report is being prepared and can be provided for information if requested. Feedback from PIC #2 indicated general support for Alternative 3-1 (Two T-intersections) and MTO requested Council's support to move forward with this alternative for the long-term solution. Final contact letter will be mailed concurrent with the release of the TESR on the public record.	Comment Form from one Councillor at PIC #2: • Concern the alternatives do not include the option that was presented as part of the original Highway 15 redesign. • Noted Alternative 1 is a viable option if implemented in 2017, and Option 3-1 and 3-2 are valid options if they are implemented within 5 years. • The commenter explained that this intersection was removed from the Highway 15 improvements to the south so that the Township could complete the Community Improvement Plan for Crosby, and we are still at this stage. In an email sent to MTO by the CAO for the Township on May 3, 2017, the CAO indicated that the letter would be presented at the next Council meeting, likely on May 23, 2017.	

TABLE 2.
SUMMARY OF CONTACTS WITH EXTERNAL AGENCIES/STAKEHOLDERS DURING PRELIMINARY DESIGN

Agency	Date Contacted	Comments/Concerns	Conclusions
Village of Westport • CAO	Received all project updates through participation on the MAC.	The CAO was a member of the Municipal Advisory Committee. All issues and concern identified during MAC meetings are summarized in **Appendix C**.	All issues/concerns raised during participation in the MAC were addressed during this study.
O.P.P. – Leeds County	Initial contact letter mailed on February 20, 2015. PIC #1 invitation letter mailed on June 9, 2015. Notice of Study Update was mailed in mid-December 2015. PIC #2 invitation letter mailed on March 9, 2017. Final contact letter will be mailed concurrent with the release of the TESR on the public record.	The OPP was a member of the Municipal Advisory Committee. All issues and concern identified during MAC meetings are summarized in **Appendix C**. Provided comments at PIC #1, indicating support for Alternative 3 (2 T intersections) but suggested that the intersections be separated by 300 m, not 200 m. Recommended increased lighting at the intersections. The option decreases the width of the highway, making left turns easier.	The comments identified were reviewed and addressed during this study.
Consortium de transport scolaire d'Ottawa	Initial contact letter mailed on February 20, 2015. PIC #1 invitation letter mailed on June 9, 2015. Notice of Study Update was mailed in mid-December 2015. PIC #2 invitation letter mailed on March 9, 2017.	No comments/concerns received.	No issues or concerns identified.

TABLE 2.
SUMMARY OF CONTACTS WITH EXTERNAL AGENCIES/STAKEHOLDERS DURING PRELIMINARY DESIGN

Agency	Date Contacted	Comments/Concerns	Conclusions
	Final contact letter will be mailed concurrent with the release of the TESR on the public record.		
Tri Board Student Transportation Services	Initial contact letter mailed on February 20, 2015. PIC #1 invitation letter mailed on June 9, 2015. Notice of Study Update was mailed in mid-December 2015. PIC #2 invitation letter mailed on March 9, 2017. Final contact letter will be mailed concurrent with the release of the TESR on the public record.	No comments/concerns received.	No issues or concerns identified.
Student Transportation of Eastern Ontario • Transportation Planner	Initial contact letter mailed on February 20, 2015. PIC #1 invitation letter mailed on June 9, 2015. Notice of Study Update was mailed in mid-December 2015. PIC #2 invitation letter mailed on March 9, 2017. Final contact letter will be mailed concurrent with the release of the TESR on the public record.	The Transportation Planner was a member of the Municipal Advisory Committee. All issues and concern identified during MAC meetings are summarized in **Appendix C**. A completed initial contact letter form was received on February 24, 2015 indicating that they have no concerns at this time, but wished to remain informed about the study.	The Student Transportation of Eastern Ontario was kept informed throughout the study.

TABLE 2.
SUMMARY OF CONTACTS WITH EXTERNAL AGENCIES/STAKEHOLDERS DURING PRELIMINARY DESIGN

Agency	Date Contacted	Comments/Concerns	Conclusions
Ontario Federation of Snowmobile Clubs	Initial contact letter mailed on February 20, 2015. PIC #1 invitation letter mailed on June 9, 2015. Notice of Study Update was mailed in mid-December 2015. PIC #2 invitation letter mailed on March 9, 2017. Final contact letter will be mailed concurrent with the release of the TESR on the public record.	No comments/concerns received.	No issues or concerns identified.
Ontario Federation of Snowmobile Clubs, District 1 Association	Initial contact letter mailed on February 20, 2015. PIC #1 invitation letter mailed on June 9, 2015. A response letter was mailed on November 26, 2015 to the OFSC indicating that the location of the trail crossing will be reviewed to determine if any impacts to the trail crossing are anticipated. It was noted that they would receive an invitation to PIC #2 to review the results of the evaluation of alternatives. Notice of Study Update was mailed in mid-December 2015.	A completed initial contact letter form was received on March 4, 2015 indicating that comments and background information would be provided. It was explained that an OFSC prescribed trail crossing of Highway 15 is located south of the intersection of Highway 15 and County Road 42. A map of the trail crossing was provided.	The issue identified was reviewed and addressed during the study. This trail crossing will not be impacted by the intersection improvements.

TABLE 2.
SUMMARY OF CONTACTS WITH EXTERNAL AGENCIES/STAKEHOLDERS DURING PRELIMINARY DESIGN

Agency	Date Contacted	Comments/Concerns	Conclusions
	PIC #2 invitation letter mailed on March 9, 2017. Final contact letter will be mailed concurrent with the release of the TESR on the public record.		
Eastern Ontario Trails Alliance	Initial contact letter mailed on February 20, 2015. PIC #1 invitation letter mailed on June 9, 2015. Notice of Study Update was mailed in mid-December 2015. PIC #2 invitation letter mailed on March 9, 2017. Final contact letter will be mailed concurrent with the release of the TESR on the public record.	No comments/concerns received.	No issues or concerns identified.
Rideau Heritage Route Tourism Association • Executive Director	Received all project updates through participation on the MAC.	The Executive Director was a member of the Municipal Advisory Committee. All issues and concern identified during MAC meetings are summarized in **Appendix C**.	All issues/concerns raised during participation in the MAC were addressed during this study.
Rideau Canal National Historic Site • Planner	Received all project updates through participation on the MAC.	The Planner, Ontario Waterways was a member of the Municipal Advisory Committee. All issues and concern identified during MAC meetings are summarized in **Appendix C**.	All issues/concerns raised during participation in the MAC were addressed during

TABLE 2.
SUMMARY OF CONTACTS WITH EXTERNAL AGENCIES/STAKEHOLDERS DURING PRELIMINARY DESIGN

Agency	Date Contacted	Comments/Concerns	Conclusions
			this study.
Rideau Ridge Riders Snowmobile Club	Initial contact letter mailed on February 20, 2015. PIC #1 invitation letter mailed on June 9, 2015. Notice of Study Update was mailed in mid-December 2015. PIC #2 invitation letter mailed on March 9, 2017. Final contact letter will be mailed concurrent with the release of the TESR on the public record.	An email was received on June 24, 2015 from the Rideau Ridge Riders Snowmobile Club indicating that they were unable to attend PIC #1 and requested any available information. The concern identified was the ability to cross the Old Abandoned Rail Line from Brockville to Westport just south of the intersection. There is concern about the number of traffic lanes that snowmobile trail users need to cross, as it is a safety concern.	The issue identified was reviewed and addressed during the study. No changes to the traffic lanes are proposed.

3.3 Correspondence with Aboriginal Communities

Correspondence with Aboriginal communities was carried out throughout the preliminary design study in accordance with the *Ontario Environmental Bill of Rights* and the *Consultation with Aboriginal Peoples – Interim Directive* (August 2007). The comments received were taken into account during the preliminary design study. Formal responses were provided as necessary to the comments received from Aboriginal communities during this preliminary design study. Correspondence with Aboriginal communities is presented in **Appendix D** for study commencement, **Appendix F** for PIC #1 notification, and **Appendix G** for PIC #2 notification.

Notification of Study Commencement

Aboriginal communities were notified of study commencement through initial contact letters sent by MTO via mail on July 24, 2013. These letters introduced the study, requested background information, asked the Aboriginal communities to identify any issues or concerns related to the study and requested that the study team be contacted if any Aboriginal communities were interested in obtaining the results of the archaeological investigation for this study. A comment form was provided for Aboriginal communities to fill out and return to the study team. A copy of the initial contact letter to Aboriginal communities is presented in **Appendix D**.

A letter was received from the Alderville First Nation, from Dave Simpson, Lands and Resources (dsimpson@aldervillefirstnation.ca) on February 26, 2015. In the letter, it was acknowledged that MTO advised the Alderville First Nation of the study, and that it is appreciated that the MTO is conforming to the requirements of the Duty to Consult Process. It was requested that the study team provide any information regarding project updates and environmental impacts during construction, should they occur. Contact information was provided. The Alderville First Nation has received all project updates during this study, and a final contact letter will be sent to confirm that no significant environmental effects will result from this study.

Public Information Centres

Aboriginal communities were invited by letter to attend the informal drop-in prior to PIC #1 and PIC #2. Invitations to the PICs were sent by MTO via mail on June 8, 2015 and June 15, 2015 (PIC #1) and on March 9, 2017 (PIC#2) with a copy of the PIC brochure. No representatives from Aboriginal communities attended the PICs, or provided comments following the PICs. The PIC invitation letters sent to Aboriginal communities on MTO letterhead are presented in **Appendix F** (PIC #1) and **Appendix G** (PIC #2).

Notification of Study Completion

A final contact letter will be sent to Aboriginal communities concurrent with the release of the TESR for public review. The letter will provide details on the recommended preliminary design and the Class EA process, and will identify locations where copies of the TESR are available for review, the closing date for submission of comments, and the persons to contact for further information. The 'Notice of Study Completion' will be attached to the letter.

3.4 Correspondence with the Public

Correspondence with members of the public was carried out throughout the preliminary design study. Consultation with the public during this study included the following:

- preparation and maintenance of a property owner and members of the public contact list;
- publication of Ontario Government Notices in local newspapers;

- notification and hosting of Public Information Centre #1;
- additional consultation activities, including participation at local community events and the use of project posters and postcards;
- kitchen table meetings with affected property owners;
- notification and hosting of Public Information Centre #2; and,
- notification of the submission of the TESR and the opportunity to review and comment within the 30 day public review period.

Table 3 summarizes the comments/concerns identified by members of the public throughout the study and outlines the study team's responses to these concerns. Any comments received were taken into account during the preliminary design study. Formal responses were provided as necessary to the comments received from members of the public during this preliminary design study. Correspondence with members of the public is presented in **Appendix E**.

Notification of Study Commencement

Property owner information was obtained from the contact lists for the previous Highway 15 improvements study. Other interested residents and members of the public were added to the public contact list throughout the course of the study, based on responses received after publication of the OGNs and after the PICs.

Information on the Ontario Government Notices published in the local newspapers during this study is presented in **Section 3.1**.

Property owners were notified of study commencement through initial contact letters sent on February 20, 2015. These letters introduced the study and encouraged property owners to contact the study team with any questions and concerns. A copy of the initial contact letter is presented in **Appendix E**.

Public Information Centres, Additional Consultation and Kitchen Table Meetings

The PIC #1 brochure was prepared and mailed directly to the member of the public on the public contact list and mailed or e-mailed to the cottage associations during the week of June 8, 2015. In addition, a copy of the brochure was distributed in the immediate vicinity of the intersection, to approximately 240 points of call through Canada Post Bulk Mailing during the week of June 8, 2015. Additional copies of the brochure were available at the PIC. The PIC #1 invitations and brochure are presented in **Appendix F**.

The Study Team conducted additional consultation activities on July 25, 2015 including participation at the Crosby Flea Market, Delta Fair, and visits at points of interest to meet with local residents. As a result of these activities, the study team posted six static displays and distributed approximately 250 postcards. Project posters and informational postcards were displayed at local businesses, including Gordanier Grocery, Kudrinko's Grocery, Forfar Dairy, Len's Cove Marina, and Bayview Yacht Harbour. The intent of this additional consultation was to reach out to community members during the high season to ensure that seasonal residents and community members were aware of the project and could submit comments. A full summary of the additional consultation activities is presented in the *Summary of Additional Consultation Activities Memo* (LGL Limited 2015) in **Appendix E**.

Kitchen table meetings were held during November 2016 with property owners that were potentially impacted by Alternatives 2, 3-1 and 3-2 to provide information regarding the evaluation of the alternatives, and to obtain input from the property owners. A summary of the issues identified during these meetings are presented in **Table 3**.

A PIC #2 Brochure was prepared and mailed directly to all members of the general public on the study contact list and mailed or e-mailed to the cottage associations during the week of March 9, 2017. In response to a comment that was received from the Township of Rideau Lakes prior to PIC #2, a revised brochure was circulated to all members of the general public and external agencies during the week of March 13, 2017. Additional copies of the revised PIC #2 Brochure were available at the PIC. The PIC #2 invitations and brochure are presented in **Appendix G**.

Notification of Study Completion

The 'Notice of Study Completion' will be mailed directly to the members of the public on the public contact list concurrent with the release of the TESR for public review. Property owners with potential property impacts will be sent a final contact letter concurrent with the release of the TESR for public review. The letter will provide details on the recommended preliminary design and the Class EA process, and will identify locations where copies of the TESR are available for review, the closing date for submission of comments, and the persons to contact for further information. The 'Notice of Study Completion' will be attached to the letter.

3.5 Public Information Centre #1

Public Information Centre #1 was held at the Portland Community Hall on Wednesday, June 24, 2015. The purpose of PIC #1 was to present the evaluation methodology and preliminary design alternatives developed for the project through an informal drop-in session and to provide further opportunities for public involvement. The PIC was open to the public from 4:00 p.m. to 8:00 p.m.

Representatives from the Ministry of Transportation and their consultants were in attendance at PIC #1 to present materials and answer questions. A total of 40 people signed the attendance register, including the following representatives from external agencies: MPP Steve Clark; the Mayors of Westport and the Township of Rideau Lakes; seven Township of Rideau Lakes Councillors; two staff representatives from the Township of Rideau Lakes (Chief Administrative Officer/MAC member and Roads Coordinator & Drainage Superintendent); a representative from the County of Leeds and Grenville (Director of Works, Planning Services and Asset Management/MAC member); and a representative/MAC member from the Leeds County Ontario Provincial Police (OPP).

Displays and exhibits available during PIC #1 included:

- copies of the PIC #1 brochure with information about the PIC and the study;
- aerial photos showing the existing environmental conditions;
- drawings of the preliminary design alternatives for intersection improvements;
- various text displays describing the purpose of PIC #1, the study area, the MTO Class Environmental Assessment process, the existing environmental and highway conditions, a summary describing the Municipal Advisory Committee, the results of the screening process to determine the short list of alternatives, the short listed alternative designs, the draft evaluation criteria, a summary of environmental sensitivity/significance, study schedule and future consultation activities, information regarding the *Freedom of Information and Protection of Privacy Act* and *Accessibility for Ontarians with Disabilities Act*, and an invitation to provide comments on the study.

The PIC #1 displays are presented in **Appendix F**.

Most of the PIC #1 attendees were interested in reviewing and gaining an understanding of the design alternatives for the intersection. During PIC #1, a number of concerns were raised regarding the safety of the intersection as it relates to the reduced sight lines that result from the current configuration of the intersection and the excessive speed of traffic through the area. PIC attendees were encouraged to see that

the study team had engaged with representatives from the community and had established a Municipal Advisory Committee to help guide the development of alternative solutions. The PIC #1 attendees were encouraged to provide written comments to the study team.

A total of 24 comments were received by the study team; 18 of these were submitted at the PIC, and the remaining six were received after the PIC via e-mail or fax. Response letters to the written comments were mailed/e-mailed following PIC #1. Copies of the PIC #1 comments and response letters are presented in **Appendix F**. A summary of the comments that were raised by participants at/after the PIC is presented in **Table 2** (agencies) and **Table 3** (members of the public).

3.6 Public Information Centre #2

Public Information Centre #2 was held at the Portland Community Hall on Thursday, March 23, 2017. The purpose of PIC #2 was to present the evaluation methodology and preliminary design alternatives developed for the project through an informal drop-in session and to provide further opportunities for public involvement. The PIC was open to the public from 4:00 p.m. to 8:00 p.m.

Representatives from the Ministry of Transportation and their consultants were in attendance at PIC #2 to present materials and answer questions. A total of 18 people attended the PIC, including 10 members of the public, and eight representatives from external agencies including: the Cataraqui Region Conservation Authority, Parks Canada, Township of Rideau Lakes (three Councillors), United Counties of Leeds and Grenville, Lanark County and the Mayor of Westport/Elected Warden of the United Counties of Leeds and Grenville.

Displays and exhibits available during PIC #2 included:

- copies of the revised PIC #2 brochure with information about the PIC and the study;
- drawings of the preliminary design alternatives, including the technically preferred alternatives for the short-term and long-term scenarios;
- various text displays describing the purpose of PIC #2, the study area, the study process, the existing highway conditions, the short listed alternatives, evaluation methodology, the results of the evaluation of the alternatives, the technically preferred short-term and long-term solutions, summary of impacted property owner meetings, technically preferred alternatives, next steps, study schedule, information regarding the *Freedom of Information and Protection of Privacy Act* and *Accessibility for Ontarians with Disabilities Act*, and an invitation to provide comments on the study.

The displays presented at PIC #2 are presented in **Appendix G**.

Most of the PIC #2 attendees were interested in reviewing and gaining an understanding of the design alternatives for the intersection. Participants had a range of comments, three individuals preferred Alternative 3-1, two individuals preferred Alternative 2, one individual preferred Alternative 1 if implemented in 2017, and Alternative 3-1 and 3-2 if they are implemented within 5 years, and another commenter preferred Alternative 4-2. During PIC #2, attendees were encouraged to review the evaluation of alternatives and to discuss any questions about the evaluation with members of the study team. The PIC #2 attendees were encouraged to provide written comments to the study team.

A total of 10 comments were received by the study team; seven of these were submitted at the PIC, and the remaining three were received after the PIC via e-mail or mail. Two of the comments were received from external agencies. Response letters to the written comments were mailed/e-mailed following PIC #2. Copies of the comments and response letters are presented in **Appendix G**. A summary of the comments that were raised by participants at/after the PIC #2 is presented in **Table 2** (agencies) and **Table 3** (members of the public).

TABLE 3.
COMMENTS RAISED BY MEMBERS OF THE PUBLIC DURING PRELIMINARY DESIGN, AND STUDY TEAM'S RESPONSE

Issue/Comment	Study Team's Response
CORRESPONDENCE AFTER PIC #1	
On the comment form, a member of the public indicated that Alternative #4 is best, given the existing almost blind right angle turn on Highway 15. The commenter explained that Alternative #4 would soften the right angle turn on the highway.	The existing sight lines for the turning movements at the intersection have been evaluated, including the turning movement that were noted. These turning movements and the sight lines needed to support the safe turning movements at the intersection will be included as part of the evaluation of the short-listed alternatives (including new alternatives developed based on feedback received at PIC #1). Upon completion of the evaluation of the alternatives, a technically preferred alternative will be selected and will be presented at PIC #2 in late fall 2015.
On the comment form, a member of the public expressed concern regarding stormwater quality measures to minimize contaminant flows and nutrient flows to Newboro Lake. In addition, the commenter asked about potential groundwater contamination from the former gas station.	The study team is currently undertaking an evaluation of alternatives for the intersection. Upon selection of the preferred alternative, recommendations regarding mitigating impacts to stormwater quality will be made. Erosion and sediment control measures will be recommended to ensure that no study area watercourse or waterbodies (Newboro Lake) will be impacted as a result of the project. Later, when the project nears construction, a detailed sediment and erosion control plan will be prepared as part of the contract package and will be implemented prior to, during, and post-construction. In regards to potential groundwater contamination from the former gas station, evaluation of this issue is beyond the limitations of this Ministry study and we cannot provide specific additional information. This study will, however, consider opportunities to address potential contamination within the roadway rights of way disturbed during construction, and will consider the potential for contaminated groundwater to be exposed in the roadside ditch and/or be transported to nearby watercourses or waterbodies. The erosion and sediment control recommendations will include a discussion of this issue, and will provide recommendations related to the disposal of contaminated groundwater and soils. The study team appreciates receiving comments on the alternatives. The study team is undertaking an evaluation of the short-listed alternatives (including new alternatives developed based on feedback received at PIC #1), using the evaluation criteria presented at PIC #1. The study team along with feedback from the project Municipal Advisory Committee will consider the comments received from participants at PIC #1, during the evaluation process. Upon completion of the evaluation of the alternatives, a technically preferred alternative will be selected and will be presented at PIC #2 in late fall 2015.

TABLE 3.
COMMENTS RAISED BY MEMBERS OF THE PUBLIC DURING PRELIMINARY DESIGN, AND STUDY TEAM'S RESPONSE

Issue/Comment	Study Team's Response
A member of the public made the following comments on their comment form: 1. Recommended that speed reduction with warnings for the curve from the hall to past the car dealership be implemented. 2. Suggested that the Crosby Community Hall be removed or relocated in order for the highway to be realigned. 3. Commented that the new intersection at County Road 42 and Highway 15 would be dangerous without speed reduction measures.	1. Highway 15 is a major arterial route between Ottawa and Kingston. Localized speed reductions on an arterial route are provided when a safety analysis has shown that a significant accident history is present and related to the speeds. Based on the collision analysis conducted by the study team, the number of accidents attributed to the operation of the intersection was low and does not meet the Ministry's requirements to qualify for a localized speed reduction. The number of accidents that have occurred over the past few years were mainly attributed to human behaviour, weather conditions and that speed was not cited as a factor in the collision. The study area signage is being considered as part of the evaluation to determine if enhanced signage can better inform drivers of the approaching intersection. 2. The study team has noted the comment related to the Crosby Community Centre. However, the Ministry does not have authority over the future use and planning of the Community Centre. The recommended alternatives do not solely avoid or impact the Community Centre, but address the safety needs of the study area. Impacts to the Community Centre will be assessed after the technically preferred alternative is selected. 3. The study team is considering many safety factors when assessing the alternatives, including the influence of speeds through the intersection. These factors, including the posted speed limits, will be included as part of the evaluation of the short-listed alternatives. The study team appreciates receiving comments on the alternatives. The study team is undertaking an evaluation of the short-listed alternatives (including new alternatives developed based on feedback received at PIC #1), using the evaluation criteria presented at PIC #1. The study team along with feedback from the project Municipal Advisory Committee will consider the comments received from participants at PIC #1, during the evaluation process. Upon completion of the evaluation of the alternatives, a technically preferred alternative will be selected and will be presented at PIC #2 in late fall 2015.
A member of the public made the following comments on their comment form: 1. Concerns related to safety for vehicles crossing Highway 15 (angle is high risk when travelling east to west). The commenter requested that the angle be reviewed.	1. The existing sight lines for the turning movements at the intersection have been evaluated, including the turning movement that were noted. These turning movements and the sight lines needed to support the safe turning movements at the intersection will be included as part of the evaluation of the short-listed alternatives. Upon completion of the evaluation of the alternatives, a technically preferred alternative will be selected and will be presented at PIC #2 in late fall 2015.

TABLE 3.
COMMENTS RAISED BY MEMBERS OF THE PUBLIC DURING PRELIMINARY DESIGN, AND STUDY TEAM'S RESPONSE

Issue/Comment	Study Team's Response
2. Requested a copy of the results of the traffic count that is planned for August 2015. 3. Explained that the new marking at the stop sign from Westport to Brockville has been changed since ripping up the pavement and that there is a high risk for severe accidents. 4. Requested that another resident's concern regarding part of the road falling in south of County Road 42 between Crosby and Elgin. 5. Noted that the pavement is better now on the section of Highway 15 that has been completed. 6. Asked if the study team is aware that there are three new businesses in Crosby – restaurant, construction business, and general store.	2. A copy of the PIC#1 slide with the traffic count was attached to this letter. Additional traffic count information is not yet available. 3. The pavement at the Highway 15 and CR 42 intersection was being milled and overlaid during the time of the Public Information Centre and the pavement markings that were noted were temporary. The concerns were passed on to the construction contractor and field inspection personnel and have been resolved. 4. This information has been provided to the contractor, and will be resolved. 5. The study team appreciates receiving this feedback. 6. The study team is aware of the new businesses in the Village of Crosby, and have updated the project mapping to reflect the new local businesses in the area. We have also completed additional public outreach since PIC #1 to engage these businesses. The study team appreciates receiving comments on the alternatives. The study team is undertaking an evaluation of the short-listed alternatives (including new alternatives developed based on feedback received at PIC #1), using the evaluation criteria presented at PIC #1. The study team along with feedback from the project Municipal Advisory Committee will consider the comments received from participants at PIC #1, during the evaluation process. Upon completion of the evaluation of the alternatives, a technically preferred alternative will be selected and will be presented at PIC #2 in late fall 2015.
A member of the public made the following comments on their comment form: 1. Expressed concern about speeding on Highway 15 within the study limits. 2. Recommended that double lines (no passing) are painted on Highway 15 and that blind driveway signs are installed. 3. The east side of the intersection is the worst blind side due to traffic flow, and a softer corner with a more square crossing would likely address the problem.	1. Highway 15 is a major arterial route between Ottawa and Kingston. Localized speed reductions on an arterial route are provided when a safety analysis has shown that a significant accident history is present and related to the speeds. Based on the collision analysis conducted by the study team, the number of accidents attributed to the operation of the intersection was low and does not meet the Ministry's requirements to qualify for a localized speed reduction. The number of accidents that have occurred over the past few years were mainly attributed to human behaviour, weather conditions and that speed was not cited as a factor in the collision. The Study area signage is being considered, however, as part of the evaluation to determine if enhanced signage can better inform drivers of the approaching intersection. 2. The comment is noted by the study team and will be considered as part of the evaluation process of the short-listed alternatives. 3. The intersection angles for Highway 15 and CR 42 intersection has been reviewed against Ministry standards. Opportunities to enhance visibility are being considered in the

TABLE 3.
COMMENTS RAISED BY MEMBERS OF THE PUBLIC DURING PRELIMINARY DESIGN, AND STUDY TEAM'S RESPONSE

Issue/Comment	Study Team's Response
4. Requested that the study team contact local residents using e-mail or social media.	evaluation of alternatives. The comments have been noted by the study team and will be consider as part of the evaluation process of the short-listed alternatives. 4. To date, it has not been a general practice for the Ministry to notify property owners and members of the public using e-mail or social media. The Ministry typically sends letters via mail delivery directly to affected property owners and other members of the public with an interest in the study to ensure that they receive correspondence regarding environmental assessments. If there is a specific request made to be contacted using email or social media, we would accommodate the request, but also supplement communication with the Ministry's general practice of sending letters via mail. The study team appreciates receiving comments on the alternatives. The study team is undertaking an evaluation of the short-listed alternatives (including new alternatives developed based on feedback received at PIC #1), using the evaluation criteria presented at PIC #1. The study team along with feedback from the project Municipal Advisory Committee will consider the comments received from participants at PIC #1, during the evaluation process. Upon completion of the evaluation of the alternatives, a technically preferred alternative will be selected and will be presented at PIC #2 in late fall 2015.
A member of the public made the following comments on their comment form: 1. Recommended that the speed limit be lowered at the intersection. Despite enforcement concerns, it would still reduce some of the traffic. 2. Explained that the commenter's family owns the Maple Bush east of Highway 15, and would not allow any alteration of the bush or sugarhouse. Requested that the study team look at Highway 15 and Sweets Corners Road where the passing lanes go through the intersection. 3. Requested that the Ministry look at Highway 15 at Sweet's Corner because	1. Highway 15 is a major arterial route between Ottawa and Kingston. Localized speed reductions on an arterial route are provided when a safety analysis has shown that a significant accident history is present and related to the speeds. Based on the collision analysis conducted by the study team, the number of accidents attributed to the operation of the intersection was low and does not meet the Ministry's requirements to qualify for a localized speed reduction. The number of accidents that have occurred over the past few years were mainly attributed to human behaviour, weather conditions and that speed was not cited as a factor in the collision. The Study area signage is being considered, however, as part of the evaluation to determine if enhanced signage can better inform drivers of the approaching intersection. 2. The study team is currently undertaking an evaluation of alternatives for the intersection, and we have noted the concern regarding impacts to this property. Upon selection of the preferred alternative, it will be determined if any direct impacts are anticipated to this property and the impacts will be summarized. The study team will host Public Information Centre #2, and the commenter will receive an invitation to participate. At that time, the

TABLE 3.
COMMENTS RAISED BY MEMBERS OF THE PUBLIC DURING PRELIMINARY DESIGN, AND STUDY TEAM'S RESPONSE

Issue/Comment	Study Team's Response
the passing lanes go through the intersection. 4. Explained that signage at Crosby Road confuses commuter traffic, and turn at the wrong road, resulting in traffic backing up onto Highway 15 or causing a bottleneck on Crosby Road.	study team will have further details on the proposed improvements at the intersection and can further discuss any potential impacts to the property. 3. The Ministry previously completed a Class Environmental Assessment Study for improvements to Highway 15 south of Crosby, including the intersection at Sweet Corner's Road, in partnership with ADI Limited. Recommendations for passing lanes was determined as part of this study. During detail design, the location and length of passing lanes were further evaluated based on engineering decisions including: distance to passing lane locations in neighbouring sections of Highway 15 and highway geometrics. The locations selected by the analysis did consider the implications of allowing the passing lane through an intersection and the passing lanes meet Ministry standards. In this instance, a passing lane at this location has the following advantages: • A passing lane in the intersection helps improve safety by passing safely clear of the vehicle being passed • Any vehicle which is going slower than the normal speed of traffic must be driven in the right hand side of the road, unless it is passing traffic moving in the same direction or preparing for a left turn 4. The Study area signage is being considered as part of the evaluation to determine if enhanced signage can better inform drivers of the approaching intersection. The study team appreciates receiving comments on the alternatives. The study team is undertaking an evaluation of the short-listed alternatives (including new alternatives developed based on feedback received at PIC #1), using the evaluation criteria presented at PIC #1. The study team along with feedback from the project Municipal Advisory Committee will consider the comments received from participants at PIC #1, during the evaluation process. Upon completion of the evaluation of the alternatives, a technically preferred alternative will be selected and will be presented at PIC #2 in late fall 2015.

TABLE 3.
COMMENTS RAISED BY MEMBERS OF THE PUBLIC DURING PRELIMINARY DESIGN, AND STUDY TEAM'S RESPONSE

Issue/Comment	Study Team's Response
A member of the public made the following comments on their comment form: 1. Speed limit reduction should be considered along both Highway 15 and County Road 42 2. The slope at the intersection is hazardous when traveling from Westport 3. The Village of Crosby Community Improvement Plan will cause more safety issues unless the intersection is re-constructed 4. Alternative #2 is a temporary solution 5. Alternative #3 is more dangerous due to the location of commercial and residential entrances, and not enough stretch of highway before turning lane to Westport 6. Alternative #3A is more viable, it has less points of impact (32 points presently at the intersection) 7. The Township will not permit erection of a new garage for this business until a decision on this intersection is made. This has caused setbacks for this company/small business.	1. Highway 15 is a major arterial route between Ottawa and Kingston. Localized speed reductions on an arterial route are provided when a safety analysis has shown that a significant accident history is present and related to the speeds. Based on the collision analysis conducted by the study team, the number of accidents attributed to the operation of the intersection was low and does not meet the Ministry's requirements to qualify for a localized speed reduction. The number of accidents that have occurred over the past few years were mainly attributed to human behaviour, weather conditions and that speed was not cited as a factor in the collision. The Study area signage is being considered, however, as part of the evaluation to determine if enhanced signage can better inform drivers of the approaching intersection. 2. The intersection grades (slopes) have been reviewed by the study team and will be considered during the evaluation of alternatives for the intersection. 3. The evaluation of alternatives is considering The Village of Crosby Community Improvement Plan. Upon selection of the preferred alternative, it will be determined if any direct impacts are anticipated to prevent the implementation of the plan and the impacts will be summarized. 4. Alternative #2 was not developed as a temporary solution. It is a set of solutions that can be implemented, if selected as the preferred alternative, that address many of the safety deficiencies identified by the study team. A range of alternatives was developed and presented at PIC #1 to provide multiple alternatives that considers safety improvements, impacts to the environment, and cost. The study team is currently evaluating the short-listed alternatives presented at PIC #1 (including new alternatives developed based on feedback received at PIC #1). Upon completion of the evaluation of the alternatives, a technically preferred alternative will be selected and will be presented at PIC #2 in late fall 2015. 5. The comment has been noted by the study team and will be considered as part of the evaluation process of the short-listed alternatives and will be incorporated into the technically preferred alternative if applicable. 6. The comment has been noted by the study team and will be considered as part of the evaluation process of the short-listed alternatives and will be incorporated into the technically preferred alternative if applicable.

TABLE 3.
COMMENTS RAISED BY MEMBERS OF THE PUBLIC DURING PRELIMINARY DESIGN, AND STUDY TEAM'S RESPONSE

Issue/Comment	Study Team's Response
8. Signage is required identifying Forfar, Westport and Newboro further away from the intersection. 9. Flashing beacon lights will help 10. Speed is the commenter's biggest concern, with the highway being a major truck route 11. Visibility due to the corner and the slope from Westport are a cause for concern 12. The hazardous intersection causes confusion, safety issues, and accidents and should be realigned in the very near future.	7. The comment has been noted by the study team and will be considered as part of the evaluation process of the short-listed alternatives and will be incorporated into the technically preferred alternative if applicable. 8. The comment has been noted by the study team and will be considered as part of the evaluation process of the short-listed alternatives and will be incorporated into the technically preferred alternative if applicable. 9. The comment has been noted by the study team and will be considered as part of the evaluation process of the short-listed alternatives and will be incorporated into the technically preferred alternative if applicable. 10. The comment has been noted by the study team and will be considered as part of the evaluation process of the short-listed alternatives and will be incorporated into the technically preferred alternative if applicable. 11. The intersection grades (slopes) have been reviewed by the study team and will be considered during the evaluation of alternatives for the intersection. The comment has been noted by the study team and will be considered as part of the evaluation process of the short-listed alternatives and will be incorporated into the technically preferred alternative if applicable. 12. The comment has been noted by the study team and will be considered as part of the evaluation process of the short-listed alternatives and will be incorporated into the technically preferred alternative if applicable. The study team appreciates receiving comments on the alternatives. The study team is undertaking an evaluation of the short-listed alternatives (including new alternatives developed based on feedback received at PIC #1), using the evaluation criteria presented at PIC #1. The study team along with feedback from the project Municipal Advisory Committee will consider the comments received from participants at PIC #1, during the evaluation process. Upon completion of the evaluation of the alternatives, a technically preferred alternative will be selected and will be presented at PIC #2 in late fall 2015.

TABLE 3.
COMMENTS RAISED BY MEMBERS OF THE PUBLIC DURING PRELIMINARY DESIGN, AND STUDY TEAM'S RESPONSE

Issue/Comment	Study Team's Response
A member of the public made the following comments on their comment form: 1. Concerns regarding speeding at the intersection, recommended speed reduction. 2. Recommended updating the traffic count given changes to local businesses in recent years (establishment of a new business several years ago, another new business, and the increase in traffic associated with French's Trucking and the more recently opened businesses). 3. Concern that the new bridge location at Crosby Creek will introduce more sightline issues. The commenter asked why the bridge was not replaced at its existing location. 4. Asked about the plan for the highway and Crosby Hall, as the alignment of Highway 15 north of the bridge will shift to accommodate the new bridge. 5. Suggested moving Highway 15 to the south through the MTO owned property at the corner. 6. The Crosby Road access at the cemetery is important for moving farming equipment, and the commenter would not support closure of this access. 7. Alternative #1 is a start and a short term fix	1. Highway 15 is a major arterial route between Ottawa and Kingston. Localized speed reductions on an arterial route are provided when a safety analysis has shown that a significant accident history is present and related to the speeds. Based on the collision analysis conducted by the study team, the number of accidents attributed to the operation of the intersection was low and does not meet the Ministry's requirements to qualify for a localized speed reduction. The number of accidents that have occurred over the past few years were mainly attributed to human behaviour, weather conditions and that speed was not cited as a factor in the collision. The Study area signage is being considered, however, as part of the evaluation to determine if enhanced signage can better inform drivers of the approaching intersection. 2. MTO is in the process of obtaining updated traffic counts for the study location. The comment has been noted by the study team and will be considered as part of the evaluation process of the short-listed alternatives. Updated traffic count data will reflect recent changes to businesses in the area and will be incorporated into the technically preferred alternative, where possible. 3. The location of the new bridge is being incorporated into the development of alternatives at the intersection to understand the impact to sight lines. The bridge was located adjacent to the existing bridge for staging purposes and to keep traffic flowing during construction. 4. The study team has noted the comments related to the Crosby Community Centre. However, the Ministry does not have authority over the future use and planning of the Community Centre. Based on the study team's review of the construction drawings, the new alignment (for the bridge) does not appear to impact the community hall. 5. Moving Highway 15 to the south will be considered as part of the evaluation process of the short-listed alternatives. 6. The study team is currently undertaking an evaluation of alternatives for the intersection, and upon selection of the preferred alternative, it will be determined if any impacts are anticipated to Crosby Road. The concerns regarding access and ability to mobilize farming equipment from this access point is noted by the study team. 7. The comment has been noted by the study team and will be considered as part of the evaluation process of the short-listed alternatives (including new alternatives developed based on feedback received at PIC #1). Alternatives were developed and presented that addressed a range of safety needs, environmental impacts, costs, and timelines to implement. The study team is currently evaluating these alternatives based on the criteria

TABLE 3.
COMMENTS RAISED BY MEMBERS OF THE PUBLIC DURING PRELIMINARY DESIGN, AND STUDY TEAM'S RESPONSE

Issue/Comment	Study Team's Response
8. Alternative #2 may help but won't fix the issues 9. Concerns regarding Alternative #3 as it would result in the highway being closer and would split the commenter's house from the upper field, and would eliminate a portion of the yard and a portion of the pasture. The westerly section of the lawn keeps weeds and poisonous parsnip from invading the lawn. This alternative also shouldn't be considered due to safety concerns. 10. Prefer Alternative #3A over #3 but there would still be a great impact on the pasture and divide the property. 11. Requested a review of the drainage to address standing water from Highway 15 run off and the spread of cattails onto the commenter's property. 12. Recommended a new alternative – realign County Road 42 from Forfar to Crosby from its current location to the old highway bed adjacent to Crosby Storage and connect to Highway 15 near Chant's Farm. 13. Concerns about a traffic light at this intersection unless the curve is removed.	presented at PIC #1. Upon completion of the evaluation of the alternatives, a technically preferred alternative will be selected and will be presented at PIC #2 in late fall 2015. The study team appreciates the opinion of this alternative. 8. Alternative #2 is a set of solutions that address many of the safety deficiencies identified by the study team. A range of alternatives was developed and presented at PIC #1 to provide multiple alternatives that consider safety improvements, impacts to the environment, cost and timelines to implement. The study team is currently evaluating the short-listed alternatives. Upon completion of the evaluation of the alternatives, a technically preferred alternative will be selected and will be presented at PIC #2 in late fall 2015. The study team appreciates the opinion of this alternative. 9. Alternative #3 is a solution that addresses many of the safety deficiencies identified by the study team. A range of alternatives was developed and presented at PIC #1 to provide multiple alternatives that considers safety improvements, impacts to the environment, cost and timelines to implement. The study team is currently evaluating the short-listed alternatives. Upon completion of the evaluation of the alternatives, a technically preferred alternative will be selected and will be presented at PIC #2 in late fall 2015. At this time, we will better understand if any impacts are anticipated to this property, and will be able to discuss this further. 10. The study team is considering how modifications, such as presented in Alternative #3A and in comment #12 below, that meet the safety improvements that a tee intersection can provide, while addressing the property concerns that were noted in the previous comment. These modifications will be evaluated with the study. 11. The comment has been noted by the study team. A drainage report was prepared as part of the previous detail design study for this section of Highway 15. The findings of the drainage report will be reviewed with respect to the alternatives being developed as part of this Preliminary Design Study. 12. The comment has been noted by the study team and will be considered as part of the evaluation process of the short-listed alternatives. 13. The concern regarding a traffic light is noted by the study team and will be considered as part of the evaluation process of the short-listed alternatives. Upon completion of the evaluation of the alternatives, a technically preferred alternative will be selected and will be presented at PIC #2 in late fall 2015.

TABLE 3.
COMMENTS RAISED BY MEMBERS OF THE PUBLIC DURING PRELIMINARY DESIGN, AND STUDY TEAM'S RESPONSE

Issue/Comment	Study Team's Response
14. The slope of County Road 42 on the west side of Highway 15 needs to be removed. 15. Recommend additional signage, for example, curve signs, light beacons, speed reduction signs. Recommended moving signs for Westport past the Crosby Road access and the Crosby Road sign (south) towards Elgin. 16. Recommend annual repainting of the roadway lines by MTO. 17. Concerns about a roundabout being considered at this intersection.	14. The intersection grades (slopes) have been reviewed by the study team and will be considered during the evaluation of alternatives for the intersection. 15. The comment has been noted by the study team and will be considered as part of the evaluation process of the short-listed alternatives. 16. The comment has been noted by the study team and will be considered as part of the evaluation process of the short-listed alternatives. Alternative 1 includes regular review and maintenance of lane markings to ensure visibility, and this will be considered for all alternatives. In addition, this comment has been forwarded to MTO maintenance staff who perform routine reviews of provincial highways to determine maintenance requirements. 17. In accordance with the Ministry policies and procedures, a roundabout will be considered as an alternative when the intersection meets the warrants for a traffic signal. Based on the current traffic volumes and project growth, it is not anticipated that these warrants would be met within the timeline of this study. However, this study is considering the longer term needs, beyond these timelines, when evaluating alternatives so as not to preclude the future construction of a signalized intersection or roundabout when the warrants are met. The study team appreciates receiving comments on the alternatives. The study team is undertaking an evaluation of the short-listed alternatives (including new alternatives developed based on feedback received at PIC #1), using the evaluation criteria presented at PIC #1. The study team along with feedback from the project Municipal Advisory Committee will consider the comments received from participants at PIC #1, during the evaluation process. Upon completion of the evaluation of the alternatives, a technically preferred alternative will be selected and will be presented at PIC #2 in late fall 2015.
A member of the public made the following comments on their comment form: 1. Recommended that traffic lights be installed at this intersection, given that they have been installed at other intersections in the region (including Highway 15 and Bay Road/Golf Club	1. The study team has reviewed the other intersections that were described that have traffic lights, and these intersections have very different highway conditions, that make the implementation of traffic lights feasible. Due to the curve and banking of Highway 15 at County Road 42, significant changes to the layout of the intersection would be required to accommodate traffic signals. In addition, the study team has assessed the traffic volumes, including the projected growth, and has determined that the intersection will not meet the Ministry's signal warrant requirements within the study period, and does not recommend signals as an alternative at this time. However, this study is considering the longer term

TABLE 3.
COMMENTS RAISED BY MEMBERS OF THE PUBLIC DURING PRELIMINARY DESIGN, AND STUDY TEAM'S RESPONSE

Issue/Comment	Study Team's Response
Road, near Smith Falls, and at Highway 15 in Smith Falls, providing access to a commercial plaza (LCBO, Dollarama, Pet Value) and business (Napa Auto Parts)). 2. Identified a dangerous blind spot when travelling west on County Road 42 onto Highway 15.	needs, beyond the study timelines, when evaluating alternatives so as not to preclude the future construction of a signalized intersection or roundabout when the warrants are met. 2. The Ministry of Transportation has undertaken recent improvements to the intersection, including a field placement of the westerly approach to Highway 15 from County Road 42 to improve driver comfort. Recent feedback from the public has indicated that this has been an improvement from the prior condition. As part of this study, the existing sight lines for the turning movements at the intersection have been evaluated, including the turning movement that the commenter noted. These turning movements and the sight lines needed to support the safe turning movements at the intersection will be included as part of the evaluation of the short-listed alternatives. The study team appreciates receiving comments on the alternatives. The study team is undertaking an evaluation of the short-listed alternatives (including new alternatives developed based on feedback received at PIC #1), using the evaluation criteria presented at PIC #1. The study team along with feedback from the project Municipal Advisory Committee will consider the comments received from participants at PIC #1, during the evaluation process. Upon completion of the evaluation of the alternatives, a technically preferred alternative will be selected and will be presented at PIC #2 in late fall 2015.
A member of the public made the following comments in their letter: 1. Explained past experience related to this project and how improvements to this intersection are not required, and driver behaviour is the cause of many of the accidents. 2. Explained that the real problem is the intent to tear down the Crosby Community Centre and explained the history related to the Hall and the commenter's family's use of the Crosby Community Centre.	1. The study team has noted the insight of the local community, and appreciates the continued participation in this, and previous studies. The study team has identified many of the human behaviors that were described in the letter as contributing local factors. Alternatives have been developed to address some of these behaviors, as an opportunity to explore options that could minimize cost or impacts to the natural environment, or be implemented very quickly. These alternatives are currently being evaluated by the study team as well as longer-term options to address future growth needs and improve geometry. 2. The study team has noted the insight related to the Crosby Community Centre. However, the Ministry does not have authority over the future use and planning of the Community Centre. Recommendations of alternatives have not been made to solely avoid or impact the Community Centre by the study team, but to address the safety needs to the study area. Impacts to the Community Centre will be assessed after the technically preferred alternative is selected. The study team appreciates receiving comments on the alternatives. The study team is

TABLE 3.
COMMENTS RAISED BY MEMBERS OF THE PUBLIC DURING PRELIMINARY DESIGN, AND STUDY TEAM'S RESPONSE

Issue/Comment	Study Team's Response
	undertaking an evaluation of the short-listed alternatives (including new alternatives developed based on feedback received at PIC #1), using the evaluation criteria presented at PIC #1. The study team along with feedback from the project Municipal Advisory Committee will consider the comments received from participants at PIC #1, during the evaluation process. Upon completion of the evaluation of the alternatives, a technically preferred alternative will be selected and will be presented at PIC #2 in late fall 2015.
KITCHEN TABLE MEETINGS WITH AFFECTED PROPERTY OWNERS	
Property owners identified concerns regarding visibility at the intersection for turning traffic with Alternative 2. In general, the two T intersections with Alternative 3-1 were thought to offer better visibility.	These comments were noted by the study team.
Concern was raised regarding the parking for the flea market.	The parking issues at the intersection were one of the issues included in the screening criteria for the short listed alternatives, and were considered during the evaluation of the alternatives.
There was some concern regarding the light impacts of the flashing beacon at the intersection as it would shine light into one of the dwellings near the intersection.	The potential for the flashing beacon to impact adjacent dwellings will be reviewed and addressed during detail design.
One property owner had a question about zoning for their property.	Additional information regarding the zoning was provided from the local Township of Rideau Lakes website.
CORRESPONDENCE AFTER PIC #2	
Preference for Alternative 3-1 and asked when the chevrons will be installed.	The Transportation Environmental Study Report will be placed on the public record for a 30-day review period. Once environmental clearance has been secured, MTO will begin the detail design and tendering process, to implement the short-term recommended improvements, including installation of the chevrons. Provided information regarding the future TESR Submission.
Expressed concerns regarding the past 15 years and the results of the study and suggested that Alternative 2 is the closest answer.	The intersection at Highway 15 and County Road 42 was included in a previous detail design study for improvements to Highway 15 between Seeley's Bay and Crosby. At the request of the Township of Rideau Lakes, this intersection was removed from the larger project and it was decided that further study was required. This decision allowed for highway improvements to be implemented along the remaining sections of Highway 15, and for the Township of Rideau

TABLE 3.
COMMENTS RAISED BY MEMBERS OF THE PUBLIC DURING PRELIMINARY DESIGN, AND STUDY TEAM'S RESPONSE

Issue/Comment	Study Team's Response
	Lakes to prepare a Community Improvement Plan (CIP) for the Village of Crosby. The CIP was completed in 2012, and the CIP was taken into consideration when evaluating the preliminary design alternatives for this study. Provided information regarding the future TESR Submission.
Preference for Alternative 2 as it makes the intersection 90°, and has the potential to turn the intersection into a roundabout in the future.	In order for traffic signals or a roundabout to be implemented, certain collision and traffic volume criteria (warrants) need to be met. Based on current data and projections, the warrants will not be met for the next 20 years. The existing geometry (layout) at the intersection may accommodate a roundabout in the future, in the event that traffic volume warrants (criteria) are met. Provided information regarding the future TESR Submission.
Concern the alternatives do not include the option that was presented as part of the original Highway 15 redesign. Noted Alternative 1 is a viable option if implemented in 2017, and Option 3-1 and 3-2 are valid options if they are implemented within 5 years. The commenter explained that this intersection was removed from the Highway 15 improvements to the south so that the Township could complete the Community Improvement Plan for Crosby, and we are still at this stage.	MTO completed some work at the intersection in 2016 including pavement rehabilitation and pavement markings. MTO is currently working towards the implementation of the short term recommendations. The Township of Rideau Lakes Community Improvement Plan for the Village of Crosby was completed in 2012. The Community Improvement Plan was taken into consideration when evaluating the preliminary design alternatives for this study. The collision history at the intersection and the projected traffic volumes do not meet the requirements (warrant) for traffic signals or a roundabout at the intersection at this time. Two alternatives for long-term solution have been recommended for implementation in 2045, and will be further assessed in the future prior to implementation to assess how traffic and highway conditions have changed since the completion of this study. Provided information regarding the future TESR Submission.
Preference for Alternative 4-2 because the curve already has too short a radius for the intersection, and there is a lot of speeding which poses a safety concern.	Acknowledged the comments and provided information on the future TESR Submission.
Noted that safety is the key issue, and that driver behaviour is the problem, not the	Acknowledged the comments and provided information on the future TESR Submission.

TABLE 3.
COMMENTS RAISED BY MEMBERS OF THE PUBLIC DURING PRELIMINARY DESIGN, AND STUDY TEAM'S RESPONSE

Issue/Comment	Study Team's Response
design of the intersection. Recommended that the speed limit be reduced and that signage be installed similar to Highway 15 through Morton, and that the lowered speed limit be enforced.	

4.0 EXISTING ENVIRONMENTAL CONDITIONS

The following discussion outlines the existing environmental conditions within the study area. The description of existing environmental conditions provided a baseline for the assessment of the preliminary design alternatives and any effects on significant environmental features, and for the determination of appropriate environmental protection/mitigation measures, including avoidance.

Data for the environmental investigations was obtained from published data sources and unpublished information made available by relevant stakeholders. This data was then reviewed to identify data gaps and deficiencies, and to scope the type, location and level of detail for field investigations. Field investigations included windshield and pedestrian surveys carried out within the study area by the study team in 2014, 2015 and 2016. Background information was used from the previous Highway 15 improvements study from data that was collected during 2008 and 2009. The field investigations in 2016 were conducted to address new areas outside the original study area that could be impacted by the alternatives. These additional investigations were conducted for the terrestrial ecosystem. For the remaining environmental factors, additional field work was not required to address the expanded study area, as adequate data had been collected during previous work on Highway 15.

The description of existing environmental conditions provides a baseline for the generation of alternatives, assessment of environmental effects and determination of the effectiveness of environmental protection measures.

4.1 Physiography and Soils

The study area is located within the Smiths Falls Limestone Plain physiographic region. This region covers approximately 3626 square kilometres and is the largest and most unbroken tract of shallow soil over limestone in southern Ontario. Exposed rock strata are part of the Beekmantown formation and include grey limestone, magnesian limestone, blue-grey dolomite and some calcareous sandstone. Soils in this physiographic region are stoney and variable, ranging from clay to light loam, despite being all classified as the Farmington series (Chapman and Putnam, 1984).

The predominant soil type surrounding the Village of Crosby is Farmington loam and sandy loam soils, with pockets of Napanee clay, Tennyson sandy loam, Farmington loam, Grenville sandy loam, and Muck (Gillespie et al. 1968). The following descriptions of soils found in the study area apply.

Farmington loam and sandy loam

The Farmington series is a well-drained, shallow till over limestone bedrock material. This is the predominant soil type in the area of Crosby, Ontario and is characterized as gently sloping with no stones. Areas with Farmington loam are complexes with rock outcrop, and soil depths of between 2 cm and 30 cm (Gillespie *et al.*, 1968).

Napanee clay

This soil type is found close to the Village of Crosby, at the northern extent of the study area. The Napanee series is poorly drained, with low organic matter content and a clay texture. It is found within the depressional areas between outcroppings of Precambrian rock and is characterized as being free of rocks and having very gentle slopes (Gillespie *et al.*, 1968).

Tennyson sandy loam

The Tennyson series is a well-drained, calcareous, stony, sandy loam till over limestone bedrock material. The topography of areas with this soil type is generally smooth with moderate slopes. Tennyson soils are

moderately stony, with Precambrian boulders that were placed by glacial ice. A relatively small pocket of Tennyson sandy loam is found along Highway 15 south of Crosby. These soils are highly productive for agriculture (Gillespie *et al.,* 1968).

Grenville loam and sandy loam

The Grenville series is a well-drained, calcareous, stony loam till material. The Grenville sandy loam overlays limestone bedrock. These soil types are found in the area of Crosby and extend south of the community. The topography of areas with this soil type is gently to moderately sloping. Some areas with Grenville soils are part of ground moraine landscapes (Gillespie *et al.,* 1968).

Muck

The Muck soils are very poorly drained, organic material often found in depressional or level areas under dense tree cover, with the water table close to the surface. The depth of muck can range between 0.9 m and 1.2 m. Small deposits of this soil type associated with areas in the vicinity of Newboro Lake overlap with the study area (Gillespie *et al.,* 1968).

4.2 Fisheries and Aquatic Ecosystems

Secondary source information was consulted to determine the fisheries resources within the study limits and to familiarize study staff with the characteristics of significant aquatic resources previously documented in the area. LGL Limited fisheries specialists conducted two seasons of fish habitat assessment and sampling at Sucker Creek under MTO contract (G.W.P. 4315-06-00) in 2008. Under the current contract, an additional survey was conducted in the fall of 2014 to verify watercourse conditions. The field investigations in 2008 were carried out in accordance with the *Ministry of Transportation* (MTO)*/Department of Fisheries and Oceans Canada (DFO)/Ontario Ministry of Natural Resources (OMNR) Protocol for Protecting Fish and Fish Habitat on Provincial Transportation Undertakings* (2006).

The study area is located within the jurisdiction of the Cataraqui Region Conservation Authority (CRCA) and the Ontario Ministry of Natural Resources and Forestry (OMNRF) Kemptville District.

No watercourses occur within the immediate vicinity of the Highway 15/County Road 42 intersection. However, Sucker Creek is located approximately 500 m to the east and supports fish and fish habitat. Provided below, is a summary of the existing aquatic habitat and fish community of Sucker Creek.

A search of OMNRF's Natural Heritage Information Centre (NHIC) database and the Fisheries and Oceans Canada (DFO) aquatic species at risk mapping revealed no rare fish or other aquatic species at risk within the study area (DFO, 2015). Personal correspondence with Mary Van Sleeuwen at Kemptville District Office OMNRF in January 2009 classified Sucker Creek as warmwater sportfish habitat, with Medium Sensitivity due to potential Northern Pike spawning habitat within the watercourse.

In a letter dated May 26, 2015 from a request for information, OMNRF responded that the following fish species were within the vicinity of the study area: Alewife *(Alosa pseudoharengus),* American Eel (*Anguilla rostrata*), Black Crappie (*Pomoxis nigromaculatus*), Blackchin Shiner (*Notropis heterodon*), Blacknose Shiner (*Notropis heterolepis*), Bluegill (*Lepomis macrochirus*), Brown Bullhead (*Ameiurus nebulosus*), Central Mudminnow (*Umbra limi*), Common Carp (*Cyprinus carpio*), Common Shiner (*Luxilus cornutus*), Golden Shiner (*Notemigonus crysoleucas*), Lake Chub (*Couesius plumbeus*), Largemouth Bass (*Micropterus salmoides*), Northern Pike *(Esox Lucius),* Pumpkinseed, Rainbow Smelt (*Osmerus mordax*), Rock Bass (*Ambloplites rupestris*), Smallmouth Bass (*Micropterus dolomieu*), Spotfin Shiner (*Cyprinella spiloptera*), Spottail Shiner (*Notropis hudsonius*), Suckers, Walleye (*Sander vitreum*), Yellow Bullhead (*Ameiurus natalis*), and Yellow Perch.

It is likely that all of the fish species listed above are a result of sampling from Newboro Lake located approximately 700 m to the west from the study intersection. Sucker Creek flows into Newboro Lake, but many of the species listed, require a larger body of water than Sucker Creek can offer. American Eel is listed as Endangered in Ontario and is regulated under the *Endangered Species Act.* It is likely that this species was found in Newboro Lake which can access this waterbody from Lake Ontario. This species is usually present in very low numbers and tends to be a habitat generalist. Based on this and the fact that preliminary design alternatives will not impact Sucker Creek, it is unlikely that this species and its habitat would be affected by any works at the study intersection.

In the May 2015 letter from OMNRF the warmwater timing window was identified as March 15 – June 30 (in-water work is restricted during this period). This window applies to any work within water at Sucker Creek, if required.

Existing Aquatic Habitat Conditions

No watercourses occur within the immediate vicinity of the Highway 15/County Road 42 intersection. However, Sucker Creek is located approximately 500 m to the east. The location of the watercourses are presented in **Figure 4**. Aquatic habitat for Sucker Creek is summarized below and in **Table 4**. A more detailed description of aquatic habitat for Sucker Creek and/or the completed Watercourse Field Record Forms and Habitat Mapping, are presented in the *Fish and Fish Habitat Technical Memo* (LGL, 2015) and *Fish and Fish Habitat – Existing Conditions Report* (LGL, 2008).

The site investigation on May 9, 2008 within the vicinity of Highway 15 approximately 900 m to the north of County Road 42, found a 5 m wide stream flowing in a southwest direction. The stream on the upstream (northwest) side of Highway 15 was channelized with cattails and sedges. The downstream (southeast) side flowed through a pasture area which appeared to be prone to flooding. The downstream section also had a significant amount of duckweed and filamentous algae present. The substrate both up and downstream was mainly sand and gravel. LGL sampling in 2008 yielded Brook Stickleback (*Culaea inconstans*), Central Mudminnow (*Umbra limi*), Pumpkinseed (*Lepomis gibbosus*), Yellow Perch (*Perca flavescens*), Banded Killifish (*Fundulus diaphanus*), and Trout-perch (*Percopsis omiscomaycus*).

The field investigations undertaken in the fall of 2014 at the County Road 42 intersection represented similar conditions to the field investigations undertaken previously in the broader Highway 15 study limits. The channel width averaged 5 m and flows southwest in a channelized fashion within a cattail/sedge buffer.

Critical Fish Habitat

The study limits were reviewed for the potential presence of critical habitat (i.e., spawning areas, groundwater discharge, nursery habitat, seasonal refugia, etc.). No evidence of critical habitat was observed during field investigations.

Thermal Regime

Based on observations and fish species captured during the 2008 field investigations, as well as information from the OMNRF, Sucker Creek is considered to be warmwater sportfish habitat (OMNRF, 2015).

TABLE 4.
HIGHWAY 15/ COUNTY ROAD 42 INTERSECTION EXISTING FISH AND FISH HABITAT CONDITIONS SUMMARY TABLE

Watercourse	Crossing	Flow	Thermal Regime	Substrate Type	Vegetation	Supports a Fishery	Fish Species Present	OMNR Identified Habitat Sensitivity (as per Fisheries Protocol)*
Sucker Creek	500 m east of the Highway 15/County Road 42 intersection	Permanent	Warm	Sand, gravel, silt, organic	Cattails, sedges, duckweed, filamentous algae	Direct	Brook Stickleback, Central Mudminnow, Pumpkinseed, Yellow Perch, Banded Killifish, Trout-Perch (LGL, 2008).	Medium Sensitivity In-water Timing Restriction March 15 to June 30

* OMNRF correspondence, Kemptville District Office received May 26, 2015.
Data from observations and collections made in 2008 and 2014.

LEGEND

Watercourse

Designated Natural Areas

Candidate Life Science Area of Natural and Scientific Interest (Newboro Lake Marsh)

Provincially Significant Wetland (The Bog Marsh)

Wetland Not Evaluated per OWES

Vegetation Communities

Vegetation Community Boundary (2016)

Vegetation Community Boundary (Terrestrial Ecosystems Report – Existing Conditions (August 2015)

CUM1-1	Dry-Moist Old Field Meadow Type
CUP3-2	White Pine Coniferous Plantation Type
CUS1	Mineral Cultural Savannah Ecosite
CUT1	Mineral Cultural Thicket Ecosite
CUW1	Mineral Cultural Woodland Ecosite
FOD7-2	Fresh-Moist Ash Lowland Deciduous Forest Type
MAM2-2	Reed-canary Grass Mineral Meadow Marsh Type
MAM2-10	Forb Mineral Meadow Marsh Type
MAS2-1	Cattail Mineral Shallow Marsh Type
SWD3-1	Red Maple Mineral Deciduous Swamp Type
AGR	Agriculture
M	Manicured Lawn
R	Residential

Data Sources: LGL Limited field surveys, Ministry of Natural Resources and Forestry.

100 50 0 100 Metres

N

HIGHWAY 15/COUNTY ROAD 42 INTERSECTION IMPROVEMENTS – NATURAL HERITAGE FEATURES

LGL LIMITED
environmental research associates

Project:	TA8484	**Figure:**	4
Date:	July, 2017	**Prepared By:**	MWF
Scale:	1 : 6000	**Checked By:**	VLG

D:\OneDrive - LGL Limited_TA\TA8484 - Highway 15\Maps\NHForPublic.mxd

4.3 Vegetation and Vegetation Communities

The geographical extent, composition, structure and function of vegetation communities were identified through air photo interpretation and field investigation. Air photos were interpreted to determine the limits and characteristics of vegetation communities. Field investigations of the vegetation communities within the existing right-of-way of the Highway 15 and Country Road 42 intersection were conducted on May 25, 2015 and July 7, 2016. The last visit in 2016 was conducted to inventory vegetation and vegetation communities within the expanded study area to address the alternatives discussed in **Section 5.0**.

Vegetation communities were classified according to the *Ecological Land Classification for Southern Ontario: First Approximation and Its Application* (Lee *et al*., 1998). The community was sampled using a plotless method for the purpose of determining general composition and structure of the vegetation. Plant species status was reviewed for Ontario (Oldham, 2009), and the Frontenac Axis Physiographic Region (Cuddy, 1991). Vascular plant nomenclature follows Newmaster *et al*. (1998) with a few exceptions that have been updated to Newmaster *et al.* (2007).

Designated Natural Areas and Environmentally Sensitive Areas

Designated natural areas include areas identified for protection by the Ontario Ministry of Natural Resources and Forestry (OMNRF), Cataraqui Region Conservation Authority and the Township of Rideau Lakes. A review of the Natural Heritage Information Centre (NHIC) indicates that there are no Provincially Significant Wetlands (PSWs), Areas of Natural and Scientific Interest (ANSIs) or Environmentally Significant/Sensitive Areas (ESAs) in or within 120 m the study area (OMNRF, 2015).

Provincially Significant Wetlands (PSW)

A review of the NHIC 2015 indicates The Bog Marsh Provincially Significant Wetland straddles Highway 15 south of County Road 42; however, the part of the PSW in closest proximity to the study area is adjacent to Narrow Locks Road and within 250 m of the study area limits. It is comprised of two wetland types: 7.5% swamp; and 92.6% marsh, and has a total size of 240 hectares (NHIC, 2015). In addition, this feature is designated as 'Natural Heritage A' in the Township of Rideau Lakes Official Plan (2004).

Areas of Natural and Scientific Interest (ANSI)

A review of the NHIC 2015 indicates that the Newboro Lake Marsh Candidate Life Science ANSI is located approximately 170 m west of the study area, west of Narrow Locks Road.

Vegetation Communities

In general, the study area consists of a variety of communities ranging from natural forest, semi-natural wetland areas adjacent to watercourses and drainage channels, cultural meadows and agricultural lands. A total of ten communities were identified, with five of those being new community types from those documented within LGL's *Terrestrial Ecosystems Report – Existing Conditions* (August, 2015). All of the communities are considered common and secure within Ontario (NHIC, 1997). Many of the vegetation communities are still able to retain much of their original character despite the higher level of disturbance that can sometimes come with proximity to active agriculture.

Communities west of Highway 15 appear to have a more natural composition and are more highly treed, while those communities that fall between Highway 15 and County Road 42 are much more open and display higher levels of cultural influence. The FOD7-2 and SWD3-1 communities make up a large contiguous forest tract. The swamp communities within the lowland forest are currently unevaluated wetlands, but are only approximately 650 m away from The Bog Marsh Provincially Significant Wetland

(PSW). Communities that border onto Sucker Creek include several semi-natural wetland communities, as well as agricultural or cultural pockets of land. Much of this area shows anthropogenic influence. Communities directly south of County Road 42 are primarily cultural or agricultural in nature. **Table 5** provides a summary of the ELC vegetation communities found within the study area.

All of the vegetation communities documented within the study area are considered widespread and common in Ontario, and secure globally. The majority of lands adjacent to the Highway 15 and County Road 42 intersection have been cleared to accommodate existing infrastructure, residential properties, and agricultural land use. Cleared vegetation communities have various degrees of colonization and disturbance. Evidence of disturbance includes a high proportion of non-native plant species that are well adapted to persist in areas that are regularly disturbed; including species that are adapted to high light conditions, limited soil moisture, and tolerant of salt spray.

Anthropogenic/cultural communities located at the intersection consist of cultural meadow (CUM1-1), cultural woodland (CUW1), and cultural thicket (CUT1). The cultural meadow communities were identified immediately adjacent to the roadways, and within these communities small wetland inclusions (meadow marsh or shallow marsh) were prevalent in low-lying roadside ditches.

The natural/semi-natural features located at the intersection within the study area are restricted to a forest community west of Highway 15 (an ash lowland deciduous forest - FOD7-2) and a small marsh community east of Highway 15 (cattail marsh - MAS2-1).

Flora

A total of 82 plant species were recorded within the study area. Three of these plants could only be identified to genus and are not included in the following calculations. A total of 71% of the plant species identified on site are considered native to Ontario while the remaining 29% are considered introduced and/or non-native to Ontario. A list of vascular plant taxa is presented in **Appendix H**.

Plant Species at Risk

No plant species regulated under the Ontario *Endangered Species Act, 2007* or the federal *Species at Risk Act* (those designated as Special Concern, Endangered, or Threatened) were encountered during LGL's botanical investigation within the study area. One species is noted as locally Rare for the Central-Frontenac Axis Region (Cuddy, D.G. 1991); Jerusalem Artichoke (*Helianthus tuberosus*). This species is considered as a non-native or introduced species. The status of the species as Rare may reflect the fact that the species has invasively spread to regions where it was previously not encountered. A description of provincial species ranks is provided in **Appendix I**.

4.4 Wildlife and Wildlife Habitat

Field investigations were conducted on November 27, 2014, May 25, 2015 and July 7, 2016 to record incidental observations of wildlife and wildlife habitat and to characterize the nature, extent and significance of wildlife usage within the project limits. The last visit in 2016 was conducted to inventory wildlife and wildlife habitat within the expanded study area to address the alternatives discussed in **Section 5.0**. Wildlife field investigations focused within 250 m (in all directions) of the Highway 15 and County Road 42 intersection right-of-way (ROW). All culvert structures were inspected for nests of migratory bird species. Detailed field investigations were also conducted by LGL in this area as part of the Highway 15 Improvements from Leeds and Grenville Road 42 to Young's Hill Road (GWP 4315-06-00) project during the week of August 18 to 22, 2008.

TABLE 5.
SUMMARY OF ECOLOGICAL LAND CLASSIFICATION VEGETATION COMMUNITIES FOR THE INTERSECTION OF HIGHWAY 15 AND COUNTY ROAD 42

ELC Code	Vegetation Type	Species Association	Comments
Terrestrial – Natural/Semi-natural			
FOD	DECIDUOUS FOREST		
FOD7-2	Fresh-Moist Ash Lowland Deciduous Forest	**Canopy:** Red Ash (*Fraxinus pennsylvanica*), Bur Oak (*Quercus macrocarpa*), Red Maple (*Acer rubrum*), and White Elm (*Ulmus americana*). **Understorey:** White Elm, Common Buckthorn (*Rhamnus cathartica*), Raspberry (*Rubus sp.*), and Red Ash. **Ground cover:** Sedges (*Carex* sp.), Sensitive Fern (*Onoclea sensibilis*), Wood Nettle (*Laportea canadensis*).	• Tree cover > 60 % (FO). • Deciduous trees > 75 % of canopy cover. • Middle to lower slopes, seepage areas and bottomlands topographic positions (7). • Ash dominant, adjacent to SWD3-1 (Red Maple Deciduous Swamp)
Terrestrial – Cultural			
CUP	CULTURAL PLANTATION		
CUP3-2	White Pine Coniferous Plantation	**Canopy:** White Pine (*Pinus strobus*). **Understorey:** White Elm, Red-panicled dogwood (*Cornus racemosa*), Riverbank Grape (*Vitis riparia*). **Ground Cover:** Riverbank Grape, Inserted Virginia Creeper (*Parthenocissus vitaceae*).	• Highly cultural, planted community • Vines dominant in understorey and groundcover layers • Low species abundance
CUM	CULTURAL MEADOW		
CUM1-1	Old Field Mineral Cultural Meadow	**Canopy:** Manitoba Maple (*Acer negundo*), Red Ash. **Under storey:** Common Buckthorn. **Ground Cover:** Canada Goldenrod (*Solidago canadensis.*), Common Milkweed (*Asclepias syriaca*), Grasses (*Poa sp., Bromus sp.*).	• Cultural meadows in study area are common along mowed road right-of-way or adjacent to residential or agricultural lands.
CUS	CULTURAL SAVANNAH		
CUS1	Mineral Cultural Savannah	**Canopy:** White Elm, Red Ash. **Under storey:** Common Buckthorn, Red-panicled Dogwood, Willow (*Salix sp.*), Narrow-leaved Meadowsweet (*Spirea alba*), Tartarian Honeysuckle (*Lonicera tatarica*). **Ground Cover:** Canada Goldenrod, Tufted Vetch (*Vicia cracca*), Common Milkweed, Asters (*Aster sp.*), Red Clover (*Trifolium pratense*).	• Tree cover ranges between 25-35%. • Mix of native and non-native species. • Area possibly used as pasture previously.

TABLE 5.
SUMMARY OF ECOLOGICAL LAND CLASSIFICATION VEGETATION COMMUNITIES FOR THE INTERSECTION OF HIGHWAY 15 AND COUNTY ROAD 42

ELC Code	Vegetation Type	Species Association	Comments
CUT	Cultural Thicket		
CUT1	Mineral Cultural Thicket	**Canopy:** includes red ash, Scots pine (*Pinus sylvestris*), sugar maple (*Acer saccharum* ssp. *saccharum*), and trembling aspen (*Populus tremuloides*). **Understory:** includes red ash, staghorn sumac (*Rhus hirta*), and common buckthorn. **Ground cover**: includes reed-canary grass, tall goldenrod, tufted vetch (*Vicia cracca*), and butter-and-eggs (*Linaria vulgaris*).	• Cultural community (CU). • Tree cover <25 %; shrub cover >25% (T). • This community can occur on a wide range of soil moisture regimes (Dry-Moist) (-1).
CUW	CULTURAL WOODLAND		
CUW1	Mineral Cultural Woodland	**Canopy:** White Elm, Red Ash **Under storey:** Riverbank Grape, Inserted Virginia Creeper, Manitoba Maple. **Ground Cover:** Reed-canary Grass (*Phalaris arundinaceae*), Common Milkweed, Riverbank Grape.	• A large dirt pile is present directly adjacent to County Rd 42. • High level of disturbance is present • Community appears to be in early regeneration
Wetland			
SWD	DECIDUOUS SWAMP		
SWD3-1	Red Maple Deciduous Swamp	**Canopy:** Red Maple, White Elm, Black Ash (*Fraxinus nigra*). **Under storey:** Red Ash, Red Maple, Black Ash. **Ground Cover:** Sensitive Fern (*Onoclea sensibilis*), Swamp Milkweed (*Asclepias incarnata*), Wood Nettle, Field Horsetail (*Equisetum arvense*).	• Swamp was relatively dry at time of survey, but soil still retained moisture • Flooding is periodic and likely seasonal • Wetland forest is surrounded by lowland Ash deciduous forest (FOD7-2)
MAM	MEADOW MARSH		
MAM2-2	Reed-canary Grass Mineral Meadow Marsh	**Canopy:** White Elm, Beaked Willow (*Salix bebbiana*), Cottonwood (*Populus deltoides*). **Under storey:** Beaked Willow, Manitoba Maple, Nannyberry (*Viburnum lentago*). **Ground Cover:** Reed-canary Grass, Purple Loosestrife (*Lythrum salicaria*), Jewelweed (*Impatiens capensis*).	• Aquatic floating species from watercourses are included • Reed-canary Grass dominates.

TABLE 5.
SUMMARY OF ECOLOGICAL LAND CLASSIFICATION VEGETATION COMMUNITIES FOR THE INTERSECTION OF HIGHWAY 15 AND COUNTY ROAD 42

ELC Code	Vegetation Type	Species Association	Comments
MAM2-10	Forb Mineral Meadow Marsh	**Under storey:** Cattails (*Typha sp.*). **Ground Cover:** Purple Loosestrife, Swamp Milkweed, Blue Vervain (*Verbena hastate*), Spotted Joe-pye-weed (*Eupatorium maculatum*).	• Small community restricted to banks of channelized section of Sucker Creek where it flows west of Highway 15 along edge of FOD7-2 community.
MAS	SHALLOW MARSH		
MAS2-1	Cattail Mineral Shallow Marsh	**Under storey:** Narrow-leaved Meadowsweet. **Ground Cover:** Broad-leaved Cattail (*Typha latifolia*), Narrow-leaved Cattail (*Typha angustifolia*), Sedges (*Carex sp.)*, Wool-grass (*Scirpus cyperinus*), Sensitive Fern.	• Pockets of shallow marsh that border meadow marsh (MAM2-2) communities along Sucker Creek floodplain. • Mostly dry at time of survey.

Wildlife Habitat

The study area at Highway 15 and County Road 42 is composed of a variety of rural, agricultural and natural habitats. Commercial buildings, residential dwellings and agricultural structures are found scattered across much of the study area. Agricultural lands are especially prevalent. Natural areas within the study limits are fragmented, and primarily consist of hedgerows, deciduous and mixed forests, cultural meadows, cultural thickets and water crossings. Generally, a 5 to 10 m clear zone paralleled both sides of the highway throughout the study area. Wildlife utilization of the clear zones was limited; however, many wildlife species cross the Highway 15 and County Road 42 intersection right-of-way to complete some aspect of their biology (for example, finding food sources, breeding, hibernacula etc.). The majority of wildlife recorded within the study area were found within the natural heritage features beyond these clear zones. No potential hibernacula were identified on the site, nor were any dens, burrows, or nests identified.

Fauna

The diversity of habitat throughout the study area has resulted in a moderate to moderate-high amount of biodiversity. Seventy-two species of wildlife (nine herpetofauna, 50 birds and 13 mammals) were recorded during 2008, 2015, and 2016 field investigations (**Table 6**). Habitat communities present and a review of secondary data were also utilized to determine a number of the species recorded, as indicated in **Table 6**.

Four of the species observed are considered Area Sensitive species according to the *Significant Wildlife Habitat Technical Guide* (SWHTG) (MNR 2000): American Redstart (*Setophaga ruticilla*); Savannah Sparrow (*Passerculus sandwichensis*); Scarlet Tanager (*Piranga olivacea*); and, Veery (*Catharus fuscescens*). Three additional species are also considered Area Sensitive species (MNR, 2000): Red-eyed Vireo (*Vireo olivaceus*); Scarlet Tanager; and, Veery. One species was confirmed to be breeding in the area (Eastern Phoebe (*Sayornis phoebe*)), with evidence of an active nest with young found in the culvert where Sucker Creek passes under Highway 15.

Herpetofauna were documented in close association with aquatic habitats found within the study area. Several species/specimens were identified as road kill during field investigations, including American Toad (*Anaxyrus americanus*), Northern Leopard Frog (*Lithobates pipiens*) and Gray Ratsnake (*Pantherophis spiloides*). No turtle nests or evidence of nesting turtles was documented within the right-of-way. Herpetofauna presence within the study area is believed to be heavily influenced by the presence of Sucker Creek (to the east), Crosby Creek (to the south) and Bog Marsh provincially significant wetland to the west. Many herpetofauna species which may be found within the study area are expected to be using habitats within the study area as corridor or movement habitat between these aquatic features.

Bird species were documented at the Highway 15 and County Road 42 intersection study area in various habitats, particularly cultural meadow, cultural thicket, cultural woodland, deciduous forest, forest edge, shallow marsh and agricultural areas. The above mentioned habitats may provide nesting opportunities for birds; however, the disturbed edges near the highway rights-of-way do not represent high quality areas for breeding opportunities, particularly for area-sensitive or interior species that would be less tolerant of edge effects (such as increased wind, human disturbance, exposure, or light).

Mammal species were observed both directly and through indirect evidence, such as tracks, faeces and sounds to record their presence and use of the habitats within the study area. Mammals were recorded across much of the study area, with higher numbers being recorded in aquatic and wooded areas. Tracks and faeces from raccoon (*Procyon lotor*) and American mink (*Mustela vison*) were observed. Regular roadside mammal trails were evidence of the many crossings that occurred between natural heritage features; however, no large structures (e.g., box culverts, bridges, etc.) which have the potential to function as locally significant wildlife crossing features were identified within the study area.

TABLE 6.
WILDLIFE SPECIES DOCUMENTED WITHIN THE STUDY AREA

Wildlife	Scientific Name	Common Name	SARA[1]	ESA[1]	Local[2]	Legal Status[1]	Others[3]
Herpetofauna	*Hyla versicolor*	Gray Treefrog				FWCA(P)	*
	Pseudacris crucifer	Spring Peeper					*
	Bufo americanus	American Toad					
	Rana pipiens	Northern Leopard Frog					
	Rana clamitans	Green Frog					
	Thamnophis sirtalis	Eastern Gartersnake					
	Storeria Dekayi	Brown Snake					*
	Lampropeltis triangulum	Eastern Milksnake	SC	SC		SARA(1) / FWCA(P)	*
	Elaphe spiloides	Eastern Ratsnake	THR	THR		FWCA(P)	
Birds	*Cathartes aura*	Turkey vulture				FWCA(P)	
	Bonasa umbellus	Ruffed Grouse			BSC	MBCA / FWCA(G)	*
	Maleagris gallopavo	Wild Turkey			BSC	MBCA / FWCA(G)	*
	Buteo jamaicensis	Red-tailed Hawk				FWCA(P)	
	Columba livia	Rock Pigeon					
	Zenaida macroura	Mourning Dove				MBCA	
	Archilochus colubris	Ruby-throated Hummingbird			BSC	MBCA	
	Picoides pubescens	Downy Woodpecker				MBCA	
	Picoides villosus	Hairy Woodpecker				MBCA	
	Colaptes auratus	Northern Flicker				MBCA	
	Dryocopus pileatus	Pileated Woodpecker			BSC	MBCA	
	Contopus virens	Eastern Wood Pewee	SC	SC		MBCA	
	Sayornis phoebe	Eastern Phoebe			BSC	MBCA	
	Myiarchus crinitus	Great Crested Flycatcher				MBCA	
	Tyrannus tyrannus	Eastern Kingbird			BSC	MBCA	
	Vireo gilvus	Warbling Vireo				MBCA	
	Vireo olivaceus	Red-eyed Vireo				MBCA	
	Cyanocitta cristata	Blue Jay				FWCA(P)	
	Corvus brachyhrynchos	American Crow					
	Corvus corax	Common Raven				FWCA(P)	*

TABLE 6.
WILDLIFE SPECIES DOCUMENTED WITHIN THE STUDY AREA

Wildlife	Scientific Name	Common Name	SARA[1]	ESA[1]	Local[2]	Legal Status[1]	Others[3]
Birds (continued)	*Eremophila alpestris*	Horned Lark			BSC	MBCA	*
	Toxostoma rufum	Brown thrasher				MBCA	
	Poecile atricapillus	Black-capped Chickadee			BSC	MBCA	
	Hirundo rustica	Barn swallow		THR		MBCA	
	Sitta canadensis	Red-breasted Nuthatch			BSC	MBCA	*
	Sitta carolinensis	White-breasted Nuthatch				MBCA	*
	Certhia americana	Brown Creeper			BSC	MBCA	*
	Troglodytes aedon	House Wren				MBCA	*
	Turdus migratorius	American Robin				MBCA	
	Dumetella carolinensis	Gray Catbird				MBCA	
	Catharus fuscescens	Veery				MBCA	
	Sturnus vulgaris	European Starling					
	Bombycilla cedrorum	Cedar Waxwing				MBCA	
	Setophaga ruticilla	American Redstart				MBCA	
	Dendroica petechia	Yellow Warbler				MBCA	*
	Geothlypis trichas	Common Yellowthroat				MBCA	
	Spizella passerina	Chipping Sparrow				MBCA	
	Spizella pusilla	Field Sparrow			BSC	MBCA	
	Passerculus sandwichensis	Savannah Sparrow			BSC	MBCA	
	Melospiza melodia	Song Sparrow				MBCA	
	Cardinalis cardinalis	Northern Cardinal				MBCA	
	Pheucticus ludovicianus	Rose-breasted Grosbeak				MBCA	
	Passerina cyanea	Indigo Bunting				MBCA	*
	Piranga olivacea	Scarlet tanager				MBCA	
	Agelaius phoeniceus	Red-winged Blackbird					
	Quiscalus quiscula	Common Grackle					
	Molothrus ater	Brown-headed Cowbird					*
	Icterus galbula	Baltimore Oriole				MBCA	
	Carduelis tristis	American Goldfinch			BSC	MBCA	
	Passer domesticus	House Sparrow					*

TABLE 6.
WILDLIFE SPECIES DOCUMENTED WITHIN THE STUDY AREA

Wildlife	Scientific Name	Common Name	SARA[1]	ESA[1]	Local[2]	Legal Status[1]	Others[3]
Mammals	*Sylvilagus floridanus*	Eastern Cottontail				FWCA(G)	*
	Tamias striatus	Eastern Chipmunk				FWCA(P)	*
	Marmota monax	Woodchuck					*
	Sciurus carolinensis	Gray Squirrel				FWCA(G)	*
	Tamiasciurus hudsonicus	Red Squirrel				FWCA(F)	
	Microtus pennsylvanicus	Meadow Vole					*
	Erithizon dorsatum	Porcupine					*
	Canis latrans	Coyote				FWCA(F)	*
	Vulpes vulpes	Red Fox				FWCA(F)	*
	Procyon lotor	Raccoon				FWCA(F)	
	Mustela vison	American Mink				FWCA(F)	
	Mephitis mephitis	Striped Skunk				FWCA(F)	
	Odocoileus virginianus	White-tailed Deer				FWCA(G)	

[1]A description of federal and provincial species ranks provided in **Appendix I.**
[2]Local Ranks: BSC – Bird Studies Canada, Species of Conservation Priority.
[3]Species recorded based on habitat type for the area or on data previously collected for the study area.

Thirty-nine of the 50 species of birds recorded are protected under the *Migratory Birds Convention Act* (MBCA) and four bird species are protected under the *Fish and Wildlife Conservation Act* (FWCA). Three of nine herpetofauna species are afforded protection under the FWCA; whereas 10 of the 13 mammal species are protected under the FWCA. Thirteen bird species identified are considered priority species for conservation in the County of Leeds and Grenville by Bird Studies Canada (BSC). These species are considered area sensitive species.

Wildlife Species at Risk

Of the 72 wildlife species recorded within the study area, two are regulated under the Ontario *ESA* and/or the federal *Species at Risk Act*. A road-killed Gray Ratsnake was identified along Highway 15 within the study area during 2008 field investigations, and a total of two Barn Swallows were observed aerial foraging in the open meadow areas surrounding Sucker Creek. No nests or additional breeding evidence were observed. It is important to note that the nesting sites/nests of Barn Swallow are the focus of habitat protection under the Ontario ESA. With the surrounding land having high agricultural land use, it is likely that the birds are using the existing barn structures present in neighbouring properties for breeding and the individuals observed were likely foraging on insects found within the wetland areas.

The Eastern Wood Pewee (*Contopus virens*) was also heard singing within the forest tract further south of County Road 42, though was not observed. This bird is currently listed as Special Concern on the Species at Risk in Ontario List.

An Information Request Form was sent to the OMNRF, Kemptville District on April 30, 2015 requesting information on species at risk previously identified in proximity to the study area. On May 25, 2015 a response was received and 12 species at risk wildlife were identified as having the potential to be present in the vicinity of the study area, including: Gray Ratsnake, Blanding's Turtle (*Emydoidea blandingii*), Eastern Musk Turtle (*Sternotherus odoratus*), Snapping Turtle (*Chelydra serpentina*), Milksnake, Barn Swallow (*Hirundo rustica*), Bobolink (*Dolichonyx oryzivorus*), Eastern Meadowlark (*Sturnella magna*), Black Tern (*Chlidonias niger*), Eastern Small-footed Myotis (*Myotis leibii*), Northern Long-eared Bat (*Myotis septentrionalis*) and Little Brown Myotis (*Myotis lucifugus*). A copy of this correspondence is presented in the *Terrestrial Ecosystems Report* (LGL, 2015).

Each of the 12 species discussed above, their respective legal status, preferred habitat and the likelihood of presence within the study area is summarized in **Table 7**.

TABLE 7.
WILDLIFE SPECIES AT RISK SUMMARY

Scientific Name	Common Name	ESA	SARA	Data Source	Preferred Habitat*	Potential Habitat in Study Area
Pantherophis spiloides	Gray Ratsnake	THR	THR	LGL (2008)/ MNRF	Forest, meadow, anthropogenic (e.g., barns, out buildings etc.)	This species has the potential to be found across much of the study area; however, use of habitats within the study area is expected to consist largely of movement between habitat features found off-site.

TABLE 7.
WILDLIFE SPECIES AT RISK SUMMARY

Scientific Name	Common Name	ESA	SARA	Data Source	Preferred Habitat*	Potential Habitat in Study Area
Lampropeltis Triangulum	Milksnake	SC	SC	MNRF	Habitat generalist.	This species has the potential to be found across much of the study area; however, use of habitats within the study area is expected to consist largely of movement between habitat features found off-site.
Chelydra serpentina	Snapping Turtle	SC	SC	MNRF	Aquatic habitats.	No aquatic habitats suitable to support this species are present within the study area. Potential exists for Snapping Turtles (from surrounding aquatic communities) to use road-shoulders present within the study area as nesting habitat. Similarly, Snapping Turtles from surrounding areas may use habitats within the study area during overland movements from one aquatic area to another.
Sternotherus odoratus	Eastern Musk Turtle	SC	THR	MNRF	Clear lakes or ponds	Potential for species to occur is considered low, given that suitable habitats to support the species are not present. Given it's highly aquatic nature it is unlikely that nesting or movement through the study area by the species occurs.

TABLE 7.
WILDLIFE SPECIES AT RISK SUMMARY

Scientific Name	Common Name	ESA	SARA	Data Source	Preferred Habitat*	Potential Habitat in Study Area
Emydoidea blandingii	Blanding's Turtle	THR	THR	MNRF	Lakes, ponds, marshes, creeks.	No aquatic habitats suitable to support this species are present within the study area. Potential exists for Blanding's Turtle (from surrounding aquatic communities) to use road-shoulders present within the study area as nesting habitat. Similarly, Snapping Turtles from surrounding areas may use habitats within the study area during overland movements from one aquatic area to another.
Hirundo rustica	Barn Swallow	THR	THR	MNRF	Open country and agricultural.	Open country and agricultural habitat types provide habitat suitable to support foraging Barn Swallow (foraging Barn Swallows observed during the 2016 field investigation). No Barn Swallow nests/nesting colonies were identified in the vicinity of the study area.
Dolichonyx oryzivorus	Bobolink	THR	THR	MNRF	Open country and agricultural.	Cultural meadow habitat types identified within the study area did not contain appropriate vegetation composition (e.g., shrub cover present, etc.) and were generally too small. Agricultural habitat types identified may provide habitat suitable to support Bobolink; however, suitability is dependent on crop type in a given year. No Bobolink identified during 2008 or 2015 field investigations.

TABLE 7.
WILDLIFE SPECIES AT RISK SUMMARY

Scientific Name	Common Name	ESA	SARA	Data Source	Preferred Habitat*	Potential Habitat in Study Area
Sturnella magna	Eastern Meadowlark	THR	THR	MNRF	Open country and agricultural.	Cultural meadow habitat types identified within the study area did not contain appropriate vegetation composition (e.g., shrub cover present, etc.) and were generally too small. Agricultural habitat types identified may provide habitat suitable to support Bobolink; however, suitability is dependent on crop type in a given year. No Eastern Meadowlark identified during 2008 or 2015 field investigations.
Chlidonias niger	Black Tern	SC	SC	MNRF	Marshland.	No habitat suitable to support this species identified within the study area.
Myotis leibii	Eastern Small-footed Myotis	END	END	MNRF	Roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees.	Roost habitat could exist in buildings located in in the vicinity of the study area.
Myotis septentrionalis	Northern Myotis	END	END	MNRF	Roost singly or in colonies underneath bark, in cavities or in crevices of both live trees and snags (dead trees).	No roosting habitat identified within study area; however, suitable roosting trees may exist in the vicinity of the study area.

TABLE 7.
WILDLIFE SPECIES AT RISK SUMMARY

Scientific Name	Common Name	ESA	SARA	Data Source	Preferred Habitat*	Potential Habitat in Study Area
Myotis lucifugus	Little Brown Myotis	END	END	MNRF	Roost in trees and buildings, often select attics, abandoned buildings and barns.	Roost habitat could exist in buildings located in the vicinity of the study area.

4.5 Existing and Planned Land Use

Primary and secondary source investigations were undertaken to identify existing and planned land uses in the study area. Field investigations were conducted within the study area by LGL Limited on November 27, 2014.

The study area is located within the Township of Rideau Lakes in the United Counties of Leeds and Grenville. Existing land uses within the study area is predominantly rural in character, consisting of a range of residential, commercial, tourism, business, and farm land uses. Planned land uses within the study area are defined in the Official Plans of the United Counties of Leeds and Grenville and the Township of Rideau Lakes, as well as the Community Improvement Plan for the Village of Crosby.

United Counties of Leeds and Grenville

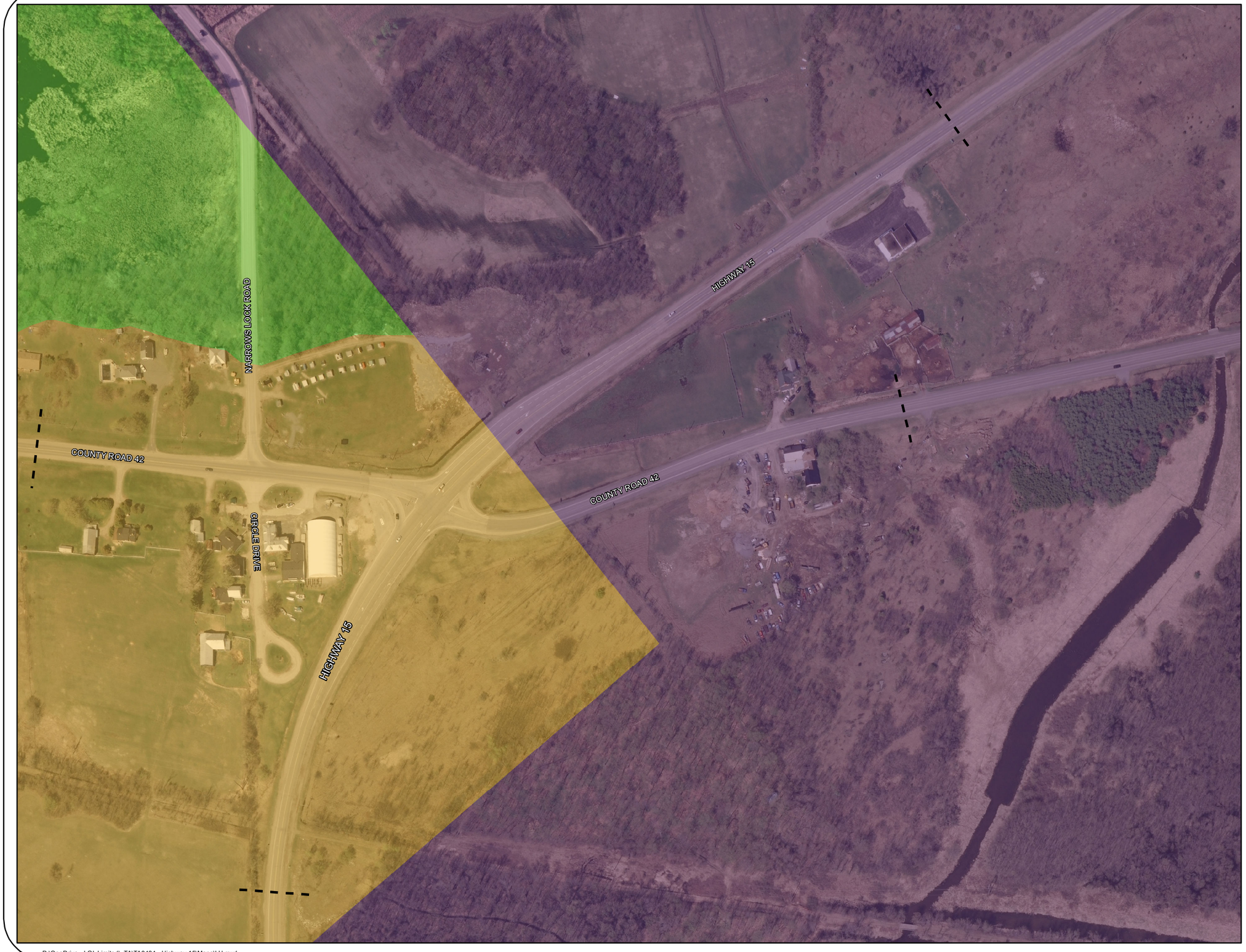
The County is in the process of preparing an Official Plan, and a revised draft of the document was made available in April 2015. The Village of Crosby is identified in the Official Plan as a Rural Settlement Area. The area north-west of the Village is identified as Life Science Candidate Area of Natural and Scientific Interest (Newboro Marsh). The Bog Marsh Provincially Significant Wetland is located west and north of the intersection, at Narrow Locks Road. There are also pockets of Woodlands identified in the vicinity of the intersection.

Rural Settlement Areas permit a range of land uses, and generally maintain a rural settlement character while evolving with the surrounding Rural Area, as appropriate (Policy 2.3.3 of Official Plan). The permitted uses within Rural Settlement Areas are defined in the Township of Rideau Lakes Official Plan.

Township of Rideau Lakes

The study area is located within the jurisdiction of the Township of Rideau Lakes and is subject to the Rideau Lakes Official Plan. According to the Official Plan, existing land use designations within the study area include 'Village and Hamlet', 'Rural', and 'Natural Heritage A'. **Figure 5** presents the boundaries of each of these land use designations. A description of the permitted uses for each of these areas follows:

- Village and Hamlet – permitted uses within this land use designation include: residential, general commercial, tourist commercial and limited industrial uses. The Village of Crosby is designated as 'Village and Hamlet' (Official Plan, 3.8);



LEGEND

Study Limits

Township of Rideau Lakes Official Plan

Village + Hamlet (approximate)

Natural Heritage 'A' (approximate)

Rural (approximate)

Data Source: Township of Rideau Lakes.

40 20 0 40 Metres

N

OFFICIAL PLAN LAND USE DESIGNATIONS

LGL LIMITED
environmental research associates

Project:	TA8484	**Figure:**	5
Date:	July, 2017	**Prepared By:**	MWF
Scale:	1 : 2500	**Checked By:**	KSB

D:\OneDrive - LGL Limited_TA\TA8484 - Highway 15\Maps\LU.mxd

- Rural – permitted uses within this land use designation include: uses permitted in the agricultural designation, forestry, conservation, various outdoor recreational and commercial uses, and industrial and residential uses, subject to use-specific policies. The majority of the study area is designated as 'Rural'. The intent of the Official Plan is to maintain rural character while providing for a modest amount of new development (Official Plan, 3.7); and,
- Natural Heritage A – the Natural Heritage System in the Township of Rideau Lakes includes two components: 'Natural Heritage A' and 'Natural Heritage B'. 'Natural Heritage A' includes Provincially Significant Wetlands (PSWs) and Areas of Natural and Scientific Interest (ANSIs) associated with PSWs. 'Natural Heritage B' includes ANSIs and non-PSWs. Fish habitat, wildlife habitat, endangered and threatened species habitat and woodlands are not included in these land use designations, but policies for their protection are included in the Official Plan. The Bog Marsh PSW is located in close proximity to the Highway 15 right-of-way northwest of the intersection of Highway 15 and County Road 42, at Crosby. This feature is designated as 'Natural Heritage A' in the Official Plan.

Village of Crosby Community Improvement Plan

The Community Improvement Plan (CIP) for the Village of Crosby was prepared in 2011, under Section 28 of the *Planning Act*. The purpose of this CIP is to support short term and medium term growth in the Village and to facilitate a long term vision for the community. The intersection of Highway 15 and County Road 42 is identified as a future residential and commercial/tourist hub. To encourage growth and development at the intersection, the Township will establish a number of programs/tasks, including:

- Acquisition of lands that are surplus to the Highway 15 and County Road 42 intersection improvements by the Township of Rideau Lakes. The Township will dispose of these lands to promote the objectives of the CIP. It is intended that these lands could be used for parking facilities, to provide parking for local community facilities (e.g. flea market) to alleviate local traffic congestion;
- Provision of a grant program to assist in the costs associated with improvements to commercial facades. The Township will provide 50% of eligible costs, up to a maximum of $1,000;
- Township support for the restoration and designation of Crosby's built heritage. The Township will provide staff advice and expertise, as well as a grant program for the costs associated with heritage restoration. The grant program will cover 50% of eligible costs, up to a maximum of $5,000;
- Township support for a private investment or public-private partnership for a year round market and community facility;
- Promotion of the Village image through signage, boundary definition, marketing and promotion; and,
- Promotion of accessibility within the Village of Crosby. A grant program for 50% of eligible costs, up to a maximum of $1,000 will be provided.

A series of schedules to the CIP identify alternatives for the intersection improvements and opportunities for economic development at the intersection. A copy of the CIP is presented in the *Land Use Factors Report* (LGL, 2015).

4.6 Residences and Communities

Primary and secondary source investigations were conducted to determine the type, location and density of residences located within and adjacent to the study area. Field investigations were conducted within the study area by LGL Limited on November 27, 2014.

Residences located within and adjacent to the study area were identified and categorized into three groups, namely residences, residential businesses or residential farms. **Figure 6** presents the location of residences, residential businesses, residential farms and communities identified within the study area.

The following rationale was used to determine the appropriate designation for a property:

- properties with dwelling units visible from the roadway and showing signs of occupation were classified as residences;
- properties with a dwelling unit and a business sign were classified as residential businesses; and,
- properties with a dwelling unit and farm structures such as barns, silos and sheds were classified as residential farms.

Table 8 lists the results of the socio-economic field inventory.

TABLE 8.
SOCIO-ECONOMIC FEATURES IN THE STUDY AREA

Residences	Residential Farm	Residential Business	Business	Community/Recreational /Institutional Facilities	Farm
7	2	1	3	2	0

The study area includes the Village of Crosby in the Township of Rideau Lakes located within the United Counties of Leeds and Grenville. The Township of Rideau Lakes has a total population of approximately 10,207, a small reduction from the 10,350 residents in 2006 (Statistics Canada, 2011). The United Counties of Leeds and Grenville had a total population of approximately 99,206 in 2006, which increased to 99,306 in 2011 (Statistics Canada, 2011).

The following is a summary of the history of the Village of Crosby based on the review of historical records during the preparation of the Community Improvement Plan. The lands surrounding the Village of Crosby were first settled in the post-1812 era, and as families settled in the area the intersection was known as Singleton's Corners. At the turn of the century, the village had near 50 inhabitants and supported a number of businesses, including two blacksmiths, a butcher, two general merchants, a steam powered mill and two local cheese factories. The second half of 1900s brought decline to the Village of Crosby, and now a number of commercial uses, including a large open market, residential uses and a Community Hall are present in the Village (Township of Rideau Lakes 2012).

The study area consists of a mixture of residential and business facilities, with two residential farms. The total approximate number of residences located within/directly adjacent to the study area is ten, comprising seven residences, two residences associated with a farm, and one residence associated with a business. All residences identified were detached single family dwellings and are located in or surrounding the Village of Crosby.

LEGEND

Study Limits

Trans Ontario Provincial Trail

Socio-Economic

- **R** Residence
- **F** Farm
- **RF** Residential Farm
- **RB** Residence/Business
- **B** Business
- **I** Institutional/Community/Recreational Facility
- **A** Former Business

Businesses

- **B1** Castle Rideau Lakes Building Centre
- **B2** Varley Gallery
- **B3** General Store
- **RB1** French's Auto and Weilding

Institutional/Community/Recreational

- **C1** Flea Market

Data Sources: LGL Limited field surveys, Ministry of Transportation.

40 20 0 40 Metres

N

SOCIO-ECONOMIC ENVIRONMENT

LGL LIMITED
environmental research associates

Project:	TA8484	**Figure:**	6
Date:	July, 2017	**Prepared By:**	MWF
Scale:	1 : 2500	**Checked By:**	KSB

D:\OneDrive - LGL Limited_TA\TA8484 - Highway 15\Maps\SE.mxd

Vehicular and Pedestrian Access Points

Vehicles access the study area along the existing Highway 15 and County Road 42. There are also vehicular access points from residential and commercial driveways. One snowmobile trail is located in the study area, along the Trans Ontario Provincial Trail, which crosses Highway 15 south of the intersection, as presented on **Figure 6**. There are no sidewalks located within the study area, however, pedestrians may use the highway/road shoulder to access points of interest in the Village of Crosby, such as the Crosby Community Centre and Crosby Corners Cemetery.

4.7 Commercial, Industrial and Tourism Businesses

Primary and secondary source investigations were conducted to determine the type, location and density of businesses located within and adjacent to the study area. Field investigations were conducted within the study area by LGL Limited on November 27, 2014. Businesses located within and adjacent to the study area were identified as businesses or residential businesses. **Figure 6** presents the location and identity of the businesses located within the study area. The following rationale was used to determine the appropriate grouping for a business:

- properties with a building structure and a business sign were classified as businesses; and,
- properties with a dwelling unit and a business sign were classified as residential businesses.

There are three businesses and one residential business located within the study area:

Businesses

- Castle Rideau Lakes Building Centre;
- Varley Gallery (former school); and,
- General Store.

Residential Business

- French's Auto and Welding

Commercial and Industrial

All of the businesses in the study area may be classified as commercial. No industrial businesses were identified in the study area during field investigations. The property located on Highway 15 east of County Road 42 showed no signs of active use, and may have previously been used as a garage/auto servicing (identified in **Figure 6** as Former Business (A)).

Tourism

Regionally, Highway 15 connecting to Highway 7 provides a link between the City of Kingston and City of Ottawa. The Central Rideau Heritage Route is located along Highway 15. This route provides events and attractions for visitors to the area.

Vehicular and Pedestrian Access Points

Vehicles access the study area along the existing Highway 15 and County Road 42. There are also vehicular access points from residential and commercial driveways. One trail is located in the study area, along the Trans Ontario Provincial Trail, as presented on **Figure 6**. There are no sidewalks located within the study area; however, pedestrians may use the highway/road shoulder to access points of interest in the Village of Crosby, such as the Crosby Community Centre and Crosby Corners Cemetery.

4.8 Community and Recreational Facilities

Primary and secondary source investigations were conducted to determine the type, location and density of community and recreational facilities located within and adjacent to the study area. Field investigations were conducted within the study area by LGL Limited on November 27, 2014.

Facilities within the study area were identified as community, recreational or institutional facilities. **Figure 6** presents the location and identity of the community, recreational and institutional facilities located within and adjacent to the study area. The following rationale was used to determine the appropriate grouping for these facilities:

- properties that have facilities which can be used for community events or activities were classified as a community facility;
- properties or areas that provide publicly accessible recreational services or activities were classified as a recreational facility; and,
- properties that are owned and operated by the local government were classified as an institutional facility.

Table 8 summarizes the total number of community, recreational and institutional facilities located within the study limits.

Community Facilities

During field investigations one community facility was identified within study area: the flea market located at the intersection of County Road 42 and Highway 15. The flea market (identified as C1 on **Figure 6**) promotes local businesses in the Village of Crosby and operates on the weekends from May to October.

Recreational Facilities

During field investigations one trail managed by the Leeds and Grenville Snowmobile Association was identified within the Highway 15 study limits. A machine groomed trail (R20) intersects through Crosby and crosses Highway 15 along the abandoned Brockville Westport & Sault St. Marie Railway. This is noted on **Figure 6** as 'Trans Ontario Provincial Trail'.

Institutional Facilities

No institutional facilities were identified within or adjacent to the study area.

Vehicular and Pedestrian Access Points

Vehicles access the study area along the existing Highway 15 and County Road 42. There are also vehicular access points from residential and commercial driveways. Access to the Flea Market is from Narrows Lock Road. As noted above, one trail is located in the study area, along the Trans Ontario Provincial Trail, as presented on **Figure 6**. There are no sidewalks located within the study area; however, pedestrians may use the highway/road shoulder to access points of interest in the Village of Crosby, such as the Crosby Community Centre and Crosby Corners Cemetery.

4.9 Agriculture

Primary and secondary source investigations were conducted to determine existing agricultural conditions in the vicinity of the study area. The field investigation was conducted on November 27, 2014 and temperature conditions on that day were from -1ºC to -3ºC, with a wind chill of -2ºC to -8ºC (Environment Canada).

Designated Agricultural Lands

The Official Plan of the Township of Rideau Lakes permits agricultural uses within the 'Rural' land use designation. Agricultural uses are permitted in the 'Rural' designation as long as they comply with the land

use compatibility policies of the Official Plan. The majority of the study area is designated as 'Rural'. Refer to **Figure 5** for a map of the Township of Rideau Lakes Official Plan land use designations.

Farm Operations

A total of two farming operations were identified within the study limits. One farm is located on Circle Drive and is associated with the adjacent residence and contains a pasture field, but there was no evidence of an active farming operation (i.e. cash crop, livestock) at the time of the field investigation. The second farm is associated with the residence on the north side of County Road 42. This farm contains evidence of a historic farm on County Road 42 (barn, pasture). It was confirmed at Public Information Centre #1 that the farm on County Road 42 is not an active farm, but will be in the future once the fences are repaired and re-built. In addition, this property includes the lands north of Highway 15, which have been used for crops in the past.

Agricultural Capability of Soils

Agricultural capability soil classes in the study area are predominantly Class 6, with a smaller area of Class 2 soils at the southern end of the study area (OMAFRA, 2007). There is an area of Class 3 soils further north of the study area.

Class 2 soils have moderate limitations that reduce the types of crops that can be grown and require some management. With management, the soils can be used for crops with little difficulty. The Class 2 soils in the Crosby area have sufficient amounts of stones that affect tilling, planting and harvesting (subclass P), and have limitations related to slope steepness and length (subclass T).

Soil capacity Class 6 is unsuitable for cultivation but is capable of unimproved permanent pasture. Improvements to this soil are limited with the use of machinery. This area of Class 6 soil is limited by the proximity of underlying bedrock from the soil surface (subclass R), which is within 100 cm of the surface.

Figure 7 presents the locations of Class 2, 3 and 6 soils within the study area. According to data accessed from Land Information Ontario, there is agricultural tile drainage for the property on County Road 42, east of Highway 15. Based on observations during the field investigation, this property serves as a residence, but does not seem to currently support agricultural activities.

4.10 Aggregate and Mineral Resources

Primary and secondary source investigations were conducted to determine existing aggregate/mining resources in the vicinity of the study area. Field investigations were conducted on November 27, 2014.

Designated Extraction Areas

In the Township of Rideau Lakes sand and gravel resources are limited, but minerals such as granite are key resources. Mineral Resources are identified in the Township of Rideau Lakes Official Plan based on information from the OMNRF and the Ministry of Northern Development and Mines. Some of these resources have not been identified on the Official Plan schedule where they were in close proximity to natural heritage features (Township of Rideau Lakes, 2004). It is the policy of the Official Plan that where soil capability Classes 1 to 3 are in areas designated for Mineral Resources, agricultural activities may occur but the long term use of these areas is for Mineral Resource extraction. There are no Mineral Resources identified within the study limits in the Official Plan.

LEGEND

- Study Limits
- Agricultural Tile Drainage

Soil Capability Classification for Agriculture

- Class 2
- Class 3
- Class 6

Data Source: Agriculture and Agri-Food Canada.

40 20 0 40 Metres

N

HIGHWAY 15/COUNTY ROAD 42
SOIL CAPABILITY FOR AGRICULTURE

LGL LIMITED
environmental research associates

Project: TA8484	**Figure:** 7
Date: June, 2015	**Prepared By:** MWF
Scale: 1 : 2500	**Checked By:** KSB

C:_TA\TA8484 - Highway 15\Maps\Soils.mxd

Mineral Aggregates within the Study Area

Aggregate resources contribute to the local economy of the study area. The United Counties of Leeds and Grenville has approximately 2,254,736 metric tonnes of aggregate in licences for extraction. The Township of Rideau Lakes has approximately 121,202 metric tonnes in aggregate permits (Ontario Aggregate Resources Corporation, 2006).

The Port of Prescott is located within the United Counties of Leeds and Grenville on the St. Lawrence River and is a large regional port that handles aggregate export. Approximately 178,203 metric tonnes of aggregate were transported at this port in 2002 (Leeds and Grenville).

There are a total of one licensed pit and three licensed quarries in the vicinity of the study area (OMNRF, 2008), as documented in the *Land Use Factors Report* (LGL, 2015). All of the pits and quarries are located well beyond the study limits, but indicate that there are resources in the general vicinity of the study area that require transportation of materials to and from these facilities. There are no designated haul routes within the study area, but Highway 15 may be used by licensed aggregate operations within the study area.

During field investigations, aggregate extraction pits and mines would have been identified where there was a sign stating “Danger Open Pit” or a name for the open pit or mine. No aggregate or mining operations were observed within the study limits.

4.11 Municipal Services

Primary and secondary source investigations were conducted to determine the type and location of municipal services located within and adjacent to the study area. Bell and Hydro aerial utilities are located throughout the study area. Some underground Bell and Hydro utilities are also found at minor intersections throughout the study area. There are no known gas utilities within the study area. No municipal services including water and sewer infrastructure are present within the study limits.

Highway 15 is used for daily bus routes on school days in the morning and afternoon by School Boards in the region. According to the Student Transportation of Eastern Ontario (July 2015), there are currently two bus stops on Circle Drive for the elementary and secondary schools. This organization services the Upper Canada District School Board and the Catholic District School Board of Eastern Ontario. There are a total of 16 buses using Highway 15 and County Road 42 (8 with children on board, 8 empty buses on route to pick up children), which are using the study area within the hours of 7:30 a.m. to 9:00 a.m. and 2:15 p.m. to 4:00 p.m. The bus stops in the study area will likely change before construction, and should be reconfirmed during detail design. The Consortium de transport scolaire d’Ottawa services the French School Boards in the area; however, it was confirmed in July 2015 that there are no bus stops in the study area, and there are no buses using Highway 15 or County Road 42 in Crosby.

Emergency Services, such as ambulance services, are provided by the United Counties of Leeds and Grenville. Fire response services are provided locally, through the Township of Rideau Lakes. Policing services are provided by the Ontario Provincial Police. Generally, Highway 15 is a route used by emergency service providers to respond to emergency calls.

4.12 Property Waste and Contamination

A Contaminated Property and Waste Management Assessment and Phase II Environmental Site Assessment (ESA) were undertaken by Golder Associates between October and November 2008 as part of a previous Highway 15 improvements study. For more information refer to the *Contaminated Property and Waste Management Assessment for Highway 15 from 1.39 km north of Chaffey’s Lock Road to 0.25 km south of Young’s Hill Road, Township of Rideau Lakes* (Golder Associates, 2008); and the *Phase II*

Environmental Site Assessment for the Intersection of Highway 15 and County Road 42 (Golder Associates, 2009).

There is one property with potential environmental concern, which was previously used for a gas station. There is potential for contaminant migration from the property onto the MTO right-of-way. A Phase II ESA was conducted for this property. The presence of the pump island on the MTO right-of-way and the inferred presence of underground storage tanks (USTs) adjacent to the right-of-way, there is potential for hydrocarbon impacted soil to be encountered during construction. An impacted soil management plan should be developed prior to construction. Additional site investigations could be carried out to further characterize the subsurface conditions prior to proceeding with the proposed construction activities. MTO may also carry out a geophysical survey in the proposed construction area in order to identify subsurface infrastructure potentially associated with the service station and associated USTs (Golder Associates 2008).

Since the completion of the Phase II ESA during the previous Class EA study, the study team has determined that Infrastructure Ontario owns this property. Infrastructure Ontario is in communication with the Ministry of Environment and Climate Change regarding the contamination of the site.

4.13 Archaeology

During the previous Highway 15 improvements Class EA Study, a Stage I Archaeological Assessment of the study area was undertaken by the Central Archaeology Group to identify any known and/or potential areas of archaeological concern. The Stage I assessment concluded that there is a moderate to high potential for the discovery of extant archaeological materials and that a Stage II Assessment would be required.

A Stage II Archaeological Assessment of the study area was undertaken including a systematic shovel testing excavation system at sites within the study limits. The Stage II assessment involved a test-pit excavation strategy, which involved hand excavation of test pits to undisturbed soils on a 5 m test pit grid interval. Each shovel sized test pit was approximately 30 cm in diameter and excavated into the first 5 cm of subsoil. All test pits were processed through 6.0 mm mesh rocker or hand screens. No sites of archaeological potential were identified during this assessment. For further information refer to the *Stage I and II Archaeological Assessment, Highway 15 Improvements WP 479-92-00 and WP 4315-06-00* (Central Archaeology 2009).

Based upon the findings of the Stage I and II Archaeological Assessment, there are no potential archaeological sites within the study limits. However, there is potential for unmarked burials to be discovered in the vicinity of the Crosby Corners Cemetery. Should work be conducted adjacent to the cemetery, it is recommended that mitigation measures be implemented. In these areas, a licensed archaeologist should be present during subsurface construction activities. It is also recommended that a geophysical survey be undertaken, including the use of ground penetrating radar, at these sites to determine map anomalies representing potential burials.

4.14 Built Heritage and Cultural Heritage Landscapes

During the previous Highway 15 improvements Class EA Study, A built heritage resource and cultural heritage landscape assessment was conducted by the Central Archaeology Group to identify any known and/or potential historic heritage features within the study limits.

Built Heritage Resources

A number of built heritage resource features were identified within the study area. Two residences on Circle Drive were identified as built heritage resource features, BHR 9 and BHR 10. The barn in association with BHR 10 is also identified as a built heritage resource feature. A residence on County Road 42 is also

identified as a built heritage resource feature (BHR 12), as well as the associated fence (BHR 13) and barn (BHR 14). The vacant building (general store) on County Road 42 (B3 on **Figure 6**) and former school that is now used for the Varley Art Gallery, located at the intersection of County Road 42 and County Road 14 (B2 on **Figure 6**) were identified as built heritage features (BHR 7 and 8, respectively). The former business on Highway 15 was identified as BHR 15, a one storey shop from 1940-1960. Cultural heritage landscapes were identified in association with two farms, one located on Circle Drive and the other on County Road 42 (Central Archaeology 2009). For further information refer to the *Built Heritage and Cultural Heritage Landscape Assessment WP 479-92-00 and WP 4315-06-00* (Central Archaeology 2009).

Cultural Heritage Resources

There is one cultural heritage resource, the Crosby Corners Cemetery located within Lot 21, Concession 2, Township of Rideau Lakes. The cemetery was established in the middle of the nineteenth century and an unknown number of now unmarked interments may be present within the existing highway right-of-way. Ground disturbance beyond the highway footprint could result in the discovery of unmarked burials. Should ground disturbance be required beyond the highway footprint at the Crosby Corners Cemetery, further archaeological investigations are recommended prior to construction, including in-depth historic research and a geophysical survey to identify whether burial features remain within the highway right-of-way. For further information refer to the *Built Heritage and Cultural Heritage Landscape Assessment WP 479-92-00 and WP 4315-06-00* (Central Archaeology 2009).

5.0 PRELIMINARY DESIGN

This chapter briefly discusses the existing highway conditions, the collision and traffic operations analysis, the evaluation of the preliminary design alternatives, the selection of the technically preferred preliminary design alternative and the main components of the recommended preliminary design for the intersection improvements at Highway 15 and County Road 42. The preliminary design phase for this project and design alternatives will be discussed in detail in the Preliminary Design Report, which will be prepared as a separate report prior to completion of the preliminary design phase.

5.1 Existing Highway Conditions

Highway 15 and County Road 42 Intersection

Highway 15 and County Road 42 is a four-leg intersection in the Village of Crosby, Township of Rideau Lakes, United Counties of Leeds and Grenville. Highway 15 has uncontrolled movement through the intersection and County Road 42 is stopped controlled with flashing beacons on the stop signs.

Northbound and southbound approaches on Highway 15 at the intersection each have one thru lane, offset left turn lanes, and right turn lanes (taper with parallel lane). The westbound and eastbound approaches on County Road 42 at Highway 15 have one through/left turn lanes and channelized right turns.

Posted Speed and Design Speed

The posted speed on Highway 15 is 80 km/hr. and the posted speed on County Road 42 is 80 km/hr. The design speed for the preliminary design is 100 km/hr. (20 km/hr. over the posted speed) for both Highway 15 and County Road 42.

5.2 Collision and Traffic Operations Analysis

Collision Analysis

HDR gathered collision data within 500 m of the Highway 15 and County 42 intersection between January 1, 2009 and December 31, 2014. The data was gathered from AIS database (for years 2009 to 2011) and supplemented by additional scanned copies of Motor Vehicle Accident Reports (MVAR between 2010 and 2014. The 2014 data was not part of the analysis conducted since it is a partial year while the others are completed years.

There were 22 reported collisions at the intersection between the study periods (January 1, 2009 – December 31, 2013, where 21 (95%) of the collisions were property damage only (PDO) and one (5%) injury collision.

The intersection performs similar to other 4-leg, two-way stop-controlled arterial intersections within Ontario based on the collision analysis conducted. From a macro level assessment, there appears to be a large number of collisions near the intersection that were related to single motor vehicle collisions that involved animals/wildlife during night-time conditions. The actual number of collisions attributed to the operation of the intersection was low (5 collisions in 5 years). No animal warning signs were noticed during a field investigation at the beginning of the study. It is recommended that animal warning signs be considered as per the Ontario Traffic Manual guidelines.

MTO provided HDR with additional collision data from 2014 to 2016. In total, 3 collisions were reported, 2 angles (i.e. collision at an intersection) and one single motor vehicle. All three of these collisions occurred 300m south of the intersection and were not related to the operation of the intersection. The three collisions have no impact on triggering the traffic signal (or roundabout) warrants.

Traffic Analysis

MTO provided AM and PM peak hour turning movement counts at the intersection (traffic counts conducted on Thursday September 13, 2012). The counts were adjusted to represent the project base year (2015) using a growth rate of 2% per annum to develop 2015 AM and PM peak hour turning movements counts (see **Figures 8 and 9**).

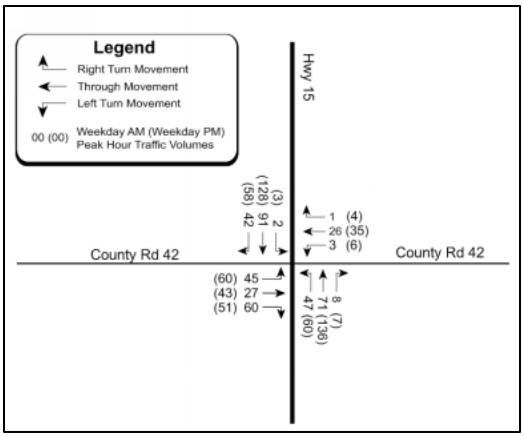


FIGURE 8.
2012 TURNING MOVEMENT COUNTS (MTO)

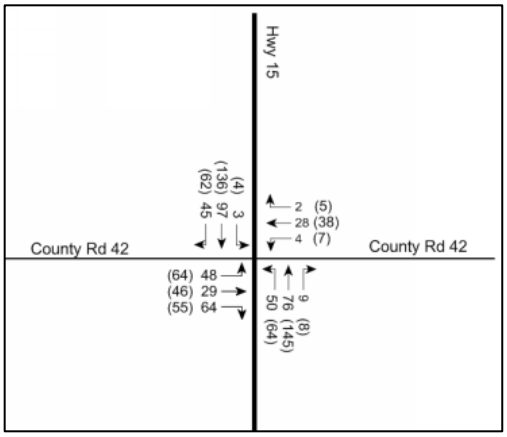


FIGURE 9.
2015 TURNING MOVEMENT COUNTS (ADJUSTED)

The Highway 15 and County Road 42 intersection operates on a level of service of 'A' during both the AM and PM peak hours. The eastbound left-through movement currently operates at a level of service 'C' in PM peak hour.

There are no existing queuing or capacity deficiencies at the intersection based on traffic analysis performed using the projected 2015 traffic volumes. Traffic signals at the intersection are not warranted as none of the criteria listed in Book 12 (Traffic Signals) of the Ontario Traffic Manual were met based on the available traffic, pedestrian, collision, and geometric data. Based on the traffic analysis, traffic signals are currently warranted for 2045.

Overall, the intersection experiences low traffic volumes with queues extending no longer than 2-to-3 vehicles on County Road 42 based on site observations[1]. No operational concerns were observed at the intersection.

5.3 Identification and Evaluation of Preliminary Design Alternatives

A number of both, short term and long term, preliminary design alternatives for intersection improvements at Highway 15 and County Road 42 were considered, assessed, and evaluated during this study. The project team, which included MTO and the project consultants (HDR and LGL), worked closely together with the Municipal Advisory Committee (MAC) to identify the problems, create a long list of alternative solutions, assess the alternative solutions, and create a short list of alternative solutions that were developed for further consideration.

[1] Traffic observations conducted on Tuesday June 15, 2013 (8:00 AM to 9:30 AM and 5:30 PM to 6:00 PM) and Monday December 15, 2014 (12:30 PM to 6:00 PM).

The following is summary of the methodology used to generate and assess the preliminary design alternatives and ultimately select a short term and long term solution for improvements at the intersection. **Figure 10** illustrates the process used to determine a technically preferred alternative.

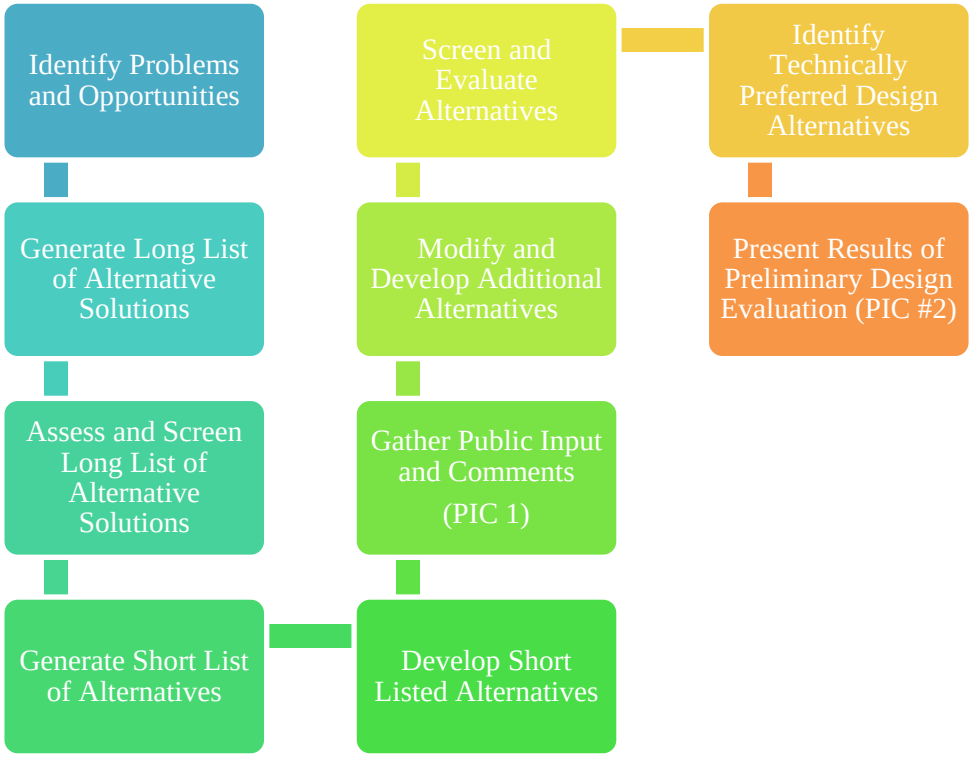


FIGURE 10. PREFERRED DESIGN ALTERNATIVES SELECTION PROCESS

Identify Problems and Opportunities

At the beginning of the study a MAC was setup to help the project study team to identify problems and opportunities and generate a long list of alternative solutions. MAC members were engaged in a free exchange of ideas and concerns and helped create a list of several problems and opportunities including the following:

Problems:

- high speeds through the intersection;
- illumination at the intersection;
- sightlines from County Road 42 to Highway 15 (east and west leg); and,
- parked cars on Highway 15 (flea market, cemetery).

Opportunities:

- incorporate Community Improvement Plan into preferred alternative;
- install traffic calming measures;
- construct more parking; and,
- enhance signage at intersection.

Generate Long List of Alternative Solutions

After the list of problems and opportunities was developed, a long list of any alternatives that could mitigate, minimize, or eliminate the problem was generated. In total, 38 alternatives were generated and were screened using several criteria including improvements to traffic operations, traffic safety, impacts to natural environment, socio-economic environment, conformance with MTO policies and design standards, cost sharing/future maintenance, etc. The alternatives were categorized into three different time horizons and based on level of complexity:

- Quick/short term, low complexity (0 to 5 years);
- Interim, medium complexity (5 to 10 years); and,
- Long-term, medium-high complexity (20+ years).

Table 9 lists the alternative solutions generated.

Short List of Alternatives

The long lists of alternative solutions were reviewed by MTO, the project team, and the MAC (Meeting #3, Thursday May 14, 2015). After discussing each of the long list of alternatives, the long list of alternatives were narrowed to identify those that would be recommended to be carried forward for development. The last column of **Table 9** indicates the alternatives that were carried forward, including:

a) routine pavement marking two times per year (currently once a year);
b) maintain clear sight lines (keep sightline free from build-up/signs, vegetation);
c) adjust pavement markings to orient County Road 42 motorists to 90° right angles;
d) shoulder hatching/hatching adjacent to turn lanes (dead lanes);
e) durable pavement markings;
f) install reference markers/chevrons on outside of Highway 15 curve;
g) eliminate right turn channelization on County Road 42 approaches, remove extra pavement;
h) overheard flashing beacon at intersection;
i) change offset left turn on Highway 15 to opposing left turn lanes (restripe existing pavement)/remove excess pavement;
j) corridor Illumination on Highway 15/point illumination on County Road 42;
k) reconstruct County Road 42 approaches to create right angle approach to Highway 15;
l) construct 2 T-intersections (relocate 1 or both County Road 42 approaches); and,
m) reconstruct Highway 15 with a large curve radius, flatter superelevation (3% max), maintain existing speed.

TABLE 9.
LIST OF ALTERNATIVE SOLUTIONS

No.	Yes = √ Positive = (+) No Change = NC No = **X** Negative = (-) MAC Priority Ranking **Alternative Solutions** **Quick Alternatives (0 to 5 years implementation) – minimal construction/cost/impacts/permits**	Improves Traffic Operations (**X** , √)	Improves Traffic Safety (**X** , √)	Impacts the Natural Environment (+), (-), NC	Impacts Socio-Economic Environment (+), (-), NC	In conformance with MTO Policies/ Meets all Warrants (**X** , √)	May require local agency cost sharing or future maintenance responsibility (**X** , √)	Initial Selection to be carried forward
1	Enforcement	**X**	√	NC	NC	√	**X**	
2	Reduce posted speed on Hwy 15 through Crosby	**X**	√	NC	(+)	**X**	**X**	
3	Routine pavement marking 2-times per year (currently 1-time per year)	√	√	NC	NC	**X**	**X**	★
4	Maintain clear sight lines (keep sightline free from build-up/signs)	√	√	(-)	(-)	√	**X**	★
5	Create designated pedestrian route from existing parking areas to flea market/cemetery	**X**	**X**	(-)	(+)	**X**	√	
6	Adjust pavement markings to orient CR42 drivers to right angles	√	√	NC	NC	√	**X**	★
7	Shoulder hatching/ hatching adjacent to turn lanes (dead lanes)	√	√	NC	NC	√	**X**	★
8	Durable pavement markings (thermos plastic/epoxy)	√	√	NC	NC	√	**X**	
9	Install reference markers/chevrons on outside of Hwy 15 curve	√	√	NC	NC	√	**X**	★
10	Recessed pavement markings (cat's eye/reflectors)	√	√	NC	NC	√	**X**	
11	Eliminate right turn channelization on CR42 approaches, remove extra pavement	√	√	(+)	NC	√	**X**	★
12	Radar speed notification signs	**X**	√	NC	NC	**X**	√	
13	Use old Hwy 15 roadbed (after bridge realignment) for cemetery parking	**X**	**X**	(+)	(+)	**X**	√	
14	Use mirrors to aid driver's sightlines on CR42	**X**	**X**	NC	NC	**X**	**X**	
No.	**Alternative Solutions** **Mid-term Alternatives (5 to 10 years implementation) – medium construction/ cost/impacts/permits**	Improves Traffic Operations (**X** , √)	Improves Traffic Safety(**X** , √)	Impacts the Natural Environment (+), (-), NC	Impacts Socio-Economic Environment (+), (-), NC	In conformance with MTO Policies/ Meets all Warrants (**X** , √)	May require local agency cost sharing or future maintenance responsibility (**X** , √)	Initial Selection to be carried forward
15	Enhanced destination signage on Hwy 15	**X**	**X**	NC	NC	**X**	√	
16	Oversized advanced intersection warning signs on Hwy 15	**X**	√	NC	NC	**X**	**X**	
17	Gateway features/signing/banners – community/tourist/business oriented	**X**	**X**	(+)	(+)	**X**	√	
18	Overhead flashing beacon at intersection location	√	√	NC	NC	√	**X**	★
19	Overhead lane designation signs and to gateway features on Hwy 15 (max span width 24m)	√	√	NC	(+)	**X**	**X**	
20	Change Offset left turns on Hwy 15 to Opposing left turn lanes (restripe existing pavement)/remove excess pavement	√	**X**	(+)	NC	√	**X**	★

No.	**Alternative Solutions** **Mid-term Alternatives (5 to 10 years implementation) – medium construction/ cost/impacts/permits (continued)**	Improves Traffic Operations (**X** , √)	Improves Traffic Safety(**X** , √)	Impacts the Natural Environment (+), (-), NC	Impacts Socio-Economic Environment (+), (-), NC	In conformance with MTO Policies/ Meets all Warrants (**X** , √)	May require local agency cost sharing or future maintenance responsibility (**X** , √)	Initial Selection to be carried forward
21	Point illumination at intersection	√	√	(-)	(+)	√	√	
22	Corridor illumination on Hwy 15/point illumination on CR42	√	√	(-)	(+)	√	√	★
23	Ornamental/gateway lighting	**X**	√	(-)	(+)	**X**	√	
No.	**Alternative Solutions** **Long-term Alternatives (20+ years to implementation) – significant construction/ cost/impacts/permits**	Improves Traffic Operations (**X** , √)	Improves Traffic Safety(**X** , √)	Impacts the Natural Environment (+), (-), NC	Impacts Socio-Economic Environment (+), (-), NC	In conformance with MTO Policies/ Meets all Warrants (**X** , √)	May require local agency cost sharing or future maintenance responsibility (**X** , √)	Initial Selection to be carried forward
24	Clean up gas station/acquire property/use as local parking area	**X**	√	(+)	(+)	**X**	√	
25	Realign Crosby Road west of cemetery, use remnant for parking	√	√	(-)	(+)	**X**	√	
26	Reconstruct CR 42 approaches to create right angle approaches to Hwy 15	√	√	(-)	NC	√	**X**	★
27	Construct 2 T intersections (relocate 1 or both CR42 approaches)	√	√	(-)	NC	√	**X**	★
28	Reduce superelevation on Hwy 15 – leave existing curve radii, reduce posted speed	√	√	NC	NC	**X**	**X**	
29	Add private entrances/approaches on Hwy 15 (visual cue)	**X**	**X**	(-)	(+)	**X**	√	
30	Construct urban cross section on Hwy 15 (visual cue)	**X**	√	(-)	(+)	**X**	√	
31	Reconstruct Hwy 15 to create right angle approach to CR42	√	√	(-)	NC	√	**X**	
32	Reconstruct CR 42 & Hwy 15 vertical profiles to eliminate “roller coaster” ride	√	√	(-)	NC	√	**X**	
33	Reconstruct Hwy 15 with larger curve radii, flatter superelevation (3% max), maintain existing speed	√	√	(-)	(+)	√	√	★
34	4-way Stop (requires reduced superelevation on Hwy 15)	√	√	(-)	NC	**X**	**X**	
35	Traffic signal (requires reduced superelevation on Hwy 15)	√	√	(-)	(+)	**X**	√	
36	Roundabout (required reduced superelevation on Hwy 15)	√	√	(-)	(+)	**X**	√	
37	Pedestrian overpass (requires structure across Hwy 15)	**X**	√	(-)	(+)	**X**	√	
38	Overpass (requires structures, ramps)	**X**	√	(-)	(+)	**X**	**X**	

Short Listed Alternatives

Four (4) alternatives where developed for Public Information Centre (PIC #1) from the short list alternatives. These included:

- **Alternative 1: Low Complexity (Short Term)**
  This alternative included design elements that can be implemented quickly including routine pavement markings, maintaining clear sightlines, adjust pavement markings, shoulder hatching, installing chevrons, etc. (short listed alternatives a to j listed above)

- **Alternative 2: Realign County Road 42 Intersection Approach (Long Term)**
  This alternative includes low complexity elements plus adjusting the County Road 42 approach to 90° with Highway 15.

- **Alternative 3: Convert to Two T-Intersections (Long Term)**
  This alternative includes converting the existing 4-leg intersection into two T-intersections and closing the east leg of the intersection (County Road 42) and moving it further to the north.

- **Alternative 4: Realign Highway 15 (Long Term)**
  This alternative includes realigning Highway 15 further to the south, reconstructing to a 3000 m radius to support a superelevation that could allow for future traffic signals (i.e. 1% superelevation)

Gather Public Input and Comments (PIC #1)

The four alternatives were presented at PIC #1where the general public had an opportunity to provide feedback and comments. Following PIC #1, alternatives were modified and additional alternatives were developed.

Develop Additional Alternatives

Two (2) new alternatives were developed for Alternative 3, and two (2) new alternatives were developed for Alternative 4 to address comments from PIC #1.

Alternative 3

Alternative 3-1: Convert to 2 T-Intersections
Alternative 3-1 would construct the new T-intersection approximately 435 m north of the Highway 15 and County Road 42 intersection.

Alternative 3-2: Convert to 2 T-Intersections
Alternative 3-2 would construct the new T-intersection approximately 950 m of the Highway 15 and County Road 42 intersection.

Alternative 4

Alternative 4-1: Realignment of Highway 15, 900m Radius
Alternative 4-1 would shift the Highway 15 and County Road 42 intersection approximately 45m to the south and realign Highway 15 from the existing alignment with a 900 m radius curve to match the new Crosby Creek Bridge.

Alternative 4-2: Realignment of Highway 15, 1200m Radius
Alternative 4-2 would shift the Highway 15 and County Road 42 intersection approximately 45m to the south and realign Highway 15 from the existing alignment with a 1200 m radius curve (meeting MTO minimum design standard for a highway alignment curve with an intersection[2]) to match into the new Crosby Creek Bridge.

Study Area Change and Additional Survey

To gather the necessary background and field information to assess the new alternatives (3-1, 3-2, 4-1, and 4-2) the original study area was expanded to incorporate the new alternatives. The data collection occurred in the spring of 2016 and included topographical survey, road safety analysis, culvert inspections, and additional environmental surveys (terrestrial).

Screen and Evaluate Alternatives

The short listed alternatives for the Highway 15 and County Road 42 intersection improvements, including the additional alternatives, were presented to the MAC (Meeting #4, December 1, 2015). Together with the MAC, each of the short listed alternatives was assessed on whether not it met the criteria developed by the project team. This assessment helped determine which of the short listed alternatives should be carried forward for evaluation of the technically preferred alternative. The criteria and results of the assessment are presented in **Table 10**.

TABLE 10.
CRITERIA AND ASSESSMENT RESULTS

CRITERIA	Alt 1	Alt 2	Alt 3	Alt 3-1	Alt 3-2	Alt 4 R=3000m	Alt 4-1 R=900m	Alt 4-2 R=1200m
Supports CIP	**N**	**N**	**Y**	**Y**	**N**	**N**	**Y**	**Y**
Addresses Safety	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
Mainline (Hwy 15) meets current MTO horizontal alignment design standards	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
Mainline (Hwy 15) horizontal alignment is acceptable for intersection configuration	**N**	**N**	**Y**	**Y**	**Y**	**Y**	**N**	**Y**
Sideroad (CR 42) meets current MTO horizontal alignment design standards	**N**	**N**	**N**	**Y**	**Y**	**Y**	**Y**	**Y**
Existing data collection/analysis is sufficient to support evaluation process	**Y**	**Y**	**Y**	**N**	**N**	**N**	**N**	**N**
Reasonableness	**Y**	**Y**	**Y**	**Y**	**N**	**N**	**N**	**Y**
Alternatives recommended to be carried forward	✓	✓	✗	✓	✓	✗	✗	✓

[2] MTO, Geometric Design Standards for Ontario Highways (E.4.1 Horizontal Alignment, page E4-1)

Alternatives Not Carried Forward for Evaluation

The following three (3) alternatives were screened out during the MAC #4 meeting, and not recommended to be carried forward for evaluation for the following reasons:

Alternative 3 (Convert to 2 T-Intersections):

- significant impacts to private property (i.e. lands outside of MTO ROW); and,
- the distance between the two legs of the T-intersection does not meet MTO policy

Alternative 4 (3000 m radius):

- significant impacts to private property (i.e. lands outside of MTO ROW);
- need for several new bridges;
- abandonment of new constructed bridge on Highway 15 south of County Road 42;
- the distance of the new Highway 15 alignment from Crosby would not support the CIP; and,
- only supporting rational is that the radius allows for a superelevation that can accommodate traffic signals, if ever warranted.

Alternative 4-1 (900 m radius):

- the 900 m radius does not meet MTO's minimum standard of 1200m at 4-leg intersection; and,
- the 900 m radius does not reduce the superelevation to allow for traffic signals, if ever warranted.

Alternatives Carried Forward for Evaluation

The following five (5) alternatives were selected to be carried forward for evaluation to determine a short and long term technically preferred alternative and are listed in **Table 11**.

TABLE 11.
SHORT LISTED ALTERNATIVES CARRIED FORWARD FOR EVALUATION

ALTERNATIVE NO.	DESCRIPTION	
1	Low complexity pavement marking and signage improvements to existing intersection	Presented at PIC#1
2	Realign County Road 42 to 90 Degree Intersection Approaches	Refined based on input from PIC#1
3-1	Convert to 2 tee-intersections with CR-42 east leg located + 430 m north of existing intersection	New-Developed based on PIC#1 comments
3-2	Convert to 2 Tee-Intersections with CR-42 east leg located + 950 m north of existing intersection	New-Developed based on PIC#1 comments
4-2	Realign Highway 15 with 1200 m Radius through CR-42 intersection and tie into new bridge south of CR-42	New-Developed to allow for traffic signals

The short listed alternatives carried forward for evaluation are presented on the following pages (**Figures 11 to 15**).

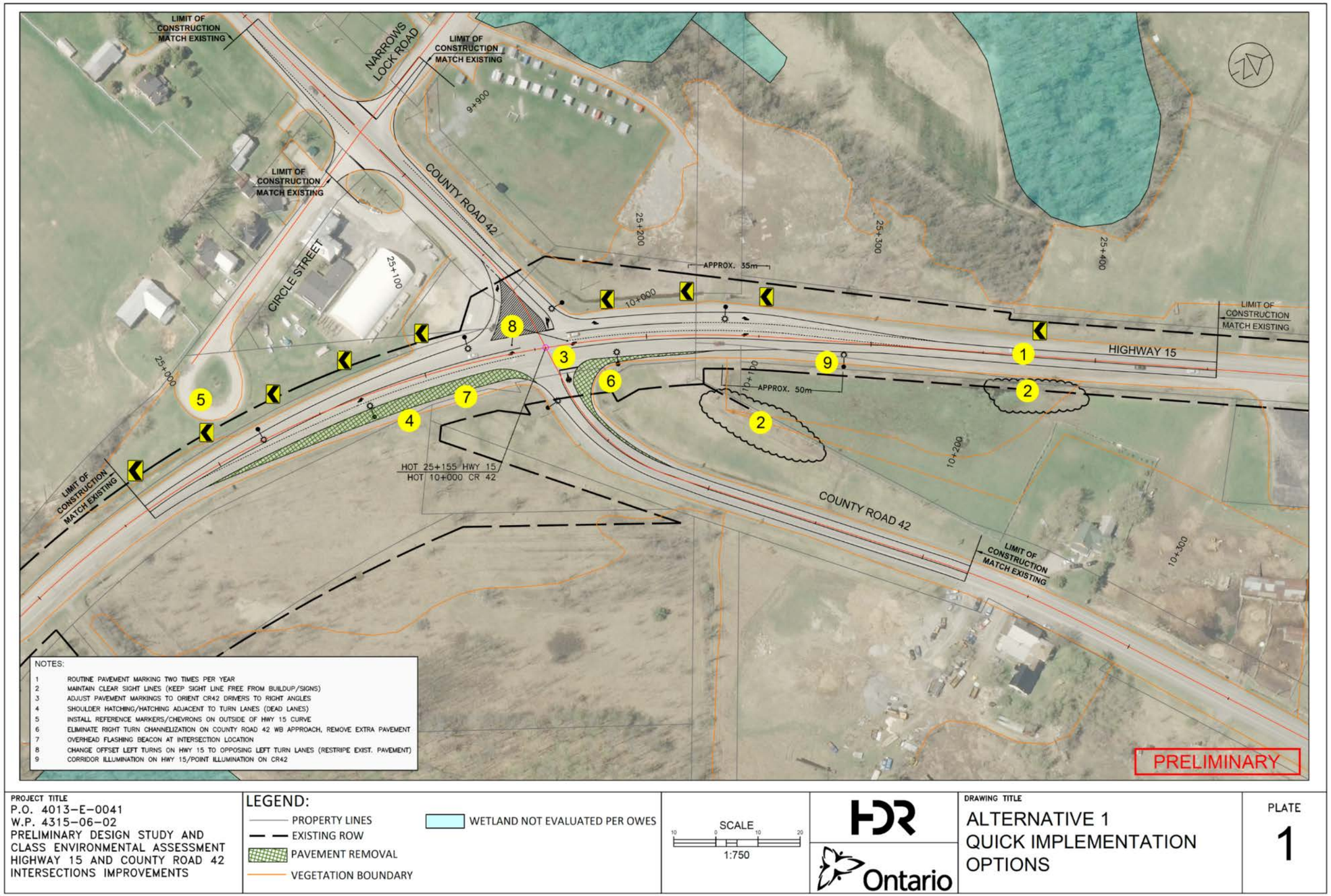


FIGURE 11. ALTERNATIVE 1: QUICK IMPLEMENTATION OPTIONS

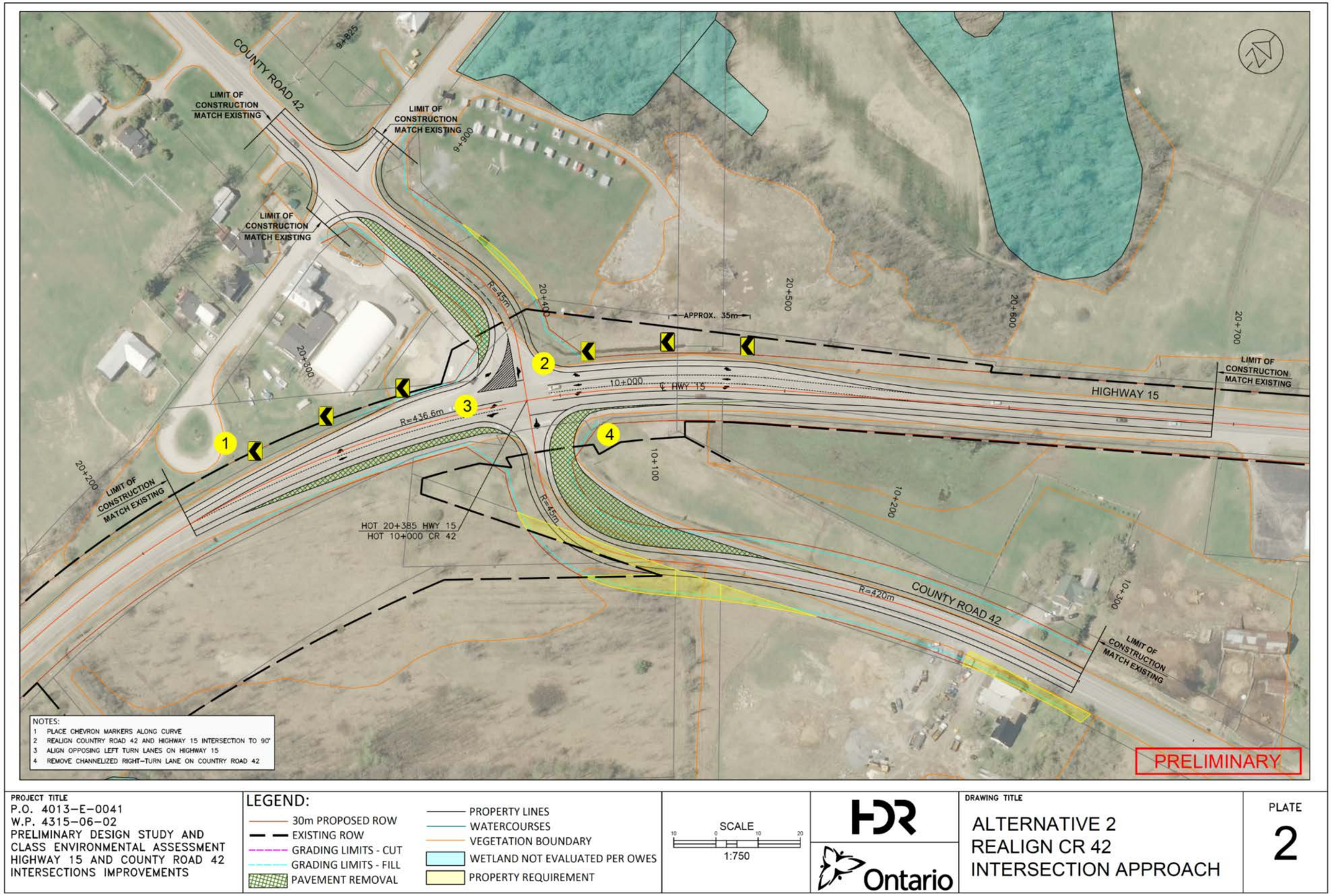


FIGURE 12. ALTERNATIVE 2: REALIGN COUNTY ROAD 42 INTERSECTION APPROACH

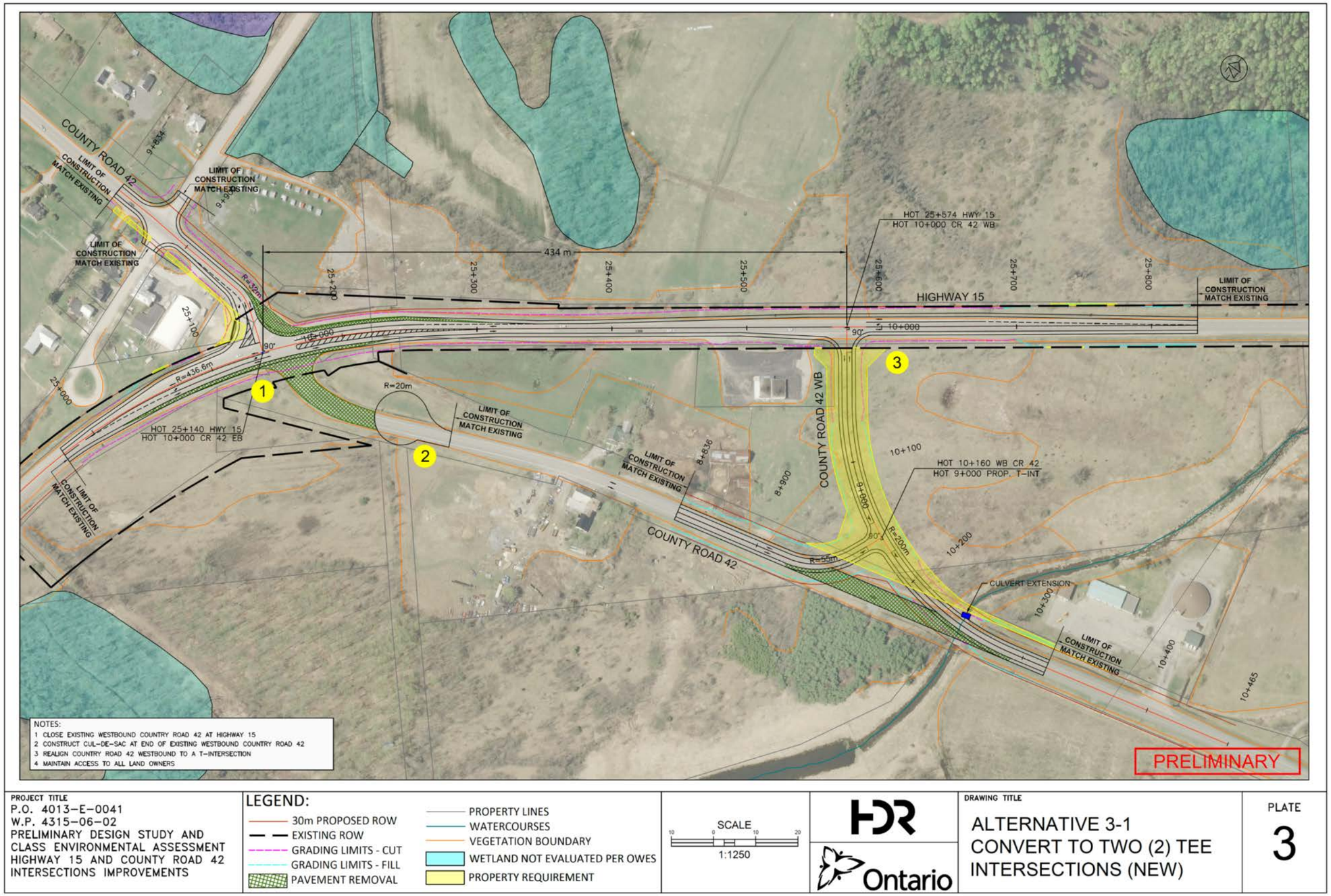


FIGURE 13. ALTERNATIVE 3-1: CONVERT TO TWO (2) T-INTERSECTIONS

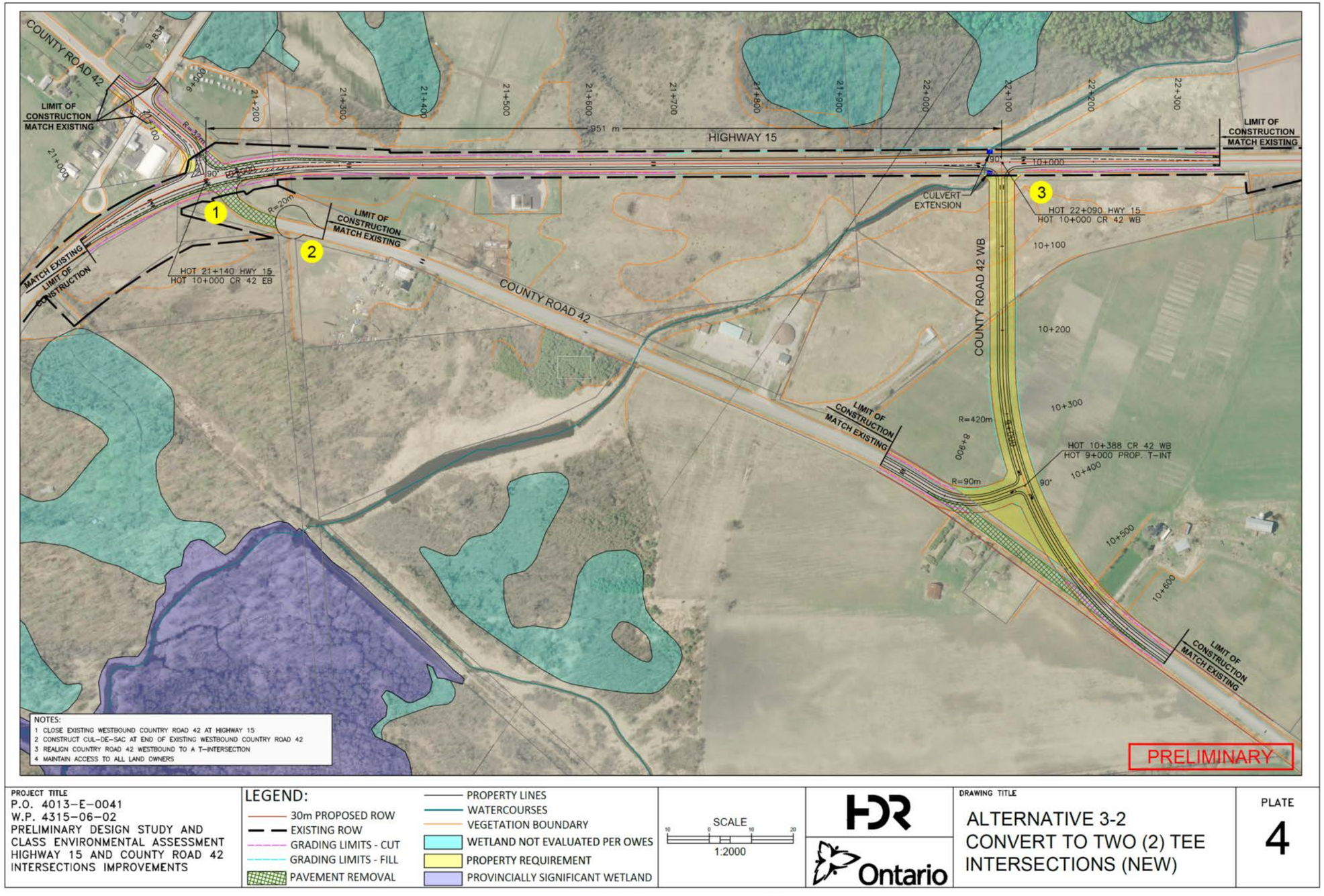


FIGURE 14. ALTERNATIVE 3-2: CONVERT TO TWO (2) T-INTERSECTIONS

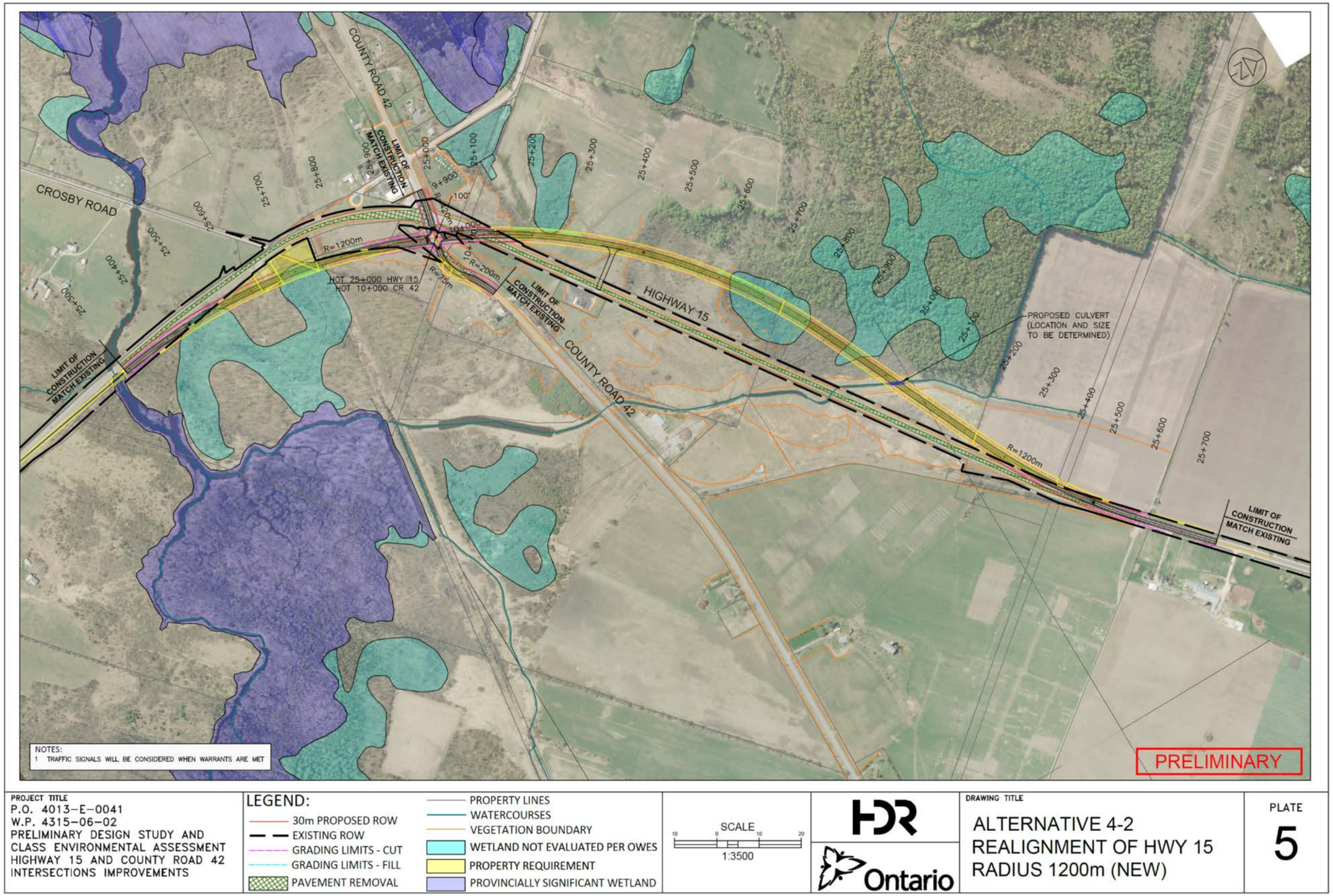


FIGURE 15. ALTERNATIVE 4-2: REALIGNMENT OF HIGHWAY 15 – RADIUS 1200M

Evaluation Methodology

The methodology used to evaluate the short listed alternatives (both short term and long term) is a pairwise comparison. This methodology compares alternatives against each other based on the determined criteria and indicators. **Table 12** lists the initial criteria and weighting developed by the project team and the MAC, and the revised criteria and weighting determined by the project team. It was determined that cost would not be factored into this evaluation and the weighting for cost was re-distributed to the remaining criteria. **Table 13** lists the final criteria groups and weighting used for the evaluation.

TABLE 12.
INITIAL EVALUATION CRITERIA AND WEIGHTING

Criteria Group	Weighting as per MAC Input (MAC #3)	Weighting used for Evaluation (as determined by Project Team)
Transportation	37.5%	45.0%
Natural Environment	0.0%	20.0%
Socio-Economic Environment	31.3%	25.0%
Cultural Environment	6.3%	10.0%
Cost	25.0%	0% (redistributed)

This methodology involves the following process to determine short and long term technically preferred alternatives:

- Establish criteria and indicators
- Establish criteria weighting
- Assess criteria for each alternative
- Conduct pairwise comparison of concept alternative for each criteria,
    - Alternative with better criteria performance/assessment is assigned 100% of criteria weighting, with 0% to the other alternative.
    - If performance/assessment of criteria are equal/similar then both alternatives are assigned 50% of the criteria weighting
    - Add assigned points for each alternative for cumulative criteria/factor “score”
    - Carry out criteria weighting sensitivity analysis
- Alternative pairs for comparison:
    - Short Term Improvements
        - Alterative 1 vs. Alternative 2
    - Long Term Alternatives
        - Alternative 3-1 vs. Alternative 3-2
        - Alternative 3-1 vs. Alternative 4-2
        - Alternative 3-2 vs. Alternative 4-2
        - Alternative 2 vs. Alternative 3-1

TABLE 13.
EVALUATION CRITERIA AND INDICATOR WEIGHTING

CRITERIA GROUP	WEIGHTING	CRITERIA	WEIGHTING	INDICATORS (Units of Measure)	WEIGHTING	NET WEIGHTING
TRANSPORTATION	45%	Intersection Level of Service	15%	Level of Service AM (2045) (A-F)	100%	6.75%
		Intersection Level of Service	15%	Level of Service PM (2045) (A-F)	100%	6.75%
		Length of Intersection Crossing alongside Road	10%	Width of pavement: stop bar to stop bar (Length – m)	100%	4.50%
		Highway Geometry/Sightlines	20%	Available sight distance (Length – m)	100%	9.00%
		Night Time Collision	15%	Ability to reduce night-time collision	100%	6.75%
		Collision Frequency	15%	Ability to reduce severity of collisions (number of conflict points)	100%	6.75%
		Conflicts between Pedestrians and Through Traffic	10%	Ability to reduce number of pedestrian conflicts with through traffic (number of conflict points)	100%	4.50%
NATURAL ENVIRONMENT	20%	Fisheries and Aquatic Habitat	20%	Potential impact on fisheries and aquatic habitat (Area – m^2 or ha)	100%	4.00%
		Wildlife	20%	Potential loss of wildlife and wildlife habitat (Area)	33%	1.33%
				Potential loss of species at risk habitat (Area –m^2 or ha)	33%	1.33%
				Impacts to wildlife crossings (#)	33%	1.33%
		Groundwater	15%	Potential interference with municipal/private water wells (# of wells)	100%	3.00%
		Vegetation	20%	Potential loss of woodlots, trees/shrubs and hedgerows (Area –m^2 or ha)	50%	2.00%
				Potential loss of species at risk habitat (Area – m2 or ha)	50%	2.00%
		Soil	15%	Potential impact to agriculturally classified soils (Area - C1&C2 m^2, C3&C4 m^2, C5&C6 m^2)	100%	3.00%
		Surface Water	10%	Potential impact to municipal drains, roadside ditches and storm sewers (Area of new pavement surface – m^2)	100%	2.00%
SOCIO-ECONOMIC ENVIRONMENT	25%	Community	25%	Ability to accommodate future development (Y/N)	20%	1.25%
				Traffic calming (Y/N)	20%	1.25%
				Impacts to EMS response time to Village of Crosby (minutes)	20%	1.25%
				Can active transportation be accommodated (Y/N)	20%	1.25%
				Distance of intersection from village hub/land parcels with development potential (m)	20%	1.25%
		Business/Commercial	25%	Existing Business Directly Impacted (#)	25%	1.56%
				Additional business property required (Area – m^2)	25%	1.56%
				Potential to displace businesses (#)	25%	1.56%
				Impact on potential contaminated sites (Area – m^2 or ha)	25%	1.56%
		Residential	25%	Residents directly impacted (#)	33%	2.08%
				Potential to displace residents (#)	33%	2.08%
				Additional property required (Area – m^2)	33%	2.08%
		Agricultural/Farming Operations	25%	Number of agricultural/farming operations affected (#)	50%	3.13%
				Potential to affect long term sustainability of agricultural/farming operations (Y/N)	50%	3.13%
CULTURAL ENVIRONMENT	10%	Archaeological Resources	40%	Number of known archaeological sites affected (#)	50%	2.00%
				Potential for new archaeological sites discoveries (Low, Medium, High)	50%	2.00%
		Cultural Heritage Resources	40%	Number of cultural heritage features affected (#)	50%	2.00%
				Number of built heritage features affected (#)	50%	2.00%
		Noise	20%	Increased noise level at adjacent receivers (Yes or No)	100%	2.00%

Identify Technically Preferred Design Alternatives

After completion of the pairwise comparison evaluation, the results indicated the following short term and long term technically preferred design alternative:

Short Term

Alternative 1: Low Complexity

- Meets all needs as currently identified to address traffic operations and safety concerns

Long Term

Alternative 3-1: Convert to 2 T-Intersections

- Provided flexibility for Township to implement Village of Crosby CIP
- Alternative is scalable to allow permitted traffic control installation (traffic signals) when warranted

Present Results of Preliminary Design Evaluation (PIC #2)

The results of the preliminary design evaluation were summarized and presented to the general public and stakeholders at PIC #2. The presentation materials included the short listed alternatives, evaluation methodology and results, and the technical preferred alternatives (Alternative 1 and Alternative 3-1). The project team was present to answer questions and receive input from the public.

5.4 Recommended Preliminary Design

The preliminary design for Alternative 1 (short term) will be outlined in this section and will be taken into detail design upon completion of this study. Since the implementation of Alternative 3-1 (long term) is currently projected to be 2045 and is beyond the study horizon, the detail design for the long term solution will be developed when warranted and will not be summarized in this section.

Alternative 1: Low Complexity

The short term alternative for the intersection improvements at Highway 15 and County 42 include the following nine (9) improvements as illustrated in **Figure 16**:

1. routine pavement markings two times per year;
2. maintain clear sightlines (keep sightlines free from build-up/signs);
3. adjust pavement markings to orient County Road 42 motorists to right angles;
4. shoulder hatching/hatching adjacent to turn lanes (dead lanes);
5. install reference markers/chevrons on outside of Highway 15 curve;
6. eliminate right turn channelization on County Road 42 WB approach, remove extra pavement;
7. overhead flashing beacon at the intersection;
8. change offset left turns on Highway 15 to opposing left turn lanes (restripe existing pavement); and,
9. corridor illumination on Highway 15/point illumination on County Road 42.

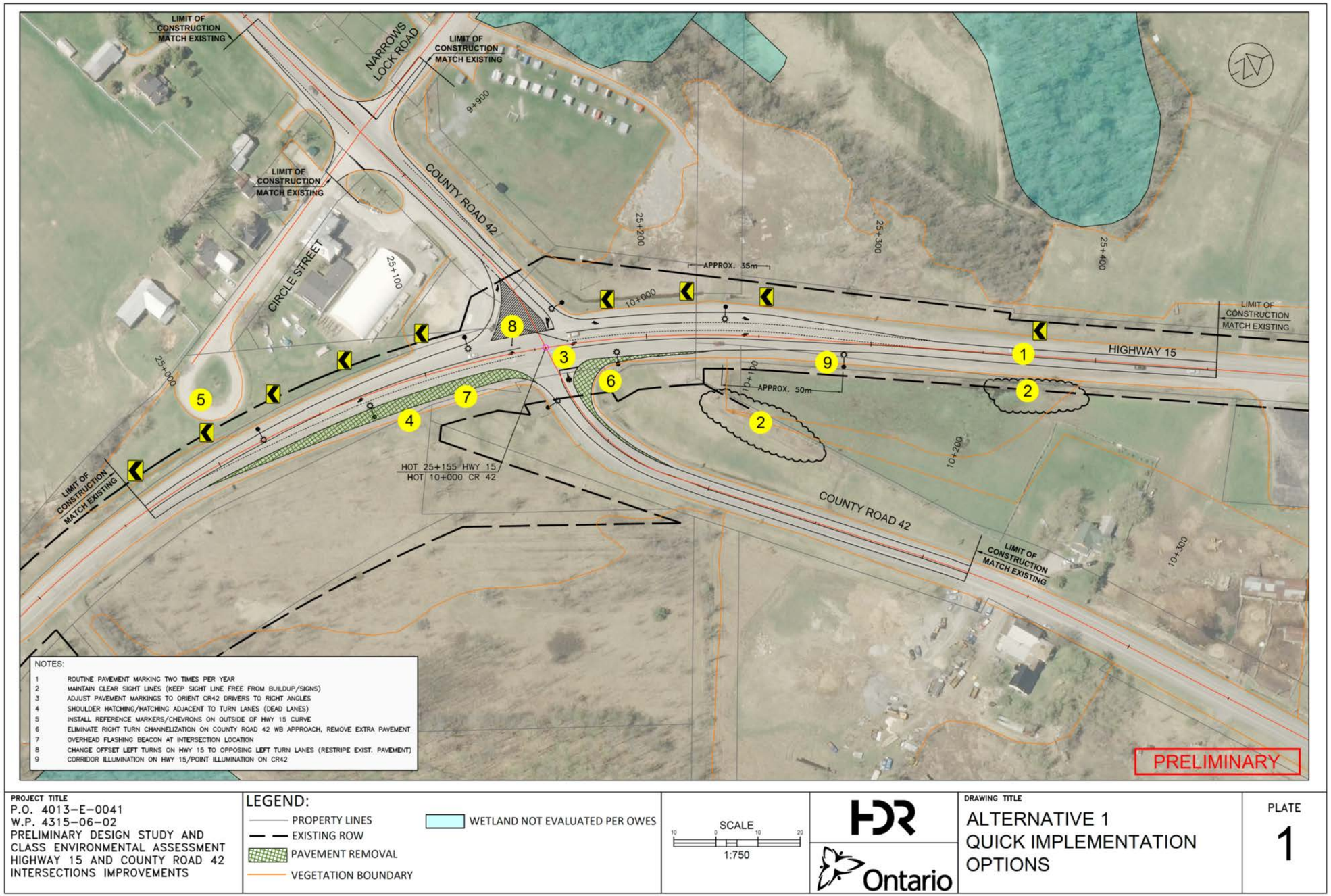


FIGURE 16. RECOMMENDED PRELIMINARY DESIGN

Drainage Improvements

The following outlines the recommendations for drainage improvements at the Highway 15 and County Road 42 intersection.

A field review of the existing centerline, entrance, and side road culverts within 500 m of the Highway 15 and County Road 42 intersection involved the physical assessment of nine (9) found culverts (Culvert A-10 not found).. **Figure 17** illustrates the location of the existing culverts.

FIGURE 17. EXISTING CULVERTS AT HIGHWAY 15 AND COUNTY ROAD 42

Debris and accumulation and/or sedimentation were noted for several culverts. Flushing and cleanout of four (4) culverts (A-6, A-7, A-8, and A-9) is recommended.

Severe corrosion was noticed in three (3) culverts (A-2, A-3, and A-4). Full replacements are recommended at these culverts and should be completed with the short term alternative. Anticipated remaining life of the severely corroded pipes is approximately 5 years.

Culvert A-1 and A-5 were in generally good condition, with minor sedimentation.

Expanded Study Area Field Review
An additional field review was done for culverts outside the original study area to collect information to properly assess the additional alternatives developed. The field review of existing centreline, entrance, and side roads culverts within the additional study area involved physical assessment of forty (40) culverts. The additional culverts assessed are not included in the drainage recommendations for the short term alternative.

Property Requirements

No property requirements for the short term alternative are anticipated. Due to the nature of the intersection improvements, no additional right-of-way will be required.

Utility Requirements

The following utility companies were identified to have utilities within the project study area and were contacted to inform them of this study:

- Bell Canada
- Hydro One

No utility relocations are anticipated for the implementation of the short term alternative. Consultation with the utility companies regarding any potential conflicts will continue during the detail design phase. Any required relocation of utilities will be confirmed during detail design and will be completed prior to construction.

Implementation

The short term alternative improvements are currently planned for implementation following completion of this study. The long term alternative will be implemented when warranted (currently projected to be 2045).

6.0 ENVIRONMENTAL CONCERNS AND COMMITMENTS

This section focuses on the potential effects on significant environmental features and outlines the environmental protection/mitigation measures proposed to manage adverse effects. Environmental effects are identified based on issues/concerns raised by external agencies/stakeholders, the Municipal Advisory Committee, Aboriginal communities, members of the public, and the study team. During detail design, the potential effects and the recommended environmental protection/mitigation measures will be reviewed and updated as necessary.

MTO's environmental protection practices seek to avoid potential adverse effects where possible. For situations where avoidance is not environmentally, technically or economically feasible, MTO has developed or adopted environmental protection/mitigation measures that are incorporated into construction contracts to bind the Contractor. These measures typically include the following:

- environmental design criteria (i.e. project components are designed to meet accepted prescribed performance requirements/targets);
- standard specifications for Ontario projects in general that have been adopted by the Professional Engineers Association of Ontario (Ontario Provincial Standard Specifications (OPSSs) and Ontario Provincial Standard Drawings (OPSDs));
- generic standard special provisions (SSPs) related to noise, air emissions, erosion and sedimentation control, etc.; or,
- project-specific non-standard special provisions (NSSPs), including operational constraints implemented during construction of the facility.

SPs are used to implement technical requirements and/or administrative agreements/protocols required to construct the highway which have not yet been prepared as standard specifications (OPSSs/OPSDs). NSSPs are needed to define site-specific mitigation measures where a suitable OPSS/OPSD or SP is not available, or requires additional clarification. The environmental protection/mitigation measures described below represent a combination of OPSSs/OPSDs, SSPs, NSSPs and commitments made by MTO during preliminary design. The recommended MTO provisions will be reviewed and updated as necessary during detail design.

6.1 Identification and Assessment of Environmental Effects and Protection Measures

The project components were screened for generic environmental effects associated with transportation facilities based on the recommended preliminary design. Where a potential for a specific environmental effect was identified, an "X" was placed in the screening matrix. The environmental screening considered "overall" environmental effects prior to the application of environmental protection measures such as avoidance, mitigation, compensation and enhancement. Where a potential environmental effect was identified, more detailed analysis was carried out to identify the likelihood and significance of the effect, appropriate environmental protection/mitigation measures, monitoring measures and the resulting "residual" or "net" environmental effects. The results of the environmental screening are presented in **Table 14**.

TABLE 14.
SCREENING FOR POTENTIAL ENVIRONMENTAL EFFECTS

ENVIRONMENTAL FACTORS AND POTENTIAL IMPACTS	MAJOR PROJECT COMPONENTS			
	Pavement Marking Adjustments	Removal of Channelized Right Turn Lane	Installation of Chevron Alignment Signs	Maintenance of Clear Sightlines
1. Fish and Aquatic Habitat				
1.a. Loss of aquatic habitat				
1.b. Barriers to fish passage				
1.c. Base flow alterations				
1.d. Impact on significant species				
2. Wildlife				
2.a. Loss of wildlife habitat				X
2.b. Severance of migration corridors				
2.c. Wildlife-vehicle collisions				
2.d. Impact on significant species				
3. Vegetation				
3.a. Loss of vegetation				X
3.b. Fragmentation of vegetation communities				
3.c. Impact on significant species				
4. Soils				
4.a. Soil disturbance		X	X	
4.b. Soil contamination			X	
4.c. Erosion and sedimentation		X	X	
5. Groundwater				
5.a. Interference with wells				
5.b. Impacts on ground water quality				
5.c. Impacts on ground water quantity				
6. Surface Water				
6.a. Impacts on surface water quality				
6.b. Impacts on surface water quantity				
6.c. Flood hazard				
7. Aesthetics				
7.a. View of landscape from facility				
7.b. View of facility from landscape				
8. Residents				
8.a. Property acquisition				
8.b. Access modification/interference	X	X		X
8.c. Nuisance effects (noise, dust, light, etc.)				
9. Businesses				
9.a. Loss of businesses				
9.b. Access modification/ interference	X	X		X

TABLE 14.
SCREENING FOR POTENTIAL ENVIRONMENTAL EFFECTS

ENVIRONMENTAL FACTORS AND POTENTIAL IMPACTS	MAJOR PROJECT COMPONENTS			
	Pavement Marking Adjustments	Removal of Channelized Right Turn Lane	Installation of Chevron Alignment Signs	Maintenance of Clear Sightlines
10. Community/Recreation/Institutional Features/Facilities				
10.a. Loss of features/facilities				
10.b. Access modification/interference	X	X		X
11. Agriculture				
11.a. Loss of agricultural resources				
11.b. Loss of farm operations				
11.c. Impacts on capital improvements				
11.d. Access modification/interference	X	X		X
12. Aggregate and Mineral Resources				
12.a. Loss of aggregate or mineral resource				
12.b. Access modification/interference				
13. Planned Land Use				
13.a. Loss of planned land use				
13.b. Impacts on Special Policy Areas				
13.c. Compatibility with planned land use				
14. Archaeology				
14.a. Areas of archaeological potential				
14.b. Known archaeological resources				
15. Heritage				
15.a. Impacts on built heritage features				
15.b. Impacts on cultural heritage landscapes				
16. Navigation				
16.a. Interference with Navigation				

'X' indicates a potential environmental effect
'blank' indicates no significant environmental effect

6.2 Soils, Erosion and Sediment Control, and Surface Water

Potential Effects

The improvements to the Highway 15/County Road 42 intersection have the potential to suspend soil particles, resulting in the impairment of surface water quality. An increase in runoff may promote erosion downstream thus impairing water quality with sediments. There is also the potential for the contamination of surface water from sources other than sediments (i.e. spills). Water quality treatment must be provided to maintain the existing quality of surface water within the study limits.

External Agency, Aboriginal Community, Public and Study Team Concerns

MOECC and MNRF are mandated to protect water quality and quantity in relation to flood potential, contamination and the resulting impact on fish/fish habitat. Soil disturbance, sedimentation and erosion control and impacts to surface water were identified as issues of concern by the study team.

Impact Assessment and Mitigation – Soil Disturbance/Erosion

The majority of the study area consists of loam and sandy loam soils that are well drained while there are pockets of areas with poorly drained soils (Napanee clay) and well drained soils (Tennyson sandy loam and Grenville loam and sandy loam). Localized soil disturbance associated with construction activities may result in the erosion of, and sedimentation to, sensitive receiving watercourses (i.e. Sucker Creek). For this reason, an erosion and sedimentation control plan must be implemented during construction. Standard erosion and sedimentation control measures must be followed during construction in accordance with OPSS 805 (Construction Specification for Temporary Erosion and Sediment Control Measures) to cover the installation, maintenance, monitoring and removal of the temporary erosion and sediment control measures (i.e. silt fencing) and the removal of sediment accumulated by the control measures. This will minimize construction-related impacts on water quality and fish habitat. Site-specific erosion and sedimentation control measures will be identified during detail design following the *Environmental Guide for Erosion and Sediment Control during Construction of Highway Projects* (MTO 2007). Erosion and sedimentation control measures may include:

- placing straw bale flow and/or rock flow checks at regular intervals in roadside ditches down-gradient from areas of soil disturbance to trap suspended sediments and reduce the erosive force of runoff;
- lining ditches with rock or matting until vegetation becomes established where warranted by ditch gradient;
- placing silt fence along watercourse/pond margins in areas of soil disturbance;
- limiting the extent and duration that soils are exposed to the elements to the minimum area and time necessary to perform the work;
- applying seed and mulch, tackifier and/or erosion control blanket in areas of soil disturbance to provide adequate slope protection and long-term slope stabilization; and,
- monitoring and maintenance of erosion and sedimentation control measures during construction to ensure their effectiveness.

These environmental protection measures will be implemented prior to construction commencement and will remain in place until construction is complete and soils have been re-stabilized. This will greatly reduce the potential for soil erosion and impairment of surface water quality and fish habitat.

Impact Assessment and Mitigation – Contamination of Surface Water from Other Sources/Best Construction Practices

There is also the potential for contamination of surface water from sources other than sediment (i.e. spills or other materials/equipment). Best management/construction practices and control of all construction operations will be implemented during construction to reduce the potential for spills or other

materials/equipment from entering the watercourse within the study area. The following measures will be employed:

- storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the current *MTO Construction Administration and Inspection Task Manual;*
- construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from the watercourse and watercourse banks to prevent their entry into the watercourse;
- equipment refueling, maintenance and washing activities will be conducted at a pre-determined site located at an adequate distance (minimum 30 m) from the watercourse and watercourse banks located within the study area to prevent the entry of petroleum, oil or lubricants (POL) or other deleterious substances (including any debris, waste, rubble or concrete material) to the watercourse within the study area, or their release to the environment. Any material which inadvertently enters the watercourse will be removed by the Contractor in a manner satisfactory to the Contract Administrator; and,
- all spills that could potentially cause damage to the environment shall be reported to the Spills Action Centre of the Ministry of Environment and Climate Change (MOECC). In the event of a spill, containment and clean-up will be completed quickly and effectively. In addition, an NSSP (Spill Prevention and Response Contingency Plan) must be been included in the contract package to ensure a Spill Prevention and Response Contingency Plan and the appropriate contingency materials to absorb or contain any petroleum products/spills that may be accidentally discharged will be on site at all times.

These environmental protection measures will greatly reduce the potential for surface water contamination from spills of POL and from other materials/equipment from entering the watercourse within the study area, and will provide a contingency in the event of an unforeseen event.

Impact Assessment and Mitigation – Erosion and Sedimentation Control

Effective erosion and sedimentation control will be achieved throughout the project with careful planning and design, stringent construction supervision, monitoring of the site, and maintenance of control works throughout their operational life. The following temporary erosion and sedimentation control measures will be implemented prior to soil disturbance and/or ground breaking to mitigate impacts on water quality and fish habitat:

1. The extent and duration that disturbed soils are exposed to the elements will be kept to a minimum.
2. Disturbed areas will be stabilized through seeding, mulching or use of an erosion control blanket, as appropriate, to provide slope protection and long-term slope stabilization.
3. Silt fencing will be placed along the watercourse margins in areas of disturbance to prevent the entry of sediment into the watercourses.
4. Flow checks will be placed at appropriate intervals in lateral ditches down gradient from areas of soil disturbance to trap suspended sediments and reduce the erosive force of runoff.

These erosion and sedimentation control measures should remain in place until soils have been re-stabilized. A number of special provisions related to erosion and sedimentation control are recommended to be included in the contract package to ensure that the above measures are implemented including:

1. Ontario Provincial Standard Specification (OPSS) 804 (Construction Specification for Seed and Cover) to stabilize disturbed areas (formerly OPSS 572).
2. OPSS 805 (Construction Specification for Temporary Erosion and Sediment Control Measures) to cover the installation, maintenance, monitoring and removal of the temporary erosion and

sediment control measures and the removal of sediment accumulated by the control measures (formerly OPSS 577).

3. Special Provision (SSP) 805F01 (Amendments to the Construction Specification for Temporary Erosion and Sediment Control Measures) to specify the type of temporary erosion and sedimentation control measures to be installed and the timing constraints for the installation and removal of the control measures (formerly SSP 577F02).
4. Any Non-Standard Special Provisions (NSSPs) required to stipulate the time interval (i.e. maximum of 20 calendar days) between the commencement and completion of any work that disturbs earth surfaces, and to provide direction for seeding, mulching or use of an erosion control blanket to be placed in areas of soil disturbance to provide slope protection and long-term slope stabilization.
5. OPSS 180 (General Specification for the Management of Excess Materials) to ensure material generated during maintenance of sediment control measures will be taken off-site for disposal.

Erosion and sedimentation will have a minor effect on surface water quality provided these measures are installed pre-construction, maintained during construction and removed post-construction following soil re-stabilization.

6.3 Fish and Fish Habitat

Potential Effects

The improvements to the Highway 15/County Road 42 intersection have the potential to impact fish and fish habitat.

External Agency, Aboriginal Community, Public and Study Team Concerns

The study team and MNRF identified potential impacts to fish and fish habitat as a potential concern.

Impact Assessment and Mitigation

Based on field investigations and review of background information and the short-term preliminary design alternative, no watercourses occur within 30 m of the proposed works area. Therefore, no impacts to fish and fish habitat are anticipated.

As a minimum, standard erosion and sedimentation control measures shall be implemented prior to soil disturbance and/or ground breaking, as necessary, to mitigate impacts on water quality of the surface drainage features adjacent to the intersection. In addition, best management and construction practices shall be implemented during construction to reduce the potential for spills or other materials to exit the work area. The measures below shall be implemented to avoid impacts to fish and fish habitat (Sucker Creek) should works take place within 30 m of the watercourse.

Impact Assessment and Mitigation – Contamination of Surface Water from Other Sources/Best Management Practices

See **Section 6.2** above.

Impact Assessment and Mitigation – Erosion and Sedimentation Control

See **Section 6.2** above.

6.4 Vegetation and Vegetation Communities

Potential Effects

The improvements to the Highway 15/County Road 42 intersection have the potential to result in the following:

- displacement of/disturbance to vegetation and vegetation communities;
- displacement of/disturbance to designated natural areas/areas of environmental significance; and
- displacement of/disturbance to rare, threatened, or endangered vegetation or vegetation communities.

External Agency, Aboriginal Community, Public and Study Team Concerns

The study team identified the displacement of/disturbance to vegetation and vegetation communities as concerns. The study team, MNRF and Cataraqui Region Conservation Authority identified potential impacts to designated natural areas and species at risk within the study area as issues of concern.

Impact Assessment and Mitigation – Displacement of/Disturbance to Vegetation and Vegetation Communities

The intersection improvements will take place within the existing right-of-way. The proposed modifications to the intersection will involve activities within the existing paved area at the intersection, including the removal of existing pavement, changing the lane markings, installation of chevrons, among other safety improvements. No direct removal of vegetation or vegetation communities is anticipated with these works; however, some disturbance to vegetation associated with construction equipment could occur. Efforts will be made to minimize disturbance to vegetation and vegetation communities, where possible. The cultural meadow (CUM1-1) vegetation communities identified adjacent to the intersection are considered widespread and common in Ontario and secure globally. The cultural vegetation communities in particular have resulted from anthropogenic influences and are considered tolerant of disturbances and are able to recover quickly post disturbance.

The Cattail Mineral Shallow Marsh (MAS2-1) at the north-east quadrant of the intersection should be avoided where possible by construction activities, to minimize the disturbance to this area. It is anticipated that any disturbance to this wetland will not be significant given that no ground disturbance is planned.

Some vegetation clearing will be undertaken within the MTO right-of-way to ensure that clear zones are maintained for visibility and driver safety. This work will be undertaken within the already disturbed area adjacent to the Highway 15 and County Road 42 intersection within the cultural meadow vegetation communities that are tolerant to disturbance. As a result, the removal of vegetation to maintain the clear zone will not significantly impact these vegetation communities.

Impact Assessment and Mitigation – Displacement of/Disturbance to Designated Natural Areas/Areas of Environmental Significance

There are no ANSIs, PSWs or ESAs located within the study area. The Bog Marsh Provincially Significant Wetland (PSW) straddles Highway 15 south of County Road 42; however, the part of the PSW in closest proximity to the study area is adjacent to Narrow Locks Road and approximately 400 m from the intersection. There will be no impacts to the PSW associated with the short-term improvements.

Impact Assessment and Mitigation – Displacement of/Disturbance to Rare, Threatened or Endangered Vegetation and Vegetation Communities

The study area has been screened for potential plant species at risk. No plant species that are regulated under the Ontario ESA or the Canada SARA were encountered during LGL's field investigation in the study area. As a result, no impacts to plant species at risk or their habitat are anticipated as a result of the intersection improvements.

6.5 Wildlife and Wildlife Habitat

Potential Effects

The improvements to the Highway 15/County Road 42 intersection have the potential to result in impacts to wildlife and wildlife habitat as a result of minor vegetation removal and disturbance. Potential effects include:

- displacement of/disturbance to wildlife and wildlife habitat;
- barrier effects and interruptions to wildlife passage corridors;
- disturbance to wildlife from noise, light and visual intrusion;
- potential impacts to migratory birds; and,
- displacement of rare, threatened or endangered wildlife or significant wildlife habitat.

External Agency, Aboriginal Community, Public and Study Team Concerns

The study team, MNRF and the Cataraqui Region Conservation Authority identified potential impacts to wildlife and wildlife habitat, migratory birds, and species at risk within the study area as issues of concern.

Impact Assessment and Mitigation – Displacement of/Disturbance to Wildlife and Wildlife Habitat

As mentioned in **Section 6.4**, the intersection improvements may cause some minor disturbance to the edges of cultural vegetation communities. As a result, wildlife present within/adjacent to the ROW may experience some level of displacement/disturbance resulting from the intersection improvements. However, since the study area has been subject to extensive disturbance from existing highway infrastructure, and the extent of disturbance to areas of wildlife habitat is limited in duration and amount, the effects of the intersection improvements on wildlife and wildlife habitat is not likely to be significant. The majority of species residing in habitats within or directly adjacent to the ROW are tolerant of human disturbances/anthropogenic influences.

The Bog Marsh PSW contains significant wildlife habitat in the vicinity of the study area. No vegetation removals are required within this PSW as it is located approximately 400 m from the intersection. As a result, no impacts to wildlife/wildlife habitat within this sensitive area is anticipated.

Impact Assessment and Mitigation – Barrier Effects and Interruptions to Wildlife Passage Corridors

No new barriers to wildlife passage will occur as a result of the intersection improvements. No significant impacts to existing wildlife passage patterns will occur as a result of the improvements.

Impact Assessment and Mitigation – Disturbance to Wildlife from Noise, Light and Visual Intrusion

Noise, light and visual intrusion have the potential to alter wildlife activities and patterns. In the Highway 15/County Road 42 intersection setting, wildlife has become acclimatized to the noise, light (from four-way flashers) and visual conditions associated with the operation of the highway/intersection and only those fauna that are tolerant of human activities tend to persist. Given that wildlife found within the study area are acclimatized to the presence of road infrastructure, disturbance to wildlife from any increase in noise, light and visual intrusion potentially caused by the operation of the intersection are not expected to have any significant adverse effects.

Impact Assessment and Mitigation – Potential Impacts to Migratory Birds

Thirty-four of the 44 species of birds recorded (based on field observations, secondary sources and/or habitats present) are protected under the MBCA. The MBCA prohibits the killing, capturing, injuring, taking or disturbing of migratory birds (including eggs) or damaging, destroying, removing or disturbing of nests. Although no nests of migratory birds were documented within the study area, evidence of breeding birds nesting within the vicinity of the construction activities was observed. All construction activities associated with the intersection improvements must be in compliance with the MBCA. One nest of Eastern Phoebe was found in a culvert with evidence of an active nest with young found in the culvert where Sucker Creek passes under Highway 15; however, no work at this culvert is proposed.

The subject lands fall within Environment Canada's Nesting Zone C2 (Nesting Period: end of March – end of August). Consequently, to comply with the requirements of the MBCA, disturbance, clearing or disruption of vegetation where birds may be nesting shall be completed outside the window of April 1 to August 31 to avoid the breeding bird season for the majority of the bird species protected under the act. In the event that clearing of vegetation is required to maintain sight lines, these activities must be undertaken from April 1 to August 31, a nest screening survey must be conducted by a qualified avian biologist to identify and locate active nests of species covered under the MBCA. If an active nest is located, a mitigation plan shall be developed. An NSSP (Operational Constraint – Migratory Bird Protection – General) will be included in the contract package to ensure Contractor compliance with the MBCA.

Impact Assessment and Mitigation – Displacement of Rare, Threatened or Endangered Wildlife or Significant Wildlife Habitat

The study area has been screened for potential wildlife species at risk, as presented in **Section 4.4**. Two species at risk were observed during field investigations, one road-killed Gray Ratsnake along Highway 15 and several foraging Barn Swallows. There is potential for Gray Ratsnake (Threatened) and Milksnake (Special Concern) to be present across much of the study area as these species move between habitats found outside the study area.

There is no aquatic habitat within the study area for Snapping Turtle (Special Concern), Blanding's Turtle (Threatened) or Eastern Musk Turtle (Special Concern). However, there is potential for these species to move through the study area between habitats found outside of the study area.

The open country and agricultural habitat types found in the study area support foraging Barn Swallow (Threatened) habitat, but no nests/nesting colonies were found in the study area. The cultural meadow habitats within the study area were not suitable for Bobolink (Threatened) or Eastern Meadowlark (Threatened) given the lack of appropriate vegetation composition and the small size of the meadows. Agricultural fields in the area may support Bobolink and Eastern Meadowlark, depending on the crops being grown. No suitable habitat for Black Tern (Special Concern) is present within the study area.

No suitable habitat for bat species at risk is present within the study area. Roosting habitat for two Endangered bat species, Eastern Small-footed Myotis and Little Brown Myotis, could be available in buildings located in the vicinity of the study area. Northern Myotis (Endangered) may utilize suitable roosting trees in the vicinity of the study area.

The requirements of the *Endangered Species Act, 2007* will be met for all species at risk (those species listed as 'Endangered' or 'Threatened' on the SARO list) impacted by the intersection improvements. Section 9(1) of the ESA prohibits a person from killing, harming, harassing, capturing or taking a member of a species listed as 'Endangered', 'Threatened' or 'Extirpated' on the SARO list. Section 10(1) of the

ESA prohibits the damage or destruction of habitat of a species listed as 'Endangered' or 'Threatened' on the SARO list.

Given the potential for species at risk to use the study area for overland movement (Gray Ratsnake, Blanding's Turtle), and foraging habitat (Barn Swallow), provisions shall be included in the contract package to address potential impacts to Endangered or Threatened species regulated under the Ontario *Endangered Species Act, 2007*. The NSSP (Prevention of Wildlife Harassment) will be included in the contract to ensure that the Contractor does not harm, harass or kill any wildlife species encountered during construction and to ensure that the Contractor remains vigilant and alert to wildlife species on the ground (in particular to the presence of turtles and snakes) and advances equipment at a slow pace to permit any wildlife species to leave the area in order to avoid trampling. The Contractor will be instructed not to handle any wildlife species encountered during construction. Prior to on-site activities/construction, should any species at risk or their habitat be potentially impacted, MNRF must be contacted immediately and operations must be modified to avoid any negative impacts to species at risk or their habitat until further discussions with MNRF can occur regarding opportunities for mitigation. If any species at risk are found, the Species at Risk Biologist at the Kemptville District MNRF office will be contacted. If possible, pictures of the species at risk and coordinates for the location where it was observed should be provided to MNRF.

6.6 Existing and Planned Land Use

Potential Effects

The improvements to the Highway 15 and County Road 42 intersection have the potential to result in minor changes to existing and planned land uses.

External Agency, Aboriginal Community, Public and Study Team Concerns

The study team and the Township of Rideau Lakes identified changes to existing and planned land uses as a concern. The Township of Rideau Lakes prepared a Community Improvement Plan for the Village of Crosby and includes recommendations for the intersection.

Impact Assessment and Mitigation

The primary concern with respect to existing and planned land use within the study area will be to ensure that the proposed intersection improvements conform to the existing and planned land use designations prescribed under the official plan and zoning by-laws. As no widening of the existing highway footprint is proposed, no changes to existing or planned land uses are expected. The Community Improvement Plan prepared by the Township of Rideau Lakes was taken into consideration by the study team throughout the evaluation of the alternatives.

6.7 Residences, Businesses, and Community and Recreational Facilities

Potential Effects

A total of seven residences, two residential farms, three businesses (Castle Rideau Lakes Building Centre, Varley Gallery and General Store), one residential business (French's Auto and Welding), one community facility (flea market), and one recreational facility (machine groomed snowmobile trail R20 along the abandoned railway) are located in close proximity to the intersection. There is potential for these residences, businesses, and community/recreational facilities to be impacted by the proposed intersection improvements. Potential impacts during construction include: traffic delays and access restrictions, property requirements, construction noise, and pollutant/construction emissions.

External Agency, Aboriginal Community, Public and Study Team Concerns

Traffic delays, access restrictions, construction noise and construction emissions were identified as potential concerns by the study team. The potential inconvenience to residents living along the highway, traffic and access restrictions, and property requirements were also identified by the study team.

A number of specific issues/concerns were raised by external agencies, property owners, and members of the public throughout the preliminary design study. **Sections 3.2 to 3.5** discuss these issues/concerns and the responses prepared by the study team.

Impact Assessment and Mitigation – Traffic Delays and Access Modifications

During construction, efforts will be made to avoid/minimize traffic delays to the extent possible. Access to residences/residential farms, businesses/residential businesses, and the community facilities will be maintained at all times throughout construction to the extent possible. A minimum of one lane in each direction will be provided along Highway 15 during construction.

Impact Assessment and Mitigation – Property Requirements

No property impacts are anticipated for the recommended preliminary design.

Impact Assessment and Mitigation – Temporary Construction Noise

See **Section 6.11** below.

Impact Assessment and Mitigation – Pollutant Emissions

During construction, efforts will be made to minimize the emission of pollutants to the extent possible. To prevent the emission of pollutants, including dust, to the atmosphere, provisions will be made to ensure there is no unnecessary idling of vehicles. Dust suppressants will be used to combat dust, where appropriate, in accordance with OPSS 506 (Construction Specification for Dust Suppressants) and SSP 105S14 (Amendment to OPSS 506 (Construction Specification for Dust Suppressants)).

6.8 Agriculture

Potential Effects

Since a number of residential farms and agricultural areas are located in close proximity to the intersection, there is potential for these residential farms/agricultural areas to be impacted by the proposed intersection improvements.

External Agency, Aboriginal Community, Public and Study Team Concerns

Traffic delays, access restrictions and the potential disruption to farm machinery movements were identified as potential concerns by the study team.

Impact Assessment and Mitigation

During construction, efforts will be made to avoid/minimize traffic delays to the extent possible. Access to residential farms and agricultural areas will be maintained at all times throughout construction to the extent possible, and the effective movement of farm equipment will be maintained. A minimum of one lane in each direction will be provided along Highway 15 during the intersection improvements. Construction activities will occur during daylight or normal working hours to avoid nuisance related effects, when possible.

6.9 Municipal Services

Potential Effects

The intersection improvements have the potential to result in impacts to existing municipal services provided by emergency service providers, transportation service providers and utilities.

External Agency, Aboriginal Community, Public and Study Team Concerns

The study team identified potential impacts to local service providers (emergency services, school buses) and potential relocation of utilities as concerns.

Impact Assessment and Mitigation – Traffic Delays and Access Modifications

During construction, efforts will be made to avoid/minimize traffic delays for local service providers to the extent possible. Access through the study area for emergency service providers and transportation service providers (i.e., school buses) will be maintained at all times throughout construction to the extent possible. A minimum of one lane in each direction will be provided along Highway 15 during the intersection improvements. Advance notification of any potential traffic delays and access restrictions will be provided to emergency service providers and transportation service providers, and these providers will be notified in advance of the construction schedule.

Impact Assessment and Mitigation – Utility Relocations

It is anticipated that no relocation of utilities will be required for the implementation of the short-term preliminary design alternative. Consultation with utility companies regarding any potential conflicts will continue during the detail design phase. Any required relocation of utilities will be confirmed during detail design and will be completed prior to construction.

6.10 Noise

Potential Effects

The potential noise effects due to the intersection improvements have been assessed in accordance with MTO's *Environmental Guide for Noise,* dated October 2006.

External Agency, Aboriginal Community, Public and Study Team Concerns

Noise effects associated with the intersection improvements during the construction phase, noise emissions associated with construction equipment are expected to be of short duration and are therefore not expected to cause any adverse effects.

Impact Assessment and Mitigation – Construction Noise

Mitigation measures with respect to construction noise will be recommended during detail design in accordance with the local noise by-law. The Township of Rideau Lake's noise by-law (By-law No. 2002-07) prohibits construction related activities on any day between 9:00 p.m. and 7:00 a.m. of the following day, except Sundays when noise is prohibited before 9:00 a.m. If construction must take place outside of these hours, a noise by-law exemption will be secured during detail design.

Construction noise is temporary noise and depends on the type of work required. The impact of construction noise depends on the type of equipment used, the number of pieces of equipment, the time and duration of the operation and the proximity of the work to noise sensitive receptor locations. When construction is occurring in relatively close proximity to a noise sensitive area (i.e. residence or community facility), noise impacts are expected as the sound level from construction will be above the ambient and will be clearly audible. To mitigate the construction noise impacts:

- equipment used for construction must be in a good state of repair with all noise muffling devices in good working order; and,
- equipment used for construction shall comply with the sound emission limits outlined in MOECC Publication NPC-115, "*Construction Equipment*".

A MTO standard special provision (SSP) 199F33 (Construction Noise Constraints) will be included in the contract package to outline general noise control measures. These constraints cover the standard requirements for the control of construction noise produced by the Contractor's operations and also prescribe constraints related to equipment maintenance and type, aggregate activities, and operation and hours of work. These requirements do not relieve the Contractor of other obligations imposed by statute. Special provisions will also be recommended so that construction activities will occur during daylight or normal working hours to avoid nuisance related effects, when possible.

Any initial complaint from the public will require verification by MTO that the general noise control measures agreed to are in effect; MTO will investigate any noise concerns, warn the Contractor of any problems, and enforce its contract. Notwithstanding compliance with the "general noise control measures", a persistent complaint will require the Contractor to comply with the MOECC sound level criteria for construction equipment contained in the MOECC Model Municipal Noise Control By-law. Subject to the results of field investigation, alternative noise control measures will be required, where these are reasonably available.

These measures will reduce the likelihood and significance of construction noise; however, for some periods of time and types of work, construction noise will be noticeable.

6.11 Property Waste and Contamination

Potential Effects

The improvements to the Highway 15/County Road intersection have the potential to impact areas of potential environmental concern related to property waste and contamination.

External Agency, Aboriginal Community, Public and Study Team Concerns

The study team identified the need to conduct a Phase I and II ESA for the study area to identify former activities in the study area which may represent an issue of potential environmental concern.

Impact Assessment and Mitigation

There is one property with potential environmental concern, the vacant lot at the southwest quadrant of Highway 15 and County Road 42. This property was previously used for a gas station, and there is potential for contaminant migration from the property onto the MTO right-of-way. A Phase II ESA was conducted for this property and determined that the presence of the pump island on the MTO right-of-way and the inferred presence of underground storage tanks (USTs) adjacent to the right-of-way, there is potential for hydrocarbon impacted soil to be encountered during construction. Given that the proposed improvements do not involve subsurface disturbance on the property that has potential environmental concern, the improvements will not disturb any contaminated soils. No property acquisition of the former gas station is proposed.

6.12 Archaeology

Potential Effects

The improvements to the Highway 15/County Road 42 intersection could result in soil disturbance. As a result, there is potential for the intersection improvements to impact areas of archaeological potential located within the study area.

External Agency, Aboriginal Community, Public and Study Team Concerns

The study team identified the potential for disturbance to/displacement of areas of archaeological potential as a concern. The MTCS is mandated to protect archaeological resources and reviews/approves archaeological assessments if required.

Impact Assessment and Mitigation

Based upon the findings of the Stage I and II Archaeological Assessment, there are no potential archaeological sites within the study limits (Central Archaeology 2009). However, there is potential for unmarked burials to be discovered in the vicinity of the Crosby Corners Cemetery. However, given that no work or ground disturbance is being proposed adjacent to the Crosby Corners Cemetery, mitigation measures are not required.

Should previously undocumented archaeological resources be discovered, they may be representative of a new archaeological site or sites and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act*. The *Cemeteries Act*, R.S.O. 1990 c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner, the Registrar of Cemeteries at the Ministry of Consumer Services and the appropriate Aboriginal community/First Nation. Should excavation unearth bones, remains or other evidence of a native burial site or any archaeological findings, the appropriate Aboriginal community/First Nations must be notified.

6.13 Built and Cultural Heritage

Potential Effects

The improvements to the Highway 15/County Road 42 intersection have the potential to impact built heritage features and/or cultural heritage landscapes within the study area.

External Agency, Aboriginal Community, Public and Study Team Concerns

The study team identified the potential for disturbance to/displacement of areas of archaeological potential as a concern. The MTCS is mandated to protect archaeological resources and reviews/approves archaeological assessments if required.

Impact Assessment and Mitigation

There are two built heritage structures of historical significance within the study area, the Crosby Brick School and the Old General Store (refer to **Section 4.13**). Since these structures are over 250 m from the intersection, there will be no impacts to these built heritage features.

One cultural heritage resource is located within the study area, the Crosby Corners Cemetery. The Built Heritage and Cultural Heritage Landscape Assessment determined that there is potential for unmarked burials to be discovered in the vicinity of the Crosby Corners Cemetery. However, given that no work or ground disturbance is being proposed adjacent to the Crosby Corners Cemetery, mitigation measures are not required.

6.14 Management of Excess Materials

Potential Effects

Excess materials will be generated as a result of the construction operations that will require management in an environmentally sensitive manner.

External Agency, Aboriginal Community, Public and Study Team Concerns

The requirement to manage excess materials was identified by the study team.

Impact Assessment and Mitigation

Excess materials generated during construction will be managed in accordance with OPSS 180 (General Specification for the Management and Disposal of Excess Material) and MOECC's *Protocol for the Management of Excess Material in Road Construction and Maintenance,* both of which direct the Contractor in the reuse and management of excess materials, such as fill, concrete, asphalt or aggregate, collected on site.

As noted above, storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the current MTO *Construction Administration and Inspection Task Manual*. NSSP 3008 (Operational Constraints – Areas Used for Management of Excess Materials) will also be included in the contract package to describe the conditions that apply (in accordance with OPSS 180) should the Contractor choose to establish excess material management areas for the purpose of disposing of excess materials resulting from the construction operations.

7.0 SUMMARY OF ENVIRONMENTAL CONCERNS AND COMMITMENTS

The summary of environmental concerns/potential effects, associated environmental protection/mitigation and monitoring requirements identified during preliminary design are presented in **Table 15**. The improvements to the intersection of Highway 15/County Road 42 will not result in any significant adverse environmental effects provided the proposed environmental protection/mitigation measures and monitoring requirements identified in **Table 15** are implemented. During detail design the environmental protection/mitigation measures will be confirmed and revised as necessary. Specific details regarding environmental monitoring will be identified during detail design. During construction, monitoring will be carried out in accordance with the MTO *Construction Administration and Inspection Task Manual*.

TABLE 15.
SUMMARY OF ENVIRONMENTAL CONCERNS/POTENTIAL EFFECTS, ASSOCIATED MITIGATION AND MONITORING REQUIREMENTS IDENTIFIED DURING PRELIMINARY DESIGN

I.D. #	Issues/Concerns/ Potential Effects	Concerned Agencies/ Stakeholders	I.D. #	Mitigation/Protection/Monitoring Requirements
1	**Erosion and Sedimentation of Soils** Potential to suspend soil particles, resulting in the impairment of surface water quality. An increase in runoff may promote erosion downstream thus impairing water quality with sediments.	• Study team • MOECC • MNRF	1.1	Implement an erosion and sedimentation control plan during construction.
			1.2	Follow standard erosion and sedimentation control measures during construction in accordance with OPSS 805 (Construction Specification for Temporary Erosion and Sediment Control Measures) to cover the installation, maintenance, monitoring and removal of the temporary erosion and sediment control measures and the removal of sediment accumulated by the control measures.
			1.3	Site-specific erosion and sedimentation control measures will be identified during detail design following the *Environmental Guide for Erosion and Sediment Control during Construction of Highway Projects* (MTO 2007). Erosion and sedimentation control measures may include: • placing straw bale flow and/or rock flow checks at regular intervals in roadside ditches down-gradient from areas of soil disturbance to trap suspended sediments and reduce the erosive force of runoff; • lining ditches with rock or matting until vegetation becomes established where warranted by ditch gradient; • placing silt fence along watercourse/pond margins in areas of soil disturbance; • limiting the extent and duration that soils are exposed to the elements to the minimum area and time necessary to perform the work; • applying seed and mulch, tackifier and/or erosion control blanket in areas of soil disturbance to provide adequate slope protection and long-term slope stabilization; • monitoring and maintenance of erosion and sedimentation control measures during construction to ensure their effectiveness; and, • ensuring environmental protection measures will be implemented prior to construction commencement and will remain in place until construction is complete and soils have been re-stabilized.
			1.4	A number of special provisions related to erosion and sedimentation control are recommended to be included in the contract package to ensure that the above measures are implemented including: 1. Ontario Provincial Standard Specification (OPSS) 804 (Construction Specification for Seed and Cover) to stabilize disturbed areas (formerly OPSS 572).

TABLE 15.
SUMMARY OF ENVIRONMENTAL CONCERNS/POTENTIAL EFFECTS, ASSOCIATED MITIGATION AND MONITORING REQUIREMENTS IDENTIFIED DURING PRELIMINARY DESIGN

I.D. #	Issues/Concerns/ Potential Effects	Concerned Agencies/ Stakeholders	I.D. #	Mitigation/Protection/Monitoring Requirements
				2. OPSS 805 (Construction Specification for Temporary Erosion and Sediment Control Measures) to cover the installation, maintenance, monitoring and removal of the temporary erosion and sediment control measures and the removal of sediment accumulated by the control measures (formerly OPSS 577). 3. Special Provision (SSP) 805F01 (Amendments to the Construction Specification for Temporary Erosion and Sediment Control Measures) to specify the type of temporary erosion and sedimentation control measures to be installed and the timing constraints for the installation and removal of the control measures (formerly SSP 577F02). 4. Any Non-Standard Special Provisions (NSSPs) required to stipulate the time interval (i.e. maximum of 20 calendar days) between the commencement and completion of any work that disturbs earth surfaces, and to provide direction for seeding, mulching or use of an erosion control blanket to be placed in areas of soil disturbance to provide slope protection and long-term slope stabilization. 5. OPSS 180 (General Specification for the Management of Excess Materials) to ensure material generated during maintenance of sediment control measures will be taken off-site for disposal.
2	**Surface Water** Potential for the contamination of surface water from sources other than sediment (i.e. spills or other materials/equipment).	• Study team • MOECC • MNRF	2.1	Implement best management/construction practices and control of all construction operations during construction to reduce the potential for spills or other materials/equipment from entering the watercourses/pond within the study area. Employ the following measures: • storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the current *MTO Construction Administration and Inspection Task Manual;* • construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from watercourses/the pond and watercourse/pond banks to prevent their entry into the watercourses/pond; • equipment refueling, maintenance and washing activities will be conducted at a pre-determined site located at an adequate distance (minimum 30 m) from the watercourse and watercourse banks located within the study area to prevent the entry of petroleum, oil or lubricants (POL) or other deleterious substances (including any debris, waste, rubble or concrete material) to the watercourse within the study area, or their release to the environment. Any material which inadvertently enters the watercourse will be removed by the Contractor in a manner satisfactory to the Contract Administrator; and,

TABLE 15.
SUMMARY OF ENVIRONMENTAL CONCERNS/POTENTIAL EFFECTS, ASSOCIATED MITIGATION AND MONITORING REQUIREMENTS IDENTIFIED DURING PRELIMINARY DESIGN

I.D. #	Issues/Concerns/ Potential Effects	Concerned Agencies/ Stakeholders	I.D. #	Mitigation/Protection/Monitoring Requirements
				• all spills that could potentially cause damage to the environment shall be reported to the Spills Action Centre of the Ministry of Environment and Climate Change (MOECC). In the event of a spill, containment and clean-up will be completed quickly and effectively. In addition, an NSSP (Spill Prevention and Response Contingency Plan) must be been included in the contract package to ensure a Spill Prevention and Response Contingency Plan and the appropriate contingency materials to absorb or contain any petroleum products/spills that may be accidentally discharged will be on site at all times.
3	**Fish and Fish Habitat** Potential impacts to fish and fish habitat as a result of the proposed intersection improvements.	• Study team • DFO • MNRF	3.1	See **ID #1 and #2** for mitigation measures regarding erosion and sedimentation control and contamination of surface water from other sources/best management practices.
4	**Vegetation and Vegetation Communities** Displacement of/disturbance to vegetation and vegetation communities.	• Study team • MNRF • CRCA	4.1	Since the proposed works are limited to the existing MTO right-of-way and do not involve the widening of the existing highway footprint, no significant impacts to vegetation or vegetation communities are anticipated. During the brush cutting activities to maintain clear zone requirements for the intersections, some vegetation loss will occur in already disturbed vegetation communities. No impacts to significant species are anticipated. Efforts should be made to minimize disturbance to existing vegetation during the construction phase.
5	**Wildlife and Wildlife Habitat** Displacement of/disturbance to wildlife and wildlife habitat. Barrier effects and interruptions to wildlife passage corridors. Potential impacts to migratory birds. Displacement of rare, threatened or endangered wildlife or significant wildlife habitat.	• Study team • MNRF • CRCA	5.1 5.2 5.3	Effects of the intersection improvements on wildlife and wildlife habitat is not likely to be significant. To comply with the requirements of the MBCA, disturbance, clearing or disruption of vegetation where birds may be nesting shall be completed outside the window of April 1 to August 31 to avoid the breeding bird season for the majority of the bird species protected under the act. In the event that these activities must be undertaken from April 1 to August 31, a nest screening survey must be conducted by a qualified avian biologist to identify and locate active nests of species covered under the MBCA. If an active nest is located, a mitigation plan shall be developed. An NSSP (Operational Constraint – Migratory Bird Protection – General) will be included in the contract package to ensure Contractor compliance with the MBCA. The NSSP (Prevention of Wildlife Harassment) will be included in the contract to ensure that the Contractor does not harm, harass or kill any wildlife species encountered during construction and

TABLE 15.
SUMMARY OF ENVIRONMENTAL CONCERNS/POTENTIAL EFFECTS, ASSOCIATED MITIGATION AND MONITORING REQUIREMENTS IDENTIFIED DURING PRELIMINARY DESIGN

I.D. #	Issues/Concerns/ Potential Effects	Concerned Agencies/ Stakeholders	I.D. #	Mitigation/Protection/Monitoring Requirements
				to ensure that the Contractor remains vigilant and alert to wildlife species on the ground (in particular to the presence of turtles and snakes) and advances equipment at a slow pace to permit any wildlife species to leave the area in order to avoid trampling. The Contractor will be instructed not to handle any wildlife species encountered during construction. Prior to on-site activities/construction, should any species at risk or their habitat be potentially impacted, MNRF must be contacted immediately and operations must be modified to avoid any negative impacts to species at risk or their habitat until further discussions with MNRF can occur regarding opportunities for mitigation. If any species at risk are found, the Species at Risk Biologist at the Midhurst District MNRF office should be contacted. If possible, pictures of the species at risk and coordinates for the location where it was observed should be provided to MNRF.
6	**Existing and Planned Land Use, Residences, Businesses, and Community and Recreational Facilities** Traffic delays and access restrictions. Property requirements. Construction noise and schedule. Pollutant/construction emissions.	• Study team • Property owners • Members of the public • Township of Rideau Lakes	6.1 6.2 6.3 6.4 6.5	During construction, efforts will be made to avoid/minimize traffic delays to the extent possible. Access to residences/residential farms, businesses/residential businesses, and the community/recreational facilities will be maintained at all times throughout construction to the extent possible. A minimum of one lane in each direction will be provided along Highway 15 during construction. See **ID # 11** for construction noise mitigation measures. Minimize the emission of pollutants to the extent possible. To prevent the emission of pollutants, including dust, to the atmosphere, provisions will be made to ensure there is no unnecessary idling of vehicles. Dust suppressants will be used to combat dust, where appropriate, in accordance with OPSS 506 (Construction Specification for Dust Suppressants) and SSP 105S14 (Amendment to OPSS 506 (Construction Specification for Dust Suppressants)). The potential for the flashing beacon to impact adjacent dwellings will be reviewed and addressed during detail design.
7	**Agriculture** Traffic delays and access restrictions. Potential disruption to farm machinery movements.	• Study team	7.1 7.2	During construction, efforts will be made to avoid/minimize traffic delays to the extent possible. Access to residential farms and agricultural areas will be maintained at all times throughout construction to the extent possible, and the effective movement of farm equipment will be maintained. A minimum of one lane in each direction will be provided along Highway 15 during

TABLE 15.
SUMMARY OF ENVIRONMENTAL CONCERNS/POTENTIAL EFFECTS, ASSOCIATED MITIGATION AND MONITORING REQUIREMENTS IDENTIFIED DURING PRELIMINARY DESIGN

I.D. #	Issues/Concerns/ Potential Effects	Concerned Agencies/ Stakeholders	I.D. #	Mitigation/Protection/Monitoring Requirements
				the intersection improvements. Construction activities will occur during daylight or normal working hours to avoid nuisance related effects, where possible.
8	**Municipal Services** Potential impacts to local service providers (emergency services, school buses). Potential conflicts with utilities (above ground and underground) and potential relocation of utilities.	• Study team • Student Transportation of Eastern Ontario • Utility companies	8.1 8.2 8.3 8.4	During construction, efforts will be made to avoid/minimize traffic delays for local service providers to the extent possible. During detail design, the location of school bus routes should be confirmed, as they may have changed. Access through the study area for emergency service providers and transportation service providers (i.e., school buses) will be maintained at all times throughout construction to the extent possible. A minimum of one lane in each direction will be provided along Highway 15 during the intersection improvements. Advance notification of any potential traffic delays and access restrictions will be provided to emergency service providers and transportation service providers, and these providers will be notified in advance of the construction schedule. It is anticipated that no relocation of utilities will be required for the implementation of the short-term preliminary design alternative. However, this will be reviewed and confirmed during detail design. Any required utility relocations will be completed prior to construction.
9	**Noise** Potential noise effects during the construction phase and through the 10-year horizon.	• Study team • MOECC	9.1 9.2 9.3	Mitigation measures with respect to construction noise will be recommended during detail design in accordance with the local noise by-law. If construction must take place outside of the hours permitted under the noise by-law, a noise by-law exemption will be secured during detail design. The following measures will be used to mitigate the construction noise impacts: • equipment used for construction must be in a good state of repair with all noise muffling devices in good working order; and, • equipment used for construction shall comply with the sound emission limits outlined in MOECC Publication NPC-115, "*Construction Equipment*". A special provision (SSP 199F33 Construction Noise Constraints) will be included in the contract package to outline general noise control measures. These constraints cover the standard requirements for the control of construction noise produced by the Contractor's operations and also prescribe constraints related to equipment maintenance and type, aggregate activities, and operation and hours of work. These requirements do not relieve the Contractor of other

TABLE 15.
SUMMARY OF ENVIRONMENTAL CONCERNS/POTENTIAL EFFECTS, ASSOCIATED MITIGATION AND MONITORING REQUIREMENTS IDENTIFIED DURING PRELIMINARY DESIGN

I.D. #	Issues/Concerns/ Potential Effects	Concerned Agencies/ Stakeholders	I.D. #	Mitigation/Protection/Monitoring Requirements
				obligations imposed by statute. Special provisions will also be recommended so that construction activities will occur during daylight or normal working hours to avoid nuisance related effects, when possible. 9.4 Any initial complaint from the public will require verification by MTO that the general noise control measures agreed to are in effect; MTO will investigate any noise concerns, warn the Contractor of any problems, and enforce its contract. Notwithstanding compliance with the "general noise control measures", a persistent complaint will require the Contractor to comply with the MOECC sound level criteria for construction equipment contained in the MOECC Model Municipal Noise Control By-law. Subject to the results of field investigation, alternative noise control measures will be required, where these are reasonably available.
10	**Property Waste and Contamination** Potential impacts to areas of potential environmental concern.	• Study team • MOECC	10.1	There is one property with potential environmental concern, the vacant lot at the southwest quadrant of Highway 15 and County Road 42. This property was previously used for a gas station, and there is potential for contaminant migration from the property onto the MTO right-of-way. A Phase II ESA was conducted for this property and determined that the presence of the pump island on the MTO right-of-way and the inferred presence of underground storage tanks (USTs) adjacent to the right-of-way, there is potential for hydrocarbon impacted soil to be encountered during construction. Given that the proposed improvements do not involve subsurface disturbance on the property that has potential environmental concern, the improvements will not disturb any contaminated soils. No property acquisition of the former gas station is proposed.
11	**Archaeology** Potential for disturbance to/displacement of areas of archaeological potential.	• Study team • MTCS	11.1	Based upon the findings of the Stage I and II Archaeological Assessment, there are no potential archaeological sites within the study limits (Central Archaeology 2009). However, there is potential for unmarked burials to be discovered in the vicinity of the Crosby Corners Cemetery. However, given that no work or ground disturbance is being proposed adjacent to the Crosby Corners Cemetery, mitigation measures are not required. Should previously undocumented archaeological resources be discovered, they may be representative of a new archaeological site or sites and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act*. The *Cemeteries Act*, R.S.O. 1990 c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002,

TABLE 15.
SUMMARY OF ENVIRONMENTAL CONCERNS/POTENTIAL EFFECTS, ASSOCIATED MITIGATION AND MONITORING REQUIREMENTS IDENTIFIED DURING PRELIMINARY DESIGN

I.D. #	Issues/Concerns/ Potential Effects	Concerned Agencies/ Stakeholders	I.D. #	Mitigation/Protection/Monitoring Requirements
				S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner, the Registrar of Cemeteries at the Ministry of Consumer Services and the appropriate Aboriginal community/First Nation. Should excavation unearth bones, remains or other evidence of a native burial site or any archaeological findings, the appropriate Aboriginal community/First Nations must be notified.
12	**Built Heritage and Cultural Heritage Landscapes** Potential for the removal of or disturbance to built heritage features and/or cultural heritage landscapes	• Study team • MTCS	12.1	No built heritage features and/or cultural heritage landscapes will be impacted by the improvements.
13	**Management of Excess Materials** Excess materials generated as a result of the construction operations will require management in an environmentally sensitive manner.	• Study team • MOECC	13.1 13.2	Excess materials generated during construction will be managed in accordance with OPSS 180 (General Specification for the Management and Disposal of Excess Material) and MOECC's *Protocol for the Management of Excess Material in Road Construction and Maintenance*, both of which direct the Contractor in the reuse and management of excess materials, such as fill, concrete, asphalt or aggregate, collected on site. Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the current MTO *Construction Administration and Inspection Task Manual*. NSSP 3008 (Operational Constraints – Areas Used for Management of Excess Materials) will also be included in the contract package to describe the conditions that apply (in accordance with OPSS 180) should the Contractor choose to establish excess material management areas for the purpose of disposing of tops, stumps, roots and other excess materials resulting from the grading operations.

8.0 REFERENCES

Cadman, M.D., P.F. J. Eagles, and F.M. Helleiner. 1987. *Atlas of the Breeding Birds of Ontario.* Federation of Ontario Naturalists and Long Point Bird Observatory. Toronto.

Chapman, L.J. and D.F. Putnam. 1951. *The Physiography of Southern Ontario, 2nd Edition*. Ontario Research Foundation.

Central Archaeology. 2009. *Built Heritage and Cultural Heritage Landscape Assessment (WP 479-92-00 and WP 4315-06-00).* Prepared for the Ministry of Transportation, Eastern Region.

Central Archaeology. 2009. *Stage I and II Archaeological Assessment, Highway 15 Improvements WP 479-92-00 and WP 4315-06-00.* Prepared for the Ministry of Transportation, Eastern Region.

Chiefs of Ontario. 2008 (last updated). Interactive Map of First Nation Communities in Ontario. http://www.chiefs-of-ontario.org.

Committee on the Status of Endangered Wildlife in Canada. 2002. *Species at Risk.* Ottawa.

Couturier, A. 1999. *Conservation Priorities for the Birds of Southern Ontario*. Bird Studies Canada.

Cuddy, D.G. 1991. Frontenac Axis. Vascular Plants of Eastern Ontario, OMNR.

Dobbyn, J.S. 1994. *Atlas of the Mammals of Ontario*. Federation of Ontario Naturalists. Toronto.

Farrar, J.L. 1995. *Trees in Canada.* Fitzhenry and Whiteside Limited and the Canadian Forest Service. Markham, Ontario. 502 pp.

Fisheries and Oceans Canada (DFO). 2015. *Distribution of Species at Risk Mapping; Rideau Valley Conservation Authority*. May 2015;

Gillespie, J.E., R.E. Wicklund, and M. H. Miller. 1968. *The Soils of Leeds County, Report No. 41 of the Ontario Soil Survey.* Research Branch, Canadian Department of Agriculture and the Ontario Department of Agriculture and Food.

Gleason, H.A. and A. Cronquist. 1991. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada*. New York Botanical Garden Press. New York.

Golder Associates. 2008. *Contaminated Property and Waste Management Assessment for Highway 15 from 1.39 km north of Chaffey's Lock Road to 0.25 km south of Young's Hill Road, Township of Rideau Lakes*. Prepared for the Ministry of Transportation, Eastern Region.

Golder Associates. 2009. *Phase II Environmental Site Assessment for the Intersection of Highway 15 and County Road 42*. Prepared for the Ministry of Transportation, Eastern Region.

HDR. 2016. *Culvert Inspection Report.* Highway 15/County Road 42 Intersection Improvements Class EA and Preliminary Design Study. Prepared for the Ministry of Transportation, Eastern Region.

HDR. 2015. *Geometric Condition Memo.* Highway 15/County Road 42 Intersection Improvements Class EA and Preliminary Design Study. Prepared for the Ministry of Transportation, Eastern Region.

HDR. 2015. *Collision Assessment Memo.* Highway 15/County Road 42 Intersection Improvements Class EA and Preliminary Design Study. Prepared for the Ministry of Transportation, Eastern Region.

HDR. 2015. *Existing Traffic Operations Memo.* Highway 15/County Road 42 Intersection Improvements Class EA and Preliminary Design Study. Prepared for the Ministry of Transportation, Eastern Region.

HDR. 2015. *Roadside Safety Memo.* Highway 15/County Road 42 Intersection Improvements Class EA and Preliminary Design Study. Prepared for the Ministry of Transportation, Eastern Region.

Holmgren, N.H., P.K. Holmgren, R.A. Jess, K.M. McCauley, and L. Vogel. 2004. *Illustrated Companion to Gleason and Cronquist's Manual. Illustrations of the Vascular Plants of Northeastern United States and Adjacent Canada.* New York Botanical Garden Press. New York.

Land Information Ontario. Accessed 2015. *Agricultural Tile Drainage data*.

Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. *Ecological Land Classification for Southern Ontario: First Approximation and Its Application*. Ontario Ministry of Natural Resources, Southcentral Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02. North Bay, Ontario. 225 pp.

LGL Limited. 2008. *Terrestrial Ecosystems Report – Highway 15 Improvements*. W.P. 479-92-00 and W.P. 4315-06-00. Prepared for the Ministry of Transportation, Eastern Region.

LGL Limited. 2009. *Fish and Fish Habitat Existing Conditions Report*. W.P. 479-92-00 and W.P. 4315-06-00. Prepared for the Ministry of Transportation, Eastern Region.

LGL Limited. 2015. *Terrestrial Ecosystems Report – Highway 15 and County Road 42*. W.P. 4315-06-02. Prepared for the Ministry of Transportation, Eastern Region.

LGL Limited. 2016. *Terrestrial Ecosystems – Existing Conditions Technical Memo*. W.P. 4315-06-02. Prepared for the Ministry of Transportation, Eastern Region.

LGL Limited 2015. *Fish and Fish Habitat Technical Memorandum*. W.P. 4315-06-02. Prepared for the Ministry of Transportation, Eastern Region.

LGL Limited 2015. *Land Use Factors Existing Conditions Report*. W.P. 4315-06-02. Prepared for the Ministry of Transportation, Eastern Region.

LGL Limited 2008. *Land Use Factors Existing Conditions Report*. W.P. 4315-06-00. Prepared for the Ministry of Transportation, Eastern Region.

Ministry of Natural Resources. 2008 (last updated). Natural Heritage Information Centre. http://nhic.mnr.gov.on.ca/nhic_.cfm.

Ministry of Natural Resources and Forestry. 2015. *Response to LGL Information Request*. File No. 2015_SCR-3046.

Natural Heritage Information Centre. 1997. *Southern Ontario Vegetation Communities List.* Natural Heritage Information Centre, Ontario Ministry of Natural Resources. Peterborough, Ontario. Last revised January 1997.

Natural Heritage Information Centre. 2007. *Lists of Ontario Plants, Birds, Reptiles, Amphibians, Mammals, Fish and Crustaceans*. Peterborough, Ontario.

Natural Heritage Information Centre. 2002. Working Lists of Ontario Amphibians, Birds, Mammals, and Reptiles. Peterborough.

Newcomb, L. 1977. *Newcomb's Wildflower Guide*. Little, Brown and Company. Boston, Massachusetts. 490 pp.

Newmaster, S.G. 2005. *Flora Ontario - Integrated Botanical Information System (FOIBIS)* 2007 species scientific names obtained March 2007 from the University of Guelph.

Newmaster, S.G., A. Lehela, P.W.C. Uhlig, S. McMurray and M.J. Oldham. 1998. *Ontario Plant List*. Ontario Ministry of Natural Resources, Ontario Forest Research Institute, Sault Ste. Marie, Ontario, Forest Research Information Paper No. 123, 550 pp. + appendices.

Newmaster, S.G., A.G. Harris and L.J. Kershaw. 1997. *Wetland Plants of Ontario*. Lone Pine Publishing and Queen's Printer. Edmonton, Alberta.

Oldham, M.J. 1999. *Natural Heritage Resources of Ontario: Rare Vascular Plants*. Natural Heritage Information Centre, Ontario Ministry of Natural Resources. Peterborough, Ontario. 56 pp.

Oldham, M.J. and S.R. Brinker. 2009. *Rare Vascular Plants of Ontario. Fourth Edition*. Natural Heritage Information Centre, Ontario Ministry of Natural Resources. Peterborough, Ontario. 188 pp.

Ontario Aggregate Resources Corporation. 2006. *Mineral Aggregates in Ontario – Statistical Update*.

Ontario Ministry of Agriculture, Food and Rural Affairs. 2007. *Canada Land Inventory Agricultural Capacity Map 31C9.*

Ontario Breeding Bird Atlas. 2006. www.birdsontario.org/atlas/atlasmain.html.

Ontario Ministry of Natural Resources. 2000. *Significant Wildlife Habitat Technical Guide.* Fish and Wildlife Branch, Wildlife Section. Peterborough.

Ontario Ministry of Natural Resources. 2001. Index List of Vulnerable, Threatened, Endangered, Extirpated or Extinct Species of Ontario. Wildlife Section, Peterborough.

Ontario Ministry of Natural Resources and Forestry. 2009. Personal Correspondence with Mary Van Sleeuwen at Kemptville District Office OMNRF (January 2009).

Ontario Ministry of Natural Resources and Forestry. 2015. *Vulnerable, Threatened, Endangered, Extirpated or Extinct Species of Ontario*. Species at Risk Project. Peterborough, Ontario.

Ontario Ministry of Transportation. 2000. *Class Environmental Assessment for Provincial Transportation Facilities.* Ministry of Transportation.

Ontario Ministry of Transportation. 2013. *Environmental Reference for Highway Design.* Environmental Standards and Practices, Ministry of Transportation.

Soper, J.H. and M.L. Heimburger. 1982. *Shrubs of Ontario*. The Royal Ontario Museum. Toronto, Ontario. 495 pp.

Statistics Canada. 2006. Community Profiles. www12.statcan.ca/English/census01/home/index.cfm.

Township of Leeds and the Thousand Islands. 2006 (Office Consolidation). *Official Plan.*

Township of Rideau Lakes. 2012. *Village of Crosby Community Improvement Plan*.

Township of Rideau Lakes. 2004 (Office Consolidation). *Official Plan*.

United Counties of Leeds and Grenville. April 2005. *Official Plan.*