
Appendix F: Natural Science Reports



FISHERIES AND AQUATIC ECOSYSTEMS EXISTING - CONDITIONS REPORT – HIGHWAY 6 (HANLON EXPRESSWAY) IMPROVEMENTS, GUELPH (GWP 3002-05-00)

File No. 165000631

Prepared for:

Ministry of Transportation
West Region
Planning and Design Section
3rd Floor, 659 Exeter Road
London, ON, N6E 1L3

Prepared by:

Stantec Consulting Ltd.
70 Southgate Drive, Suite 1
Guelph ON N1G 4P5

December 2007 (Updated May 2009)

**Stantec
FISHERIES AND AQUATIC ECOSYSTEMS – EXISTING CONDITIONS REPORT
HIGHWAY 6 (HANLON EXPRESSWAY) IMPROVEMENTS, GUELPH (GWP 3002-05-00)
DECEMBER 2007 (UPDATED MAY 2009)**

Table of Contents

1.0 INTRODUCTION 1.1

2.0 METHODOLOGY 2.1
2.1 AGENCY CONSULTATION AND BACKGROUND DATA COLLECTION..... 2.1
2.2 FISHERIES PROTOCOL..... 2.2
2.3 FIELD INVESTIGATIONS..... 2.2

3.0 EXISTING ECOLOGICAL CONDITIONS..... 3.1

4.0 ENVIRONMENTAL PROTECTION MEASURES..... 4.1
4.1 SEDIMENT AND EROSION CONTROL..... 4.1
4.2 CONSTRUCTION TIMING RESTRICTIONS..... 4.2

5.0 PRELIMINARY IMPACT ASSESSMENT..... 5.1

6.0 SUMMARY 6.1

7.0 REFERENCES 7.1

Table of Contents

List of Appendices

Appendix A	Photographic Record
Appendix B	MTO Riverine Field Collection Records
Appendix C	Risk Assessment Worksheets

List of Figures

Figure 1	Study Area Location.....	1.2
Figure 2	Aquatic Resources in the Study Area	3.3

List of Tables

Table 1	Water Quality Conditions in Hanlon Creek (June 12, 2007)	3.2
---------	----------------------------------------------------------------	-----

1.0 Introduction

Stantec Consulting Ltd. (Stantec) has been retained by the Ministry of Transportation, Ontario (MTO) to undertake the planning, preliminary design, and environmental assessment for the upgrading of Highway 6 (the Hanlon Expressway) from 0.5 km south of Maltby Road north to (but not including) the Speed River. The study area is located within the City of Guelph, the Township of Puslinch, and Wellington County (see **Figure 1**).

Highway 6 is a major provincial facility. The purpose of the study is to upgrade the expressway to a fully-controlled access freeway between the Speed River and 0.5 km south of Maltby Road, with access restricted to interchange locations only.

The study includes:

- Carrying out engineering and environmental field investigations;
- Developing interchange and access alternatives for College Avenue, Stone Road, Kortright Road, Laird Road, Clair Road, and Maltby Road;
- Seeking input from the public, property owners, local municipalities, external ministries / agencies, and businesses;
- Evaluating the interchange and access alternatives;
- Identifying a recommended plan for an access-controlled Highway 6, including side road connections and grade separations;
- Preliminary design and environmental mitigation to facilitate the proposed improvements; and
- Conducting an environmental assessment under MTO's Class EA process to obtain environmental approvals for the recommended alternative(s).

The purpose of this Fisheries and Aquatic Ecosystems Report is to document the existing aquatic ecological features within the Highway 6 study area. All natural environment features have been characterized based upon field assessment, secondary source data, and consultation with agency staff.

The scope of work for this report is limited to fish and aquatic habitat. However, a Terrestrial Ecosystems Report is being submitted concurrently with this report. Together, these two documents summarize the Natural Sciences component of the Highway 6 planning, preliminary design, and environmental assessment study.

2.0 Methodology

2.1 AGENCY CONSULTATION AND BACKGROUND DATA COLLECTION

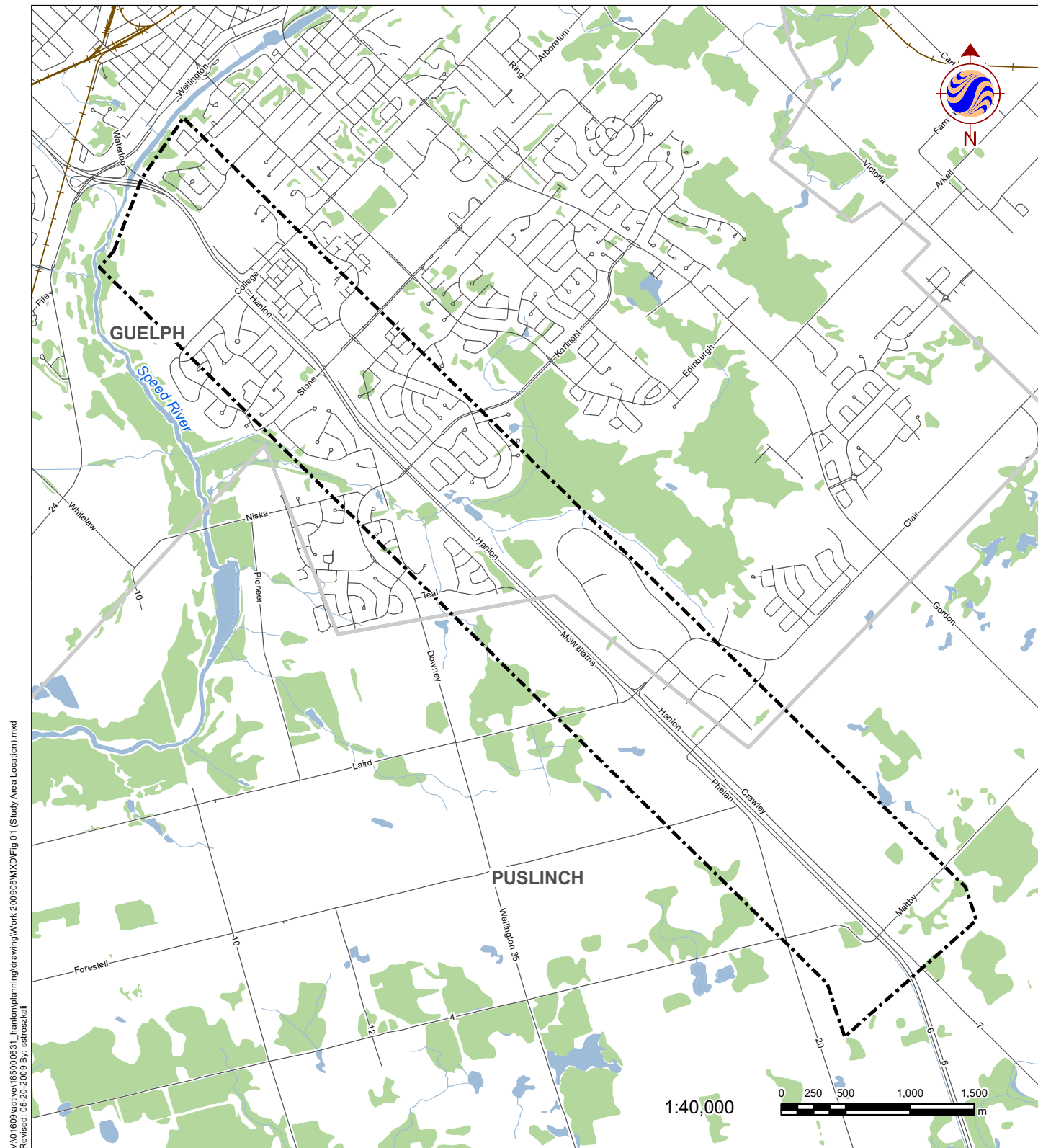

The study area is located within the jurisdiction of the Guelph District Ministry of Natural Resources (MNR) and within the Grand River Conservation Authority (GRCA) watershed. Both MNR and GRCA staff were contacted to obtain available background aquatic data pertinent to the study area.

Consultation with agency staff included:

- Donald Kirk (Natural Heritage Ecologist, MNR) provided rare species data. He indicated there are no aquatic Species at Risk documented within the study area. Updated SAR maps were reviewed in May 2009, confirming there have been no changes in this regard;
- Jean-Christophe Laurence (GIS Officer, MNR) provided mapping of fish spawning areas that occur within the study area;
- Art Timmerman (Fish and Wildlife Biologist, MNR) permitted access to fisheries data on file, provided a License to Collect Fish for Scientific Purposes, and identified an appropriate construction timing window for in-water works. In a subsequent project meeting (March 31, 2008), MNR indicated that Hanlon Creek has been impacted by adjacent development, particularly west of Highway 6 and that the areas adjacent to the existing Highway 6 culvert does not provide brook trout spawning habitat.
- Zoë Green (GIS Technician, GRCA) directed us toward the GRCA website for natural features mapping; and
- Jennifer Wright (Aquatic Ecologist, GRCA) indicated that no aquatic habitat information was available from the GRCA.

The MNR's Natural Heritage Information Centre (NHIC) database was consulted to document the presence / absence of known occurrences of rare aquatic floral or faunal species (i.e., nationally and/or provincially endangered, threatened or special concern species) within the vicinity of the study area. Local MNR and GRCA offices were consulted to confirm this information.

In addition, the project team has reviewed information collected as part of the City of Guelph's Natural Heritage Strategy update (April 2009).

Legend

- Study Area
- Ontario Road Network
- Watercourse
- Railroad
- Lower Tier Municipality
- Wooded Area
- Waterbody

Notes

1. Ontario Base Map: © Queen's Printer for Ontario, 2009.

Client/Project
 MTO - West Region
 HWY 6 Improvements
 Guelph & Puslinch, Ontario

Figure No.
 1

Title
Study Area Location

2.2 FISHERIES PROTOCOL

This project was initiated (via a Request for Proposals) in October 2006. At the time of project initiation, the MNR was the lead agency on MTO projects and the role of various provincial ministries with respect to fish and fish habitat was outlined in the 1993 MTO-MNR Fisheries Protocol. In the years between project initiation and the selection of the Preferred Plan for this project, a new MTO/DFO/OMNR Protocol has been adopted. The MTO/DFO/MNR (2006) protocol includes specific field requirements and a change in the process for DFO approvals that required for Ministry of Transportation projects. The most significant change to the approvals process was that MNR is no longer responsible for confirming the fisheries impacts (i.e. HADD or No HADD) of MTO projects. Due to the timing and schedule of this project, the field data collection and documentation followed the 1993 MTO-MNR Fisheries Protocol.

However, this component of the fisheries and aquatic ecosystem study has been updated in 2009 to include the decision process with respect the level of risk that any residual effects may pose to fish and fish habitat was determined using DFO's Risk Assessment Matrix. Background and field data collected for the project, in combination with anticipated construction activities according to the Preferred Plan were used to assess the level of risk to fish and fish habitat.

2.3 FIELD INVESTIGATIONS

Stantec staff conducted site-specific fisheries and aquatic ecosystems field investigations on June 12, 2007. The only watercourse that crosses Highway 6 within the Study Area is Hanlon Creek. The Speed River is located immediately north of the north end of the Study Area. All field investigations were conducted according to the MTO Environmental Reference for Highway Design (2002), which includes the 1993 MTO-MNR Fisheries Protocol. Under the 1993 Protocol, fisheries data requirements for a Preliminary Design study include habitat mapping from 20 m upstream to 100 m downstream of the estimated project ROW. One season of fisheries surveys was conducted. The purpose of the field investigations was to document existing aquatic ecological conditions within the Highway 6 study area.

Fisheries collections were conducted utilizing a backpack electrofisher. All fish were identified and live-released in the field. The field investigations included a description of site-specific aquatic habitat (i.e., dimensions, bank stability, streamflow, riffle-pool-run formation), identification of key habitat features (i.e., in-stream and riparian cover, substrate characteristics, etc.), and a summary of general water quality parameters (i.e., dissolved oxygen, conductivity, pH, temperature) upstream and downstream of Highway 6. The survey concentrated on identifying sensitive habitat areas (such as spawning, nursery and feeding areas), potential migration routes, and any barriers to fish migration.

A photographic record of field surveys is included in **Appendix A**. MTO Riverine Field Collection Records are included in **Appendix B**.

3.0 Existing Ecological Conditions

The Highway 6 study area is situated within the Speed River subwatershed, which is part of the Grand River watershed. In addition to baitfish and panfish species, the Speed River supports the following sportfish species (GRCA, 2007):

- brook trout
- brown trout
- bullhead
- carp
- largemouth bass
- northern pike
- rainbow trout
- smallmouth bass

Aquatic habitat field investigations were conducted within the Highway 6 study area (see **Figure 2**), in which the only watercourse crossing is Hanlon Creek.

According to the NHIC database, there are no aquatic Species at Risk occurring within the Highway 6 study area. This information was confirmed by the MNR (personal communication with Donald Kirk, Natural Heritage Ecologist) and in 2008 DFO Species-at-Risk mapping. Digital mapping provided by the MNR (personal communication with JC Laurence, GIS Officer) indicates the presence of fish spawning habitat in the upstream reaches of Hanlon Creek, specifically in a tributary flowing from the south (**Figure 2**). The University of Guelph Fisheries Club was contacted regarding the potential for trout spawning habitat within the vicinity of the Highway 6 crossing of Hanlon Creek. According to their 1990 data, no spawning areas were documented within the Highway 6 right-of-way (confirmed by A. Timmerman in March 2008). The Club indicated that trout nests (redds) have been recorded in the upstream headwater reaches of Hanlon Creek (the same location provided by the MNR; **Figure 2**).

Hanlon Creek is a meandering coldwater creek that is a tributary to the Speed River. On the upstream side of Highway 6, the watercourse exhibits a mean channel width of 2.5 m and mean water depth of 15 cm. In-stream habitat features include logs and trees, organic debris, and undercut banks. Stream morphology is dominated by flat reaches. Bottom substrates are comprised of a mixture of silt with sand, muck, gravel and rubble.

Downstream of Highway 6, the mean channel width is 2.5 m and mean water depth is 15 cm. In-stream habitat features include logs and trees, organic debris, and boulders. The downstream reaches demonstrate good riffle-run complexing and riparian cover. Benthic substrates are dominated by muck with silt and rubble.

Stantec

**FISHERIES AND AQUATIC ECOSYSTEMS – EXISTING CONDITIONS REPORT
HIGHWAY 6 (HANLON EXPRESSWAY) IMPROVEMENTS, GUELPH (GWP 3002-05-00)
DECEMBER 2007 (UPDATED MAY 2009)**
Existing Ecological Conditions
May 19, 2009

According to data on file at the MNR, the following fish species reside in Hanlon Creek (GRCA, 1988; MNR, 1998):

- blacknose dace
- creek chub
- mottled sculpin
- brook stickleback
- greenside darter
- pumpkinseed
- brook trout
- longnose dace
- white sucker

The following species were captured during Stantec’s field investigations (June 2007):

- blacknose dace
- fathead minnow
- brook trout
- mottled sculpin
- creek chub
- pumpkinseed

Water quality parameters were recorded during the field investigations, and are summarized in **Table 1**.

Parameter	Upstream of Highway 6	Downstream of Highway 6
Dissolved Oxygen (mg/L)	9.55	9.12
Conductivity (µS/cm)	832	830
pH	8.40	8.40
Water Temperature (°C)	18.40	18.50
Air Temperature (°C)	24	24

V:\01609 active\16500631_hanlon\planning\drawing\Work_200905\MXD\Fig 02 (Aquatic Resources).mxd
 Revised: 05-20-2009 By: stroszkai



- Legend**
- Watercourse
 - Fish Spawning Area
 - Study Area

Notes

1. Orthoimagery provided by the Grand River Conservation Authority. Flown by First Base Solutions, 2006.
2. Fish Spawning area provided by the Ministry of Natural Resources.

Client/Project
 MTO - West Region
 HWY 6 Improvements
 Guelph & Puslinch, Ontario

Figure No.
 2

Title
**Aquatic Resources
 in the Study Area**

May 2009
 Project No. 16500631

4.0 Environmental Protection Measures

4.1 SEDIMENT AND EROSION CONTROL

General mitigation measures are provided herein; however, an erosion and sediment control plan should be confirmed during detail design in accordance with current Best Practices outlined in the *Environmental Reference for Highway Design* (2006).

Various mitigation techniques will be employed during construction to reduce the risk of impacts to natural environment features. Mitigation measures for sedimentation, erosion, and dust control should be implemented to prevent sediment and dust from entering sensitive natural features.

The primary principles associated with sedimentation and erosion protection measures are to: (1) minimize the duration of soil exposure; (2) retain existing vegetation, where feasible; (3) encourage re-vegetation; (4) divert runoff away from exposed soils; (5) keep runoff velocities low; and to (6) trap sediment as close to the source as possible. To address these principles, the following mitigation measures are proposed:

- No equipment will be permitted to enter any natural areas during construction;
- Silt fencing will be used along all construction areas adjacent to natural areas and the boundaries of the site;
- All materials requiring stockpiling (fill, topsoil, etc.) will be stabilized and kept a safe distance from any sensitive natural features. The perimeter of the stockpiles will be encircled with silt fencing;
- All exposed soil areas will be stabilized and re-vegetated, through the placement of seed and mulching or seed and an erosion control blanket, promptly upon completion of construction activities;
- Refueling of equipment will be carried out away from any sensitive natural features to avoid potential impacts, in the event that an accidental spill occurs;
- Straw bale dams will be placed in front of sewer (catchment) inlets;
- In addition to any specified requirements, additional silt fence, straw bales, and rip-rap should be moved on site, prior to grading operations, to provide a contingency supply in the event of an emergency;
- All sediment and erosion controls should be monitored regularly and properly maintained, as required. Controls are to be removed only after the soils of the construction area have been stabilized and adequately protected until cover is re-established;

- The limits of construction adjacent to all natural features to be retained will be flagged and fenced prior to construction, and monitored during construction (along with sediment and erosion control measures) to ensure the limits are maintained with respect to vehicular traffic and soil or equipment stockpiling; and
- The Contractor is required to restore any disturbed natural areas to pre-construction conditions.

4.2 CONSTRUCTION TIMING RESTRICTIONS

Works adjacent to aquatic resources that provide fish habitat, or have the potential to support fish, are often restricted to certain periods to avoid construction-related impacts to fish species during their most sensitive / vulnerable life cycles (i.e., during reproduction and early development stages of off-spring). According to the MNR (personal communication with Art Timmerman, Fish and Wildlife Biologist), any construction activities in Hanlon Creek (coldwater habitat) would be restricted between September 16 and June 30 (i.e., in-water work is prohibited during this period). As per the Preferred Plan no in-water work is required at Hanlon Creek however the construction window would apply in the event of possible future changes at this location.

5.0 Preliminary Impact Assessment

The Preferred Plan for the Highway 6 improvements includes interchanges at Laird Road and Stone Road, a partial interchange (ramps to the south) at Kortright Road/Downey Road, and highway underpasses for Kortright Road/Downey Road and College Avenue.

During the study, the project team confirmed that no changes are required to the existing Highway 6, Hanlon Creek culvert. Minor roadway widening will occur above the existing Highway 6 Hanlon Creek Culvert, and also over the existing Downey Road, Hanlon Creek structure.

The federal *Fisheries Act* is the primary piece of environmental legislation governing the protection of fisheries and aquatic habitat, including the harmful alteration, disruption or destruction (HADD) of fish habitat (Section 35), and the deposition of deleterious substances into fisheries waters (Section 36). The DFO's Risk Assessment Matrix is now a key tool in the determination of the risk of project to fish and fish habitat. The potential for HADD is greatest if any Highway 6 improvements are in close proximity to known fisheries waters however the Preferred Plan has been selected, in part, since it avoids work in the vicinity of Hanlon Creek, the only location in the study area where fish habitat is present. Based on the Risk Assessment Matrix, the risk of the project to fish habitat is Low (**Appendix C**), therefore DFO approval would not be required for the current Preferred Plan.

Provided there are no future changes to the Preferred Plan in the Hanlon Creek area, the field data collected during this Preliminary Design phase would not require updating under the 2006 Fisheries Protocol. Additional data collection may be warranted if changes to the culvert (e.g., replacement or lengthening) were proposed at the Detail Design stage.

Sediment introduction from graded areas adjacent to streams has the potential to affect fish habitat. Suspended sediments increase stream turbidity, which can impair vision and subsequent feeding by fish that are sight-hunters, abrade gill membranes leading to physical stress, and impact prey organisms. Heavier sediments can deposit on the stream bottom and clog coarser substrates that may be used for spawning, incubation of juvenile fish, or food production. These potential indirect effects to fish habitat can be mitigated through the use of standard sediment and erosion control measures, outlined in Section 4.

6.0 Summary

This Fisheries and Aquatic Ecosystems Report documents existing aquatic ecological features within the Highway 6 study area, from 0.5 km south of Maltby Road to the Speed River. Together with the Terrestrial Ecosystems Report, these two documents summarize the Natural Sciences component of the Highway 6 planning, preliminary design, and environmental assessment study.

Fisheries Act implications associated with this project are greatest where the improvements to Highway 6 may come within close proximity of known fisheries habitat. The only fish habitat within the study area limits is Hanlon Creek, a coldwater brook trout creek. Located immediately to the north of the study area, the Speed River is a large warmwater river that supports a diverse community of sportfish, panfish, and baitfish. No aquatic Species at Risk are known to occur in the study area.

The partial interchange at Kortright Road/Downey Road has been designed to avoid impacts to Hanlon Creek. Direct impacts to fish habitat in Hanlon Creek are not anticipated. In the event that changes to the culvert are required or construction activities (e.g. grading, vegetation removal) are necessary adjacent to the creek, additional mitigation measures (and localized field investigations) may be required during detail design.

All of which is respectfully submitted,

STANTEC CONSULTING LTD.



For Kathleen Todd, M.Sc.
Benthic Ecologist

7.0 References

- City of Guelph. 2009. Natural Heritage Strategy: Phase 2: Terrestrial Inventory & Natural Heritage System. (Dougan and Associates)
- Fisheries and Oceans Canada. 2008. Distribution of Fish Species at Risk – GRCA (maps valid to May 2009).
- Fisheries and Oceans Canada. 2008. Distribution of Mussel Species at Risk – GRCA (maps valid to May 2009).
- Grand River Conservation Authority. 1988. Exploratory Electrofishing Record – Speed 10-1, Hanlon Creek. October 18, 1988. Data on file at MNR; accessed in June 2007.
- Grand River Conservation Authority. 2007. Personal communication with Zoë Green, GIS Technician, and Jennifer Wright, Aquatic Biologist.
- Grand River Conservation Authority internet database. 2007. <http://www.grandriver.ca> Accessed in July 2007.
- Ministry of Natural Resources, Guelph District. 1998. Field Collection Record – Speed 10-6 (Station #7), Hanlon Creek. June 15, 1998. Data on file at MNR; accessed in June 2007.
- Ministry of Natural Resources, Guelph District. 2007. Personal communication with Donald Kirk, Natural Heritage Ecologist, JC Laurence, GIS Officer, and Art Timmerman, Fish and Wildlife Biologist.
- Ministry of Transportation, Ontario. 2002. Environmental Reference for Highway Design. Planning and Environmental Office. The Queen's Printer for Ontario.
- Natural Heritage Information Centre internet database. 2007. Ministry of Natural Resources. <http://www.mnr.gov.on.ca/MNR/nhic/nhic.html> Accessed in July 2007.
- University of Guelph Fisheries Club. 1990. Redd Survey Record – Speed 10-13, Hanlon Creek. November 2, 1990. Data on file at MNR; accessed in June 2007.

APPENDIX A

PHOTOGRAPHIC RECORD



Speed River, looking downstream (southwest) toward the Highway 6 crossing.



Hanlon Creek, looking upstream (east) from under the Highway 6 crossing.



Hanlon Creek, looking downstream (west) toward the Highway 6 crossing.



Hanlon Creek, looking downstream (west) from the Highway 6 crossing.



Brook trout captured in Hanlon Creek.



Mottled sculpin captured in Hanlon Creek.

APPENDIX B

MTO RIVERINE FIELD COLLECTION RECORDS

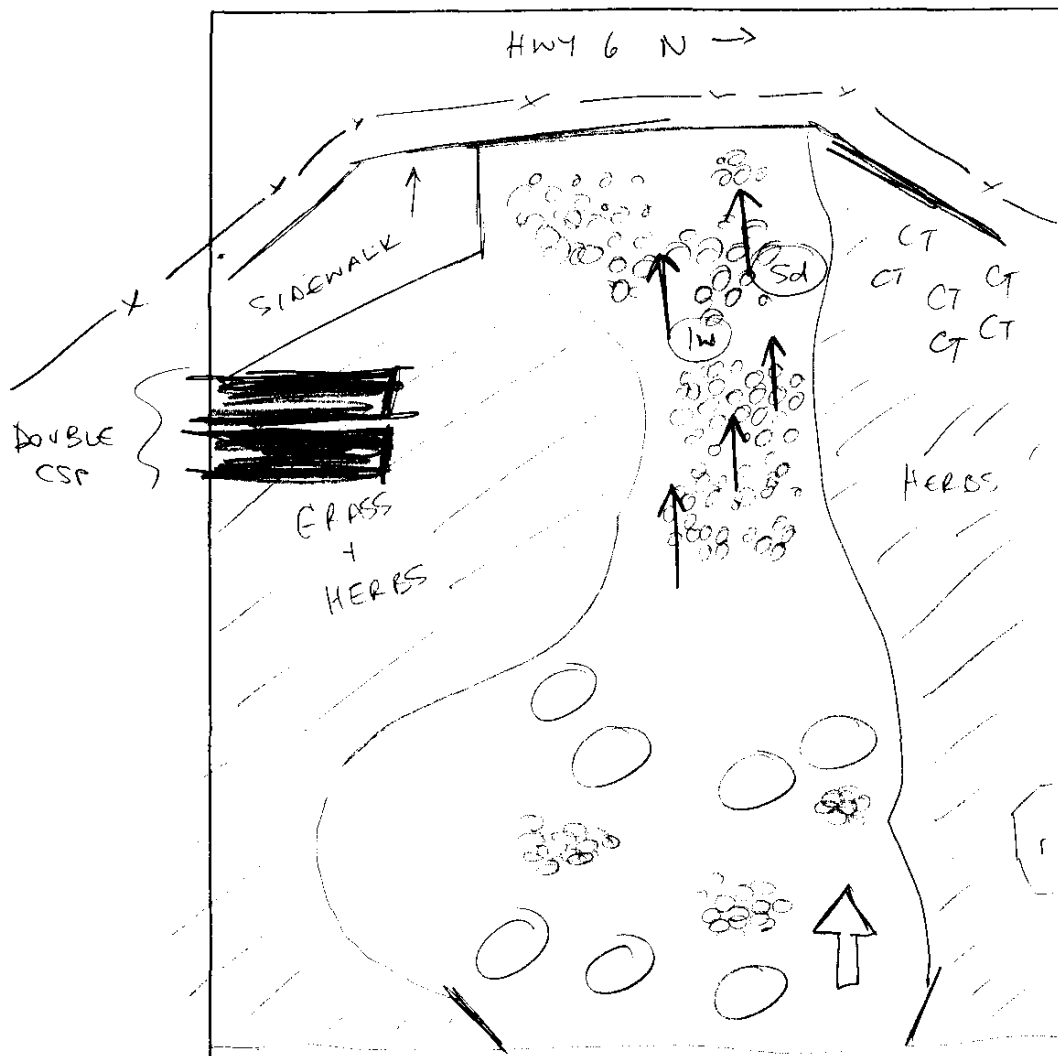
FILENAME: W:\active\Other_PCs_Active\650 - Hamilton\65000631\graphics\Correl\65000631_02.cdr

A1.1 RIVERINE FIELD COLLECTION RECORD (page 1)

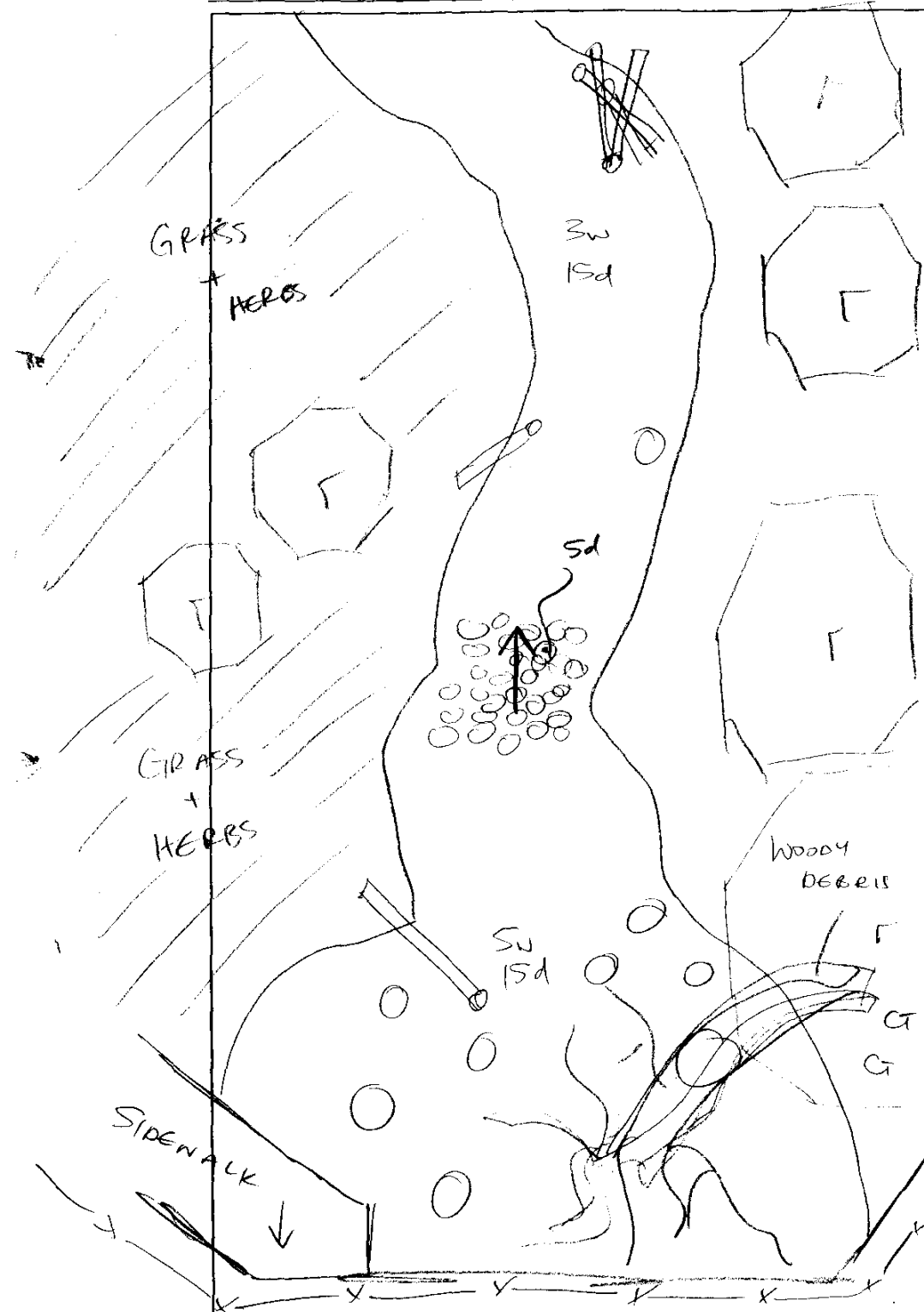
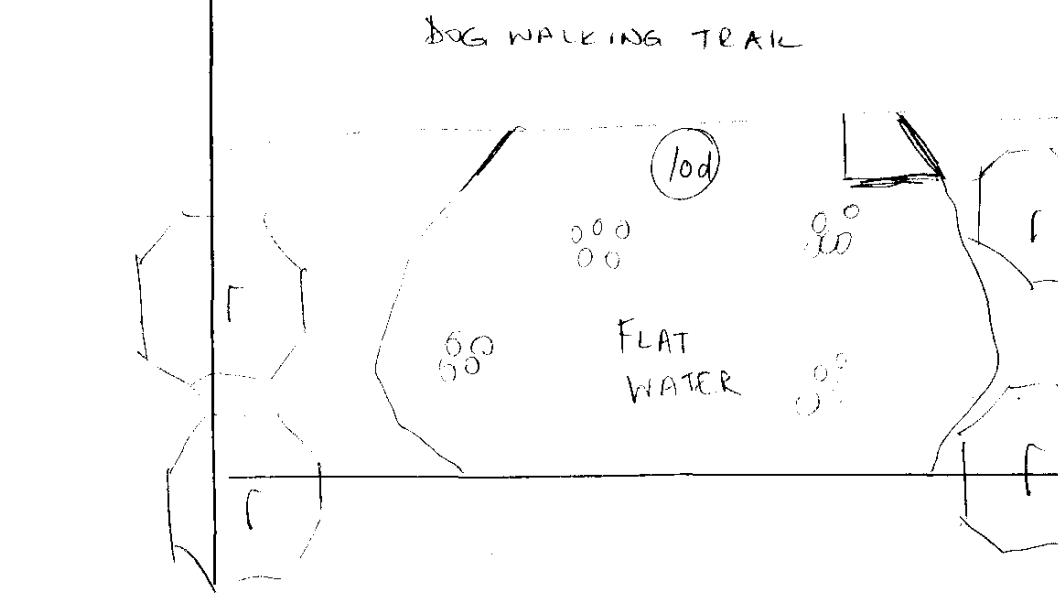
Project # 165000631	Project Description HANLON EXPRESSWAY	Day 14	Month JUNE	Year 2007						
Name of Waterbody HANLON CREEK	Drainage System GRCA	Crossing #	Station #							
Location of Crossing DOG WALKING PARK		Structure Type <input checked="" type="checkbox"/> Bridge <input type="checkbox"/> Open Foot Culvert <input type="checkbox"/> Other <input type="checkbox"/> Box Culvert <input type="checkbox"/> csp								
Latitude	Longitude	Size (w x h)								
Township	MNR District GUELPH									
Collectors: K TODD R PARK										
Weather Conditions: SUNNY, WARM										
Station:	Length (m)	Time Started	Time Finished	Sampling Duration						
Upstream										
Downstream										
Culvert / Hwy ROW										
Water type:	<input checked="" type="checkbox"/> stream/river canal	<input checked="" type="checkbox"/> permanent intermittent	Associated Wetland:							
Channel Dimensions:	mean width (m)	mean depth (m)	bankfull width (m)	bankfull depth (m)	W/D ratio					
Upstream	2.5	0.15								
Downstream	3.0	0.15								
Culvert / Hwy ROW										
Stream Gradient (m/100m):	Current Velocity (m/s):		Stream realignment required:							
Upstream		Upstream	Upstream	<input type="checkbox"/> Yes <input type="checkbox"/> No						
Downstream		Downstream	Downstream	<input type="checkbox"/> Yes <input type="checkbox"/> No						
Culvert / Hwy ROW										
Water Chemistry:	pH	D.O. (mg/L)	water temp. (°C)	air temp. (°C)	conductivity (µS)					
Upstream	8.40	9.55	18.40		832					
Downstream	8.40	9.12	18.50		820					
Stream Morphology (%):	riffles	runs	pools	flats	other					
Upstream				100						
Downstream	15	20		70						
Culvert / Hwy ROW	50		50							
Water Colour:	colourless	yellow/brown	blue/green	turbid	other					
Upstream	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
Downstream	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
Substrate (%):	bedrock	boulder	rubble	gravel	sand	silt	clay	muck	marl	detritus
Upstream			5	10	25	40		20		
Downstream			5			10		80		
Culvert / Hwy ROW										

RIVERINE FIELD COLLECTION RECORD (page 2)

Instream Cover (% surface area)	undercut banks	boulders	logs & trees	organic debris	vascular plants	none
Upstream	5		10	10		
Downstream		5	30	10		
Culvert / Hwy ROW						
Shore Cover (% stream shaded):	90-100 %	60-90 %	30-60%	1-30 %	none	
Upstream	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Downstream	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Culvert / Hwy ROW	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Vegetation Type (%):	Submergent	Floating	Emergent	None		
Upstream			15 - SEDGES			
Downstream						
Culvert / Hwy ROW			5 - CATTAIL			
Banks:	Stable (%)	Unstable (%)	Surrounding land use:			
Upstream	60	40	Upstream DOG WALKING PARK			
Downstream			Downstream NATURAL AREA			
Culvert / Hwy ROW						
Migratory Obstructions:	None	Seasonal	Permanent	Sources of Pollution		
Upstream	<input checked="" type="checkbox"/>					
Downstream	<input checked="" type="checkbox"/>					
Culvert / Hwy ROW	<input type="checkbox"/>					
Potential Critical Habitat:	Spawning	Upwellings	Other			
Upstream						
Downstream						
Culvert / Hwy ROW	<input checked="" type="checkbox"/>					
Potential Enhancement Opportunities:	TREE PLANTINGS WITHIN CULVERT ROW					
Comments:	ELECTROFISHING RESULTS (361 e-seconds): PUMPKINSEED - III FATHEAD MINNOW - III CREEK CHUB - III BLACKNOSE BACE BROOK TROUT - I MOTILED SCULPIN - III					
Sinuosity	D50	Bankfull Return Period	Erodible soils	High Moderate Low		
		<input type="checkbox"/> > 1.2-1.5 years <input type="checkbox"/> < 1.2-1.5 years	<input type="checkbox"/> High <input type="checkbox"/> Moderate <input type="checkbox"/> Low			
Stream Classification:	Rosgen Classification:					
<input checked="" type="checkbox"/> Coldwater <input checked="" type="checkbox"/> Coolwater <input type="checkbox"/> Migratory	<input type="checkbox"/> Warmwater sport fish <input type="checkbox"/> Warmwater bait fish <input type="checkbox"/> No fish habitat					



- FIELD HABITAT MAP**
 W.P. #/Hwy.: 6
 Date: JUNE 14 2007
 Upstream Downstream
- 10d -- Depth (cm)
 - 6w -- Width (m)
 - -- Riffle
 - ⇨ -- Run/Glide
 - -- Pool
 - ⊗ -- Island/Bar
 - ⋯ -- Fine Substrate
 - ⊥ -- Gravel Substrate
 - ⊙ -- Cobble/Boulder Substrate
 - *** -- Debris
 - CT -- Cattail
 - SV/FV -- Submergent/Floating Vegetation
 - EV -- Emergent Vegetation
 - W -- Watercress
 - Fe -- Iron Staining
 - /////// -- Eroded Bank
 - xxxxxx -- Riprap/Other Stabilization
 - ⊂ -- Instream Log/Tree
 - AAAAA -- Dam/Weir/Obstruction
 - ⊕ -- Seep/Spring
 - ① -- Riparian Tree
 - -- Undercut Bank
 - — — -- Barrier to Fish Movement
 - S — — — -- Seasonal Barrier to Fish Movement
 - x---x -- Fenceline
 - | | | -- Culvert



- FIELD HABITAT MAP**
 W.P. #/Hwy.: 6
 Date: JUNE 14 2007
 Upstream Downstream
- 10d -- Depth (cm)
 - 6w -- Width (m)
 - -- Riffle
 - ⇨ -- Run/Glide
 - -- Pool
 - ⊗ -- Island/Bar
 - ⋯ -- Fine Substrate
 - ⊥ -- Gravel Substrate
 - ⊙ -- Cobble/Boulder Substrate
 - *** -- Debris
 - CT -- Cattail
 - SV/FV -- Submergent/Floating Vegetation
 - EV -- Emergent Vegetation
 - W -- Watercress
 - Fe -- Iron Staining
 - /////// -- Eroded Bank
 - xxxxxx -- Riprap/Other Stabilization
 - ⊂ -- Instream Log/Tree
 - AAAAA -- Dam/Weir/Obstruction
 - ⊕ -- Seep/Spring
 - ① -- Riparian Tree
 - -- Undercut Bank
 - — — -- Barrier to Fish Movement
 - S — — — -- Seasonal Barrier to Fish Movement
 - x---x -- Fenceline
 - | | | -- Culvert





APPENDIX C

RISK ASSESSMENT WORKSHEETS

Ministry of Transportation
Environmental Guide for Fish and Fish Habitat

TEMPLATE 10.5 Risk Assessment Worksheet

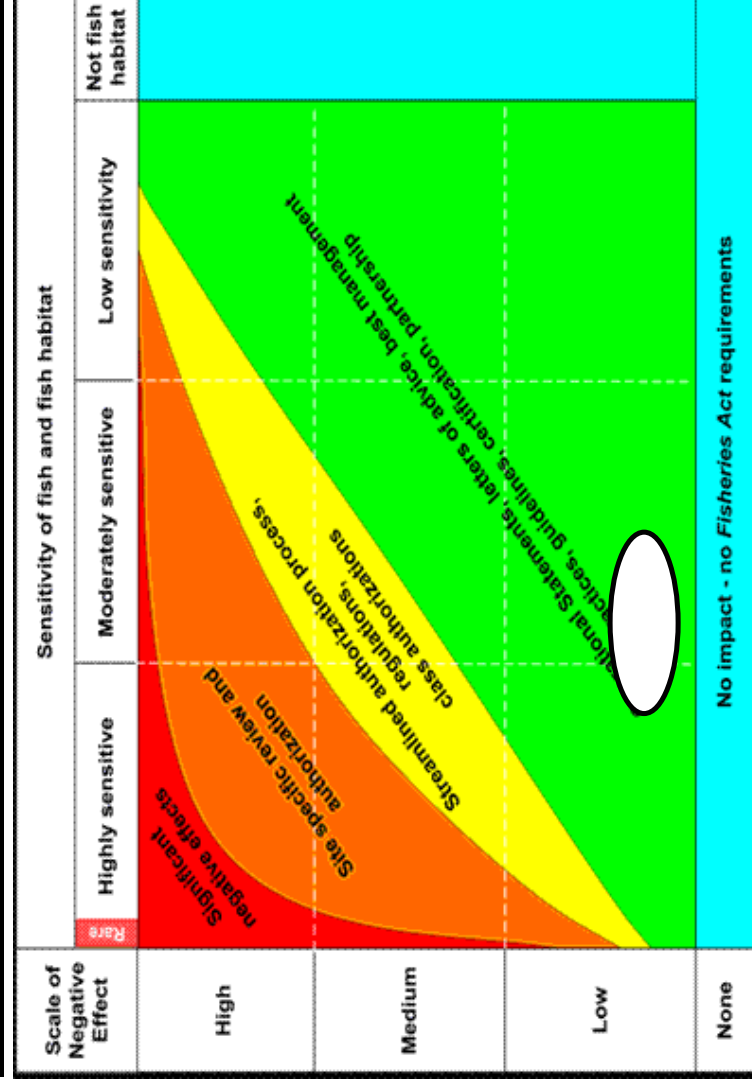
Risk Assessment Worksheet	Assessor/Date: N. Harttrup (Stantec) May 14, 2009	PATH File #: W:\active\165000631_Hwy 6 Improvements\planning\report\Aquatic\App C_MTO Risk Asmnt Worksheet_Template 10_5_Hanlon Ck.doc
Waterbody: Hanlon Creek		
Residual Negative Effects from Aquatic Effects Assessment: None – no in water work required. Sediment and erosion control plan will mitigate any potential effects from nearby construction activities		
Scale of Negative Effect		
Attribute	Scale	Rationale
Extent (size) Refers to the direct "footprint" of the development proposal, as well as areas indirectly affected, such as downstream or down-current areas in relation to an ecological unit.	None <input checked="" type="checkbox"/>	Preferred Plan does not include any changes to the existing culvert or any other instream work
	Low <input type="checkbox"/>	
	Medium <input type="checkbox"/>	
	High <input type="checkbox"/>	
Duration The amount of time that a residual effect will persist.	None <input checked="" type="checkbox"/>	No residual effects anticipated.
	Low <input type="checkbox"/>	
	Medium <input type="checkbox"/>	
	High <input type="checkbox"/>	
Intensity The expected amount of change from the baseline condition. Intensity is a way of describing the degree of change, such as changes in water temperature, salinity, flow, suspended sediment etc. The timing of works may have a major influence on intensity. Effects such as sediment release occurring during critical spawning periods will have a higher intensity.	None <input checked="" type="checkbox"/>	No instream work or changes to culvert required (as per the Preferred Plan).
	Low <input type="checkbox"/>	
	Medium <input type="checkbox"/>	
	High <input type="checkbox"/>	

Ministry of Transportation
Environmental Guide for Fish and Fish Habitat

Scale of Sensitivity for Fish and Fish Habitat		Rationale
Attribute	Scale	
Species Sensitivity Sensitivity of species to change in environmental conditions, such as suspended sediments, water, temperature or salinity.	None <input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High <input checked="" type="checkbox"/>	Brook trout are sensitive to changes in water quality.
Species' Dependence on Habitat Use of habitat by fish species. Some species may be able to spawn in a wide range of habitats, while others may have very specific habitat requirements.	None <input type="checkbox"/> Low <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> High <input type="checkbox"/> Rare <input type="checkbox"/>	Brook trout require gravel substrate and groundwater upwelling. No spawning documented immediately upstream or downstream of Highway 6.
Rarity The relative strength of a fish population or prevalence of a particular type of habitat.	None <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> High <input type="checkbox"/> Rare <input type="checkbox"/>	Similar habitat is available in upstream and downstream reaches; however brook trout habitat becoming limited in southern Ontario.
Habitat Resiliency Habitat resiliency refers to the ability of an aquatic ecosystem to recover from changes in environment conditions. The flow and thermal regimes of the system as well as its physical characteristics are important considerations in describing freshwater ecosystems.	None <input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High <input checked="" type="checkbox"/>	Permanent coldwater stream.

Ministry of Transportation
Environmental Guide for Fish and Fish Habitat

Scale of Sensitivity for Fish and Fish Habitat		Rationale
Attribute	Scale	
Risk Management Decision	Low Risk <input checked="" type="checkbox"/> Medium Risk <input type="checkbox"/> High Risk <input type="checkbox"/> Significant Effects <input type="checkbox"/>	Preferred plan avoids any in-water footprint or in-water work at Hanlon Creek



Categorize risk by plotting a point/circle/oval on the Risk Assessment Matrix.
Use a point, circle or oval depending on uncertainty.

NOTES:

- Complete one Worksheet for each waterbody that requires a Comprehensive Fisheries Assessment (step 5).
- Completion of Worksheet:
 - o Waterbody – enter name of waterbody
 - o Residual Negative Effects – enter residual negative effects from Aquatic Effects Assessment Summary
 - o Scale of Negative Effect – for details on completing the assessment, refer to sections 6 and 7 of the Guide.
 - o Scale of Sensitivity of Fish and Fish Habitat – for details on completing the assessment, refer to sections 5 and 7 of the Guide.
 - o Risk Management Decision box – enter general comments (e.g. designed to avoid in-water footprint) and specific comments relating to the main areas of concern (e.g. duration component was the main concern, all other components were considered low)
 - o Risk matrix – plot a point / circle / oval depending on uncertainty



**TERRESTRIAL ECOSYSTEMS -
EXISTING CONDITIONS REPORT -
HIGHWAY 6 (HANLON EXPRESSWAY) IMPROVEMENTS,
GUELPH
(GWP 3002-05-00)**

File No. 165000631

Prepared for:

Ministry of Transportation
West Region
Planning and Design Section
3rd Floor, 659 Exeter Road
London, ON, N6E 1L3

Prepared by:

Stantec Consulting Ltd.
70 Southgate Drive, Suite 1
Guelph ON N1G 4P5

December 2007 (Updated May 2009)

**TERRESTRIAL ECOSYSTEMS EXISTING CONDITIONS REPORT
HIGHWAY 6 (HANLON EXPRESSWAY) IMPROVEMENTS, GUELPH (GWP 3002-05-00)
DECEMBER 2007 (UPDATED MAY 2009)**

Table of Contents

1.0 INTRODUCTION 1.1

2.0 METHODOLOGY 2.1
2.1 AGENCY CONSULTATION AND BACKGROUND DATA COLLECTION..... 2.1
2.2 FIELD SURVEY GUIDE..... 2.1
2.3 FIELD INVESTIGATIONS..... 2.2

3.0 EXISTING ECOLOGICAL CONDITIONS..... 3.1
3.1 SIGNIFICANT NATURAL FEATURES 3.1
3.2 PHYSICAL ENVIRONMENT..... 3.7
3.3 TERRESTRIAL ECOSYSTEMS 3.7
3.4 WILDLIFE HABITAT 3.10
3.5 REVIEW OF NATURAL HERITAGE STRATEGY 3.13

4.0 PRELIMINARY IMPACT ASSESSMENT 4.1

5.0 ENVIRONMENTAL PROTECTION MEASURES..... 5.1
5.1 SEDIMENT AND EROSION CONTROL..... 5.1
5.2 MINIMIZING DAMAGE TO PERIPHERAL VEGETATION 5.2

6.0 SUMMARY 6.1

7.0 REFERENCES 7.1

Table of Contents

List of Appendices

Appendix A	Photographic Record
Appendix B	Ecological Land Classification Data Sheets
Appendix C	Wild Life List from Background Sources
Appendix D	Summary of MTO Review of the City of Guelph's Phase 2 Natural Heritage Strategy

List of Figures

Figure 1	Study Area Location.....	1.2
Figure 2	Natural Environment Features.....	3.2

List of Tables

Table 1	Vegetation Communities within the Highway 6 Study Area	3.7
---------	--------------------------------------------------------------	-----

1.0 Introduction

Stantec Consulting Ltd. (Stantec) has been retained by the Ministry of Transportation, Ontario (MTO) to undertake the planning, preliminary design, and environmental assessment for the upgrading of Highway 6 (the Hanlon Expressway) from 0.5 km south of Maltby Road north to (but not including) the Speed River. The study area includes 120 m on both sides of Highway 6 (the Hanlon Expressway) in accordance with the *Environmental Reference for Highway Design* (2002). The study area is located within the City of Guelph, the Township of Puslinch, and Wellington County (see **Figure 1**).

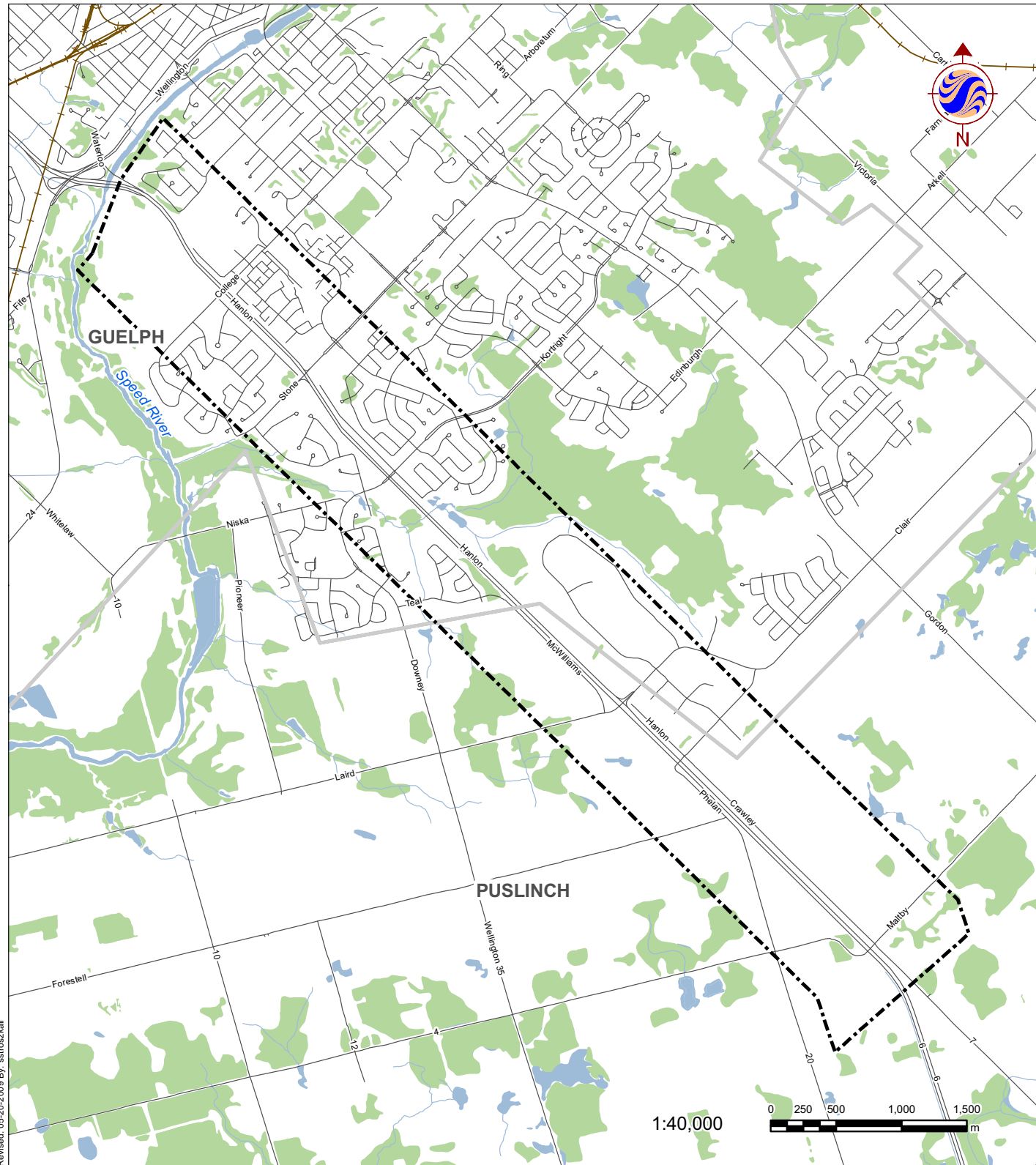
Highway 6 is a major provincial facility. The purpose of the study is to upgrade the expressway to a fully-controlled access freeway between the Speed River and 0.5 km south of Maltby Road, with access restricted to interchange locations only.

The study includes:

- Carrying out engineering and environmental field investigations;
- Developing interchange and access alternatives for College Avenue, Stone Road, Kortright Road, Laird Road, Clair Road, and Maltby Road;
- Seeking input from the public, property owners, local municipalities, external ministries / agencies, and businesses;
- Evaluating the interchange and access alternatives;
- Identifying a recommended plan for an access-controlled Highway 6, including side road connections and grade separations;
- Preliminary design and environmental mitigation to facilitate the proposed improvements; and
- Conducting an environmental assessment under MTO's Class EA process to obtain environmental approvals for the recommended alternative(s).


The purpose of this Terrestrial Ecosystems Report is to document the existing terrestrial ecological features within the Highway 6 study area. All natural environment features have been characterized based upon field assessment, secondary source data, and consultation with agency staff.

The scope of work for this report is limited to terrestrial ecosystems. However, a Fisheries and Aquatic Ecosystems Report is being submitted concurrently with this report. Together, these two documents summarize the Natural Sciences component of the Highway 6 planning, preliminary design, and environmental assessment study.



V:\016500631_hanlon\planning\drawing\work\200905\MXD\Fig 01 (Study Area Location).mxd
 Revised: 05-20-2009 By: satraszkal

May 2009
 Project No. 16500631



Legend

- Study Area
- Ontario Road Network
- Watercourse
- Railroad
- Lower Tier Municipality
- Wooded Area
- Waterbody

Notes

1. Ontario Base Map: © Queen's Printer for Ontario, 2009.

Client/Project
 MTO - West Region
 HWY 6 Improvements
 Guelph & Puslinch, Ontario

Figure No.
 1

Title
Study Area Location

Stantec
TERRESTRIAL ECOSYSTEMS EXISTING CONDITIONS REPORT
HIGHWAY 6 (HANLON EXPRESSWAY) IMPROVEMENTS, GUELPH (GWP 3002-05-00)
DECEMBER 2007 (UPDATED MAY 2009)

2.0 Methodology

2.1 AGENCY CONSULTATION AND BACKGROUND DATA COLLECTION

The study area is located within the jurisdiction of the Guelph District Ministry of Natural Resources (MNR) and the within the Grand River Conservation Authority (GRCA) watershed. Both MNR and GRCA staff were contacted to obtain available background terrestrial data pertinent to the study area.

Consultation with agency staff included:

- Donald Kirk (Natural Heritage Ecologist, MNR) provided rare species data. He indicated that the Eastern Milksnake (*Lampropeltis triangulum*) has been recorded in the study area, and that Jefferson Salamanders (*Ambystoma jeffersonianum*) are known to occur approximately 500 m southeast of the study area;
- Mike Stone (District Planner, MNR) indicated that Eastern Milksnake and Eastern Ribbonsnake (*Thamnophis sauritus*) are potentially within the study area;
- Art Timmerman (Fish and Wildlife Biologist) attended a project meeting to discuss the sensitivities of natural features in the study area;
- Jean-Christophe Laurence (GIS Officer, MNR) provided mapping of wetlands and woodlands that occur within the study area; and
- Zoë Green (GIS Technician, GRCA) directed us toward the GRCA website for natural features mapping.

The MNR's Natural Heritage Information Centre (NHIC) database was consulted to document the presence / absence of known occurrences of rare floral or faunal species (i.e., nationally and/or provincially endangered, threatened or special concern species) in the study area. Local MNR and GRCA offices were consulted to confirm this information.

In addition, the project team has reviewed information collected as part of the City of Guelph's *Natural Heritage Strategy* update (April 2009).

2.2 FIELD SURVEY GUIDE

This project was initiated (via a Request for Proposal) in October 2006. At the time of project initiation, the reference document for the completion the Terrestrial Ecosystems component of the study was the 2002 ERHD. The data collection and documentation methods used are appropriate for the reporting of existing conditions and the completion of a preliminary impact assessment of the Preferred Plan, as discussed in this report.

2.3 FIELD INVESTIGATIONS

Stantec staff conducted site-specific field investigations on June 14, 2007. All Natural Sciences field investigations were conducted according to the MTO *Environmental Reference for Highway Design* (2002). The purpose of the field investigations was to document existing terrestrial ecological conditions up to 120 m east and west of Highway 6 (the Hanlon Expressway) between the south side of the Speed River and 0.5 km south of Maltby Road. A photographic record of field surveys is included in **Appendix A**.

Significant Natural Features

The MNR's Natural Heritage Information Centre (NHIC) database was consulted to document the presence / absence of known occurrences of rare floral or faunal species (i.e., nationally and/or provincially endangered, threatened or special concern species) within the vicinity of the study area. Additionally, the presence / absence of known sensitive natural environment features was determined, including areas of natural and scientific interest (ANSIs), provincially significant wetlands (PSWs), environmentally significant areas (ESAs), provincial or national parks, or conservation areas. Local MNR and GRCA offices were consulted to confirm this information.

Terrestrial Ecosystems

Within the Highway 6 study area, vegetation communities were initially delineated through interpretation of aerial photography. In the field, community characterizations were based on the Ecological Land Classification (ELC) system for Southern Ontario (Lee et al., 1998). ELC data sheets were completed for every unit identified and are included in **Appendix B**.

Wildlife Habitat

Incidental wildlife observations were recorded during field investigations. In addition, major culverts were searched for evidence of nesting migratory birds as defined by the *Migratory Birds Convention Act* (MBCA). Secondary source data were used to augment these data, to determine potential wildlife habitat in the study area, including wildlife species recorded within the *Atlas of the Mammals of Ontario* (Dobbyn, 1994), the *Ontario Herpetofaunal Summary Atlas* (Oldham and Weller, 2001), and the *Ontario Breeding Bird Atlas* (Bird Studies Canada, 2005).

3.0 Existing Ecological Conditions

3.1 SIGNIFICANT NATURAL FEATURES

According to the NHIC database, there are no ANSIs, ESAs, provincial or national parks, or conservation areas within the Highway 6 study area. This information was confirmed by the MNR (electronic mapping received from J.C. Laurence, GIS Officer). The study area does include portions of the Hanlon Creek Swamp Complex Provincially Significant Wetland (PSW) (**Figure 2**). This PSW is comprised of 15 individual wetlands, and includes two wetland types (i.e., 89% swamp and 11% marsh) (Coulson et al., 1993). Within the study area, this feature is primarily represented by swamp units, as described in Section 3.3. Additionally, there are a number of woodlots and small unevaluated wetlands present within the study area limits (see **Figure 2**).

As indicated within the NHIC database, and subsequently confirmed by the MNR (personal communication with Donald Kirk, Natural Heritage Ecologist), habitat for the Eastern Milksnake is found within the study area and there is a record of Eastern Ribbonsnake (email from Mike Stone, District Planner). Both snake species are ranked S3 (vulnerable in Ontario), and are categorized as "Special Concern" species at both provincial and national levels. No protection for these species or their habitats is afforded by legislation. However, the MNR's role is to ensure that regard is given to the habitats of species of conservation concern (i.e., ranked S1, S2, and S3) during the planning process. Eastern Milksnake utilizes a wide variety of habitats, including fields, woodlands, rocky hillsides, river bottoms, buildings, etc. while the Eastern Ribbonsnake is most often found near wetland areas (Connant and Collins, 1998).

According to the MNR (personal communication with Donald Kirk, Natural Heritage Ecologist), the Jefferson Salamander has been recorded within 500 m (southeast) of the study area. Despite this occurrence, the MNR has confirmed that its habitat is found well beyond the limits of the Highway 6 study area. The Jefferson Salamander is ranked S2 (imperiled in Ontario) and is "Threatened" at provincial and national levels. This species and its habitat are protected by the provincial *Endangered Species Act*.

Recent fieldwork carried out as part of the City of Guelph's *Natural Heritage Strategy* (2009) identified areas of potential habitat for the Jefferson Salamander in wetland areas west of the Highway 6/Laird Road intersection. However, no pure Jefferson Salamanders were identified during the field investigations. In addition, MNR's draft (2009) *Recovery Strategy for the Jefferson Salamander in Ontario* indicates that the Jefferson Salamander population in Wellington County, South of Guelph is likely extirpated and noted that the last of the pure salamanders were observed in Wellington County in April 1989 and that the breeding pond was dry in successive years (1990 – 1993).



Ecological Land Classification Units

FOREST COMMUNITIES

- Coniferous Forest**
- FOC2-2** Dry-fresh White Cedar Coniferous Forest
- Mixed Forest**
- FOM** Mixed Forest
- FOM7-2** Fresh-moist White Cedar - Hardwood Mixed Forest
- FOM9-1*** White Spruce - Hardwood Mixed Forest
- Deciduous Forest**
- FOD5-2** Dry-fresh Sugar Maple - Beech Deciduous Forest
- FOD7-2** Fresh-moist Ash Lowland Deciduous Forest
- FOD7-6*** Fresh-moist Willow - Ash - Manitoba Maple Lowland Deciduous Forest
- FOD10-1*** Fresh-moist Manitoba Maple - Balsam Poplar - Ash Deciduous Forest

CULTURAL COMMUNITIES

- Cultural Plantation**
- CUP3-1** Red Pine Coniferous Plantation
- CUP3-2** White Pine Coniferous Plantation
- CUP3-3** Scotch Pine Coniferous Plantation
- Cultural Meadow**
- CUM1** Mineral Cultural Meadow
- Cultural Thicket**
- CUT1-7*** European Buckthorn Cultural Thicket
- Cultural Savannah**
- CUS1** Mineral Cultural Savannah
- Cultural Woodland**
- CUW*** Cultural Woodland (*manicured)
- CUW1** Mineral Cultural Woodland
- CUW1-3*** White Cedar Cultural Woodland
- CUW1-4*** Willow - Manitoba Maple Cultural Woodland

SWAMP COMMUNITIES

- Mixed Swamp**
 - SWM1-1** White Cedar - Hardwood Mineral Mixed Swamp
 - Deciduous Swamp**
 - SWD4-5*** Ash - White Elm Mineral Deciduous Swamp
 - Thicket Swamp**
 - SWT2-2** Willow Mineral Thicket Swamp
- * = ELC code not listed in the first approximation of ELC for Southern Ontario (Lee et al., 1998)

OTHER DESIGNATIONS

- AGR** Agriculture
- DH** Deciduous hedgerow
- PARK** Public manicured park
- RES** Residential / Business
- IND** Industrial

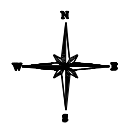
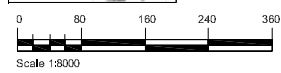
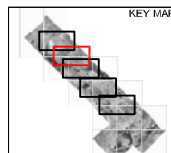
NATURAL HERITAGE FEATURES (MNR, 2007)

- Fish Spawning Areas
- Woodlots
- Significant Wetlands
- Unevaluated Wetlands

Client/Project
MTO - WEST REGION
HWY 6 IMPROVEMENTS

Figure No.
2

Title
NATURAL ENVIRONMENTAL FEATURES



Ecological Land Classification Units

FOREST COMMUNITIES

- Coniferous Forest**
- FOC2-2** Dry-fresh White Cedar Coniferous Forest
- Mixed Forest**
- FOM** Mixed Forest
- FOM7-2** Fresh-moist White Cedar - Hardwood Mixed Forest
- FOM9-1*** White Spruce - Hardwood Mixed Forest
- Deciduous Forest**
- FOD5-2** Dry-fresh Sugar Maple - Beech Deciduous Forest
- FOD7-2** Fresh-moist Ash Lowland Deciduous Forest
- FOD7-6*** Fresh-moist Willow - Ash - Manitoba Maple Lowland Deciduous Forest
- FOD10-1*** Fresh-moist Manitoba Maple - Balsam Poplar - Ash Deciduous Forest

CULTURAL COMMUNITIES

- Cultural Plantation**
- CUP3-1** Red Pine Coniferous Plantation
- CUP3-2** White Pine Coniferous Plantation
- CUP3-3** Scotch Pine Coniferous Plantation
- Cultural Meadow**
- CUM1** Mineral Cultural Meadow
- Cultural Thicket**
- CUT1-7*** European Buckthorn Cultural Thicket
- Cultural Savannah**
- CUS1** Mineral Cultural Savannah
- Cultural Woodland**
- CUW*** Cultural Woodland (*manicured)
- CUW1** Mineral Cultural Woodland
- CUW1-3*** White Cedar Cultural Woodland
- CUW1-4*** Willow - Manitoba Maple Cultural Woodland

SWAMP COMMUNITIES

- Mixed Swamp**
 - SWM1-1** White Cedar - Hardwood Mineral Mixed Swamp
 - Deciduous Swamp**
 - SWD4-5*** Ash - White Elm Mineral Deciduous Swamp
 - Thicket Swamp**
 - SWT2-2** Willow Mineral Thicket Swamp
- * = ELC code not listed in the first approximation of ELC for Southern Ontario (Lee et al., 1998)

OTHER DESIGNATIONS

- AGR** Agriculture
- DH** Deciduous hedgerow
- PARK** Public manicured park
- RES** Residential / Business
- IND** Industrial

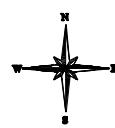
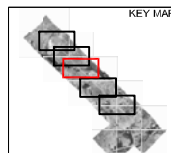
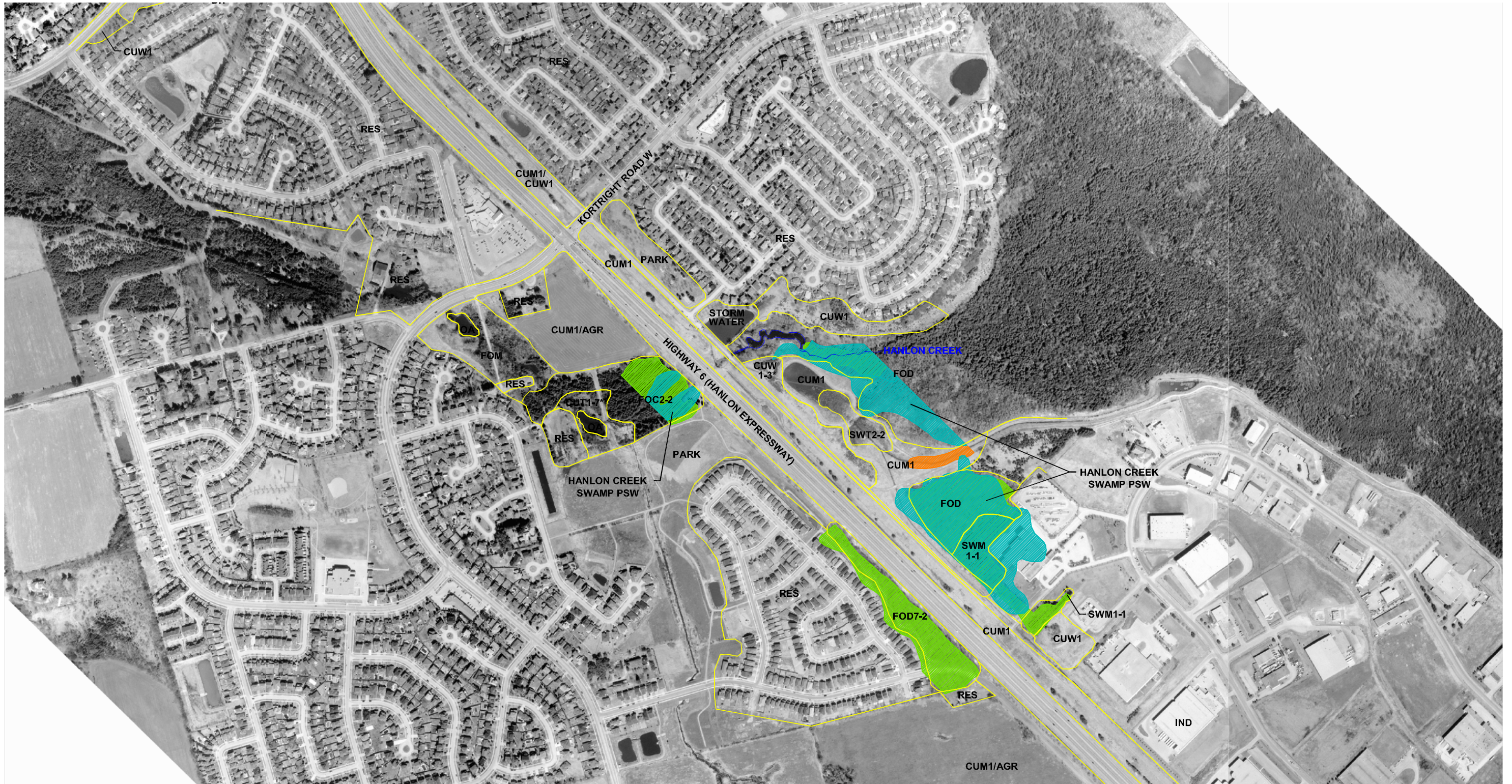
NATURAL HERITAGE FEATURES (MNR, 2007)

- Fish Spawning Areas
- Woodlots
- Significant Wetlands
- Unevaluated Wetlands

Client/Project
MTO - WEST REGION
HWY 6 IMPROVEMENTS

Figure No.
2

Title
NATURAL ENVIRONMENT FEATURES



Ecological Land Classification Units

FOREST COMMUNITIES

- Coniferous Forest**
- FOC2-2** Dry-fresh White Cedar Coniferous Forest
- Mixed Forest**
- FOM** Mixed Forest
- FOM7-2** Fresh-moist White Cedar - Hardwood Mixed Forest
- FOM9-1*** White Spruce - Hardwood Mixed Forest
- Deciduous Forest**
- FOD5-2** Dry-fresh Sugar Maple - Beech Deciduous Forest
- FOD7-2** Fresh-moist Ash Lowland Deciduous Forest
- FOD7-6*** Fresh-moist Willow - Ash - Manitoba Maple Lowland Deciduous Forest
- FOD10-1*** Fresh-moist Manitoba Maple - Balsam Poplar - Ash Deciduous Forest

CULTURAL COMMUNITIES

- Cultural Plantation**
- CUP3-1** Red Pine Coniferous Plantation
- CUP3-2** White Pine Coniferous Plantation
- CUP3-3** Scotch Pine Coniferous Plantation
- Cultural Meadow**
- CUM1** Mineral Cultural Meadow
- Cultural Thicket**
- CUT1-7*** European Buckthorn Cultural Thicket
- Cultural Savannah**
- CUS1** Mineral Cultural Savannah
- Cultural Woodland**
- CUW*** Cultural Woodland (*manicured)
- CUW1** Mineral Cultural Woodland
- CUW1-3*** White Cedar Cultural Woodland
- CUW1-4*** Willow - Manitoba Maple Cultural Woodland

SWAMP COMMUNITIES

- Mixed Swamp**
- SWM1-1** White Cedar - Hardwood Mineral Mixed Swamp
- Deciduous Swamp**
- SWD4-5*** Ash - White Elm Mineral Deciduous Swamp
- Thicket Swamp**
- SWT2-2** Willow Mineral Thicket Swamp

* = ELC code not listed in the first approximation of ELC for Southern Ontario (Lee et al., 1998)

OTHER DESIGNATIONS

- AGR** Agriculture
- DH** Deciduous hedgerow
- PARK** Public manicured park
- RES** Residential / Business
- IND** Industrial

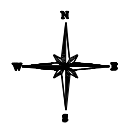
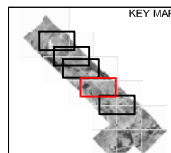
NATURAL HERITAGE FEATURES (MNR, 2007)

- Fish Spawning Areas
- Woodlots
- Significant Wetlands
- Unevaluated Wetlands

Client/Project
MTO - WEST REGION
HWY 6 IMPROVEMENTS

Figure No.
2

Title
NATURAL ENVIRONMENT FEATURES



Ecological Land Classification Units

FOREST COMMUNITIES

- Coniferous Forest**
- FOC2-2** Dry-fresh White Cedar Coniferous Forest
- Mixed Forest**
- FOM** Mixed Forest
- FOM7-2** Fresh-moist White Cedar - Hardwood Mixed Forest
- FOM9-1*** White Spruce - Hardwood Mixed Forest
- Deciduous Forest**
- FOD5-2** Dry-fresh Sugar Maple - Beech Deciduous Forest
- FOD7-2** Fresh-moist Ash Lowland Deciduous Forest
- FOD7-6*** Fresh-moist Willow - Ash - Manitoba Maple Lowland Deciduous Forest
- FOD10-1*** Fresh-moist Manitoba Maple - Balsam Poplar - Ash Deciduous Forest

CULTURAL COMMUNITIES

- Cultural Plantation**
- CUP3-1** Red Pine Coniferous Plantation
- CUP3-2** White Pine Coniferous Plantation
- CUP3-3** Scotch Pine Coniferous Plantation
- Cultural Meadow**
- CUM1** Mineral Cultural Meadow
- Cultural Thicket**
- CUT1-7*** European Buckthorn Cultural Thicket
- Cultural Savannah**
- CUS1** Mineral Cultural Savannah
- Cultural Woodland**
- CUW*** Cultural Woodland (*manicured)
- CUW1** Mineral Cultural Woodland
- CUW1-3*** White Cedar Cultural Woodland
- CUW1-4*** Willow - Manitoba Maple Cultural Woodland

SWAMP COMMUNITIES

- Mixed Swamp**
 - SWM1-1** White Cedar - Hardwood Mineral Mixed Swamp
 - Deciduous Swamp**
 - SWD4-5*** Ash - White Elm Mineral Deciduous Swamp
 - Thicket Swamp**
 - SWT2-2** Willow Mineral Thicket Swamp
- * = ELC code not listed in the first approximation of ELC for Southern Ontario (Lee et al., 1998)

OTHER DESIGNATIONS

- AGR** Agriculture
- DH** Deciduous hedgerow
- PARK** Public manicured park
- RES** Residential / Business
- IND** Industrial

NATURAL HERITAGE FEATURES (MNR, 2007)

- Fish Spawning Areas
- Woodlots
- Significant Wetlands
- Unevaluated Wetlands

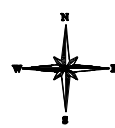
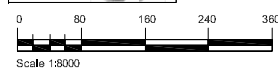
Client/Project
MTO - WEST REGION
HWY 6 IMPROVEMENTS

Figure No.

2

Title
NATURAL ENVIRONMENT FEATURES

W:\active\Other_PCs_Active\650 - Hamilton\65000631\graphics\CAD\65000631_Vegetation Communities_BCC.dwg [ELC_page5]
 Printed on: 2009-05-20 03:54PM By: bcowper



Ecological Land Classification Units

FOREST COMMUNITIES

- Coniferous Forest**
- FOC2-2** Dry-fresh White Cedar Coniferous Forest
- Mixed Forest**
- FOM** Mixed Forest
- FOM7-2** Fresh-moist White Cedar - Hardwood Mixed Forest
- FOM9-1*** White Spruce - Hardwood Mixed Forest
- Deciduous Forest**
- FOD5-2** Dry-fresh Sugar Maple - Beech Deciduous Forest
- FOD7-2** Fresh-moist Ash Lowland Deciduous Forest
- FOD7-6*** Fresh-moist Willow - Ash - Manitoba Maple Lowland Deciduous Forest
- FOD10-1*** Fresh-moist Manitoba Maple - Balsam Poplar - Ash Deciduous Forest

CULTURAL COMMUNITIES

- Cultural Plantation**
- CUP3-1** Red Pine Coniferous Plantation
- CUP3-2** White Pine Coniferous Plantation
- CUP3-3** Scotch Pine Coniferous Plantation
- Cultural Meadow**
- CUM1** Mineral Cultural Meadow
- Cultural Thicket**
- CUT1-7*** European Buckthorn Cultural Thicket
- Cultural Savannah**
- CUS1** Mineral Cultural Savannah
- Cultural Woodland**
- CUW*** Cultural Woodland (*manicured)
- CUW1** Mineral Cultural Woodland
- CUW1-3*** White Cedar Cultural Woodland
- CUW1-4*** Willow - Manitoba Maple Cultural Woodland

SWAMP COMMUNITIES

- Mixed Swamp**
- SWM1-1** White Cedar - Hardwood Mineral Mixed Swamp
- Deciduous Swamp**
- SWD4-5*** Ash - White Elm Mineral Deciduous Swamp
- Thicket Swamp**
- SWT2-2** Willow Mineral Thicket Swamp

* = ELC code not listed in the first approximation of ELC for Southern Ontario (Lee et al., 1998)

OTHER DESIGNATIONS

- AGR** Agriculture
- DH** Deciduous hedgerow
- PARK** Public manicured park
- RES** Residential / Business
- IND** Industrial

NATURAL HERITAGE FEATURES (MNR, 2007)

- Fish Spawning Areas
- Woodlots
- Significant Wetlands
- Unevaluated Wetlands

Client/Project
MTO - WEST REGION
HWY 6 IMPROVEMENTS

Figure No.
2

Title
NATURAL ENVIRONMENTAL FEATURES

3.2 PHYSICAL ENVIRONMENT

The study area is within the Huron-Ontario section of the Great Lakes Forest Region (Rowe, 1972). Natural upland forest cover in this region is generally dominated by sugar maple, American beech, basswood, white ash, white oak, bur oak, eastern hemlock and eastern white pine. Mixed forests of silver maple, white elm, red elm, black ash, and eastern white cedar generally develop in lowland areas.

3.3 TERRESTRIAL ECOSYSTEMS

Nineteen vegetation communities were identified within the Highway 6 study area, along with additional anthropogenic communities (i.e., residential and business areas). Of these communities, those ranked for provincial status in the NHIC database are all considered ranked S5 (secure in Ontario). A brief description of each unit is provided in **Table 1**. **Figure 2** depicts the type and extent of vegetation communities. ELC data sheets are provided in **Appendix B**.

Table 1 Vegetation Communities within the Highway 6 Study Area	
Vegetation Unit	Community Description
Forest Communities	
Coniferous Forest	
FOC2-2 Dry-fresh White Cedar Coniferous Forest	This community contained white cedar in the canopy, sub-canopy and understory. Additional species in the understory included white ash and common buckthorn. Groundcover was not well-developed, and contained sparse groupings of garlic mustard and seedlings. This community type was present south of Kortright Road.
Mixed Forest	
FOM Mixed Forest	This community consisted of a mix of both coniferous and deciduous trees, with no clear dominant species. This community type was present south of Kortright Road.
FOM7-2 Fresh-moist White Cedar – Hardwood Mixed Forest	White cedar was the dominant species in the canopy and sub-canopy, while white birch and balsam poplar were sub-dominant in one unit, and red maple, white elm and green ash were sub-dominant in the other. Understory and groundcover species consisted of ash and other saplings, common buckthorn, and garlic mustard. This community type was present immediately south of the Speed River.

Table 1 Vegetation Communities within the Highway 6 Study Area

Vegetation Unit	Community Description
FOM9-1* White Spruce – Hardwood Mixed Forest	Anthropogenic activity has resulted in the formation of this white spruce dominated community. Other species present included white elm, white ash, basswood, and black cherry in both the sub-canopy and understory. Common buckthorn was also in the sub-canopy. Groundcover species included goldenrods, asters, and various seedlings. This community type was present immediately south of Clair Road.
Deciduous Forest	
FOD Deciduous Forest	Deciduous forest patches with no clear species dominance were present in several locations in the study area. These communities contained a highly variable mix of deciduous hardwoods, such as maples, ashes, poplars, basswood, and elms. These communities are generally disturbance-related. Communities of this type were present throughout the study area.
FOD5-2 Dry-fresh Sugar Maple – Beech Deciduous Forest	Sugar maple and American beech dominated the canopy, sub-canopy and understory of this community. Also present in the understory were black cherry saplings. Groundcover species included herb Robert, chokecherry, and woodland sedges. Communities of this type were present along Maltby Road.
FOD7-2 Fresh-moist Ash Lowland Deciduous Forest	This community contained green ash in the canopy, along with basswood, black cherry, balsam poplar, and white elm. The sub-canopy and understory consisted of various saplings and common buckthorn. Garlic mustard, herb Robert, enchanter's nightshade, and Virginia creeper were present in the groundcover. This community type was present across from the Hanlon Business Park along the Hanlon Expressway.
FOD7-6* Fresh-moist Willow – Ash – Manitoba Maple Lowland Deciduous Forest	This community occupied low-lying areas along the south edge of the Speed River. Species in the canopy included willow, green ash, Manitoba maple, and balsam poplar. Sub-canopy and understory consisted of Manitoba maple and common buckthorn. Groundcover species included stinging nettle, garlic mustard, celandine, and dame's rocket.
FOD10-1* Fresh-moist Manitoba Maple – Balsam Poplar – Ash Deciduous Forest	This community occupied areas of disturbance in the northern portions of the study area. Species in the canopy included Manitoba maple, balsam poplar and ash. These species, along with common buckthorn, were also present in the sub-canopy and understory. Groundcover species included seedlings, garlic mustard, and Virginia creeper. This community type was found south of the Speed River.
Cultural Communities	
Cultural Meadow	
CUM1 Cultural Meadow	Cultural meadows are present throughout the study area; some are related to fallow agricultural fields in the central portions of the study area, while others represent disturbed areas along roads. In each case, a mix of native and exotic forbs and grasses are present, including grasses, goldenrods, asters, vetch, birdsfoot trefoil, and ox-eye daisy.

Table 1 Vegetation Communities within the Highway 6 Study Area	
Vegetation Unit	Community Description
Cultural Thicket	
CUT1-7* European Buckthorn Cultural Thicket	Common buckthorn almost exclusively dominated this thicket community, with scattered nannyberry and white cedar. The lower layers consisted of grasses, goldenrods, and asters. This community type was found south of Kortright Road.
Cultural Savannah	
CUS1 Mineral Cultural Savannah	This cultural savannah showed no clear species dominance, with species such as black locust, sugar maple, scotch pine, and white ash in the canopy. Lower layers were occupied by Tartarian honeysuckle and scotch pine, while grasses, goldenrods, asters, oxeye daisy, strawberry, and fleabanes were noted in the groundcover. Cultural savannahs were found throughout the study area, primarily along the Hanlon Expressway south of Laird Road.
Cultural Woodland	
CUW1 (*) Mineral Cultural Woodland	Cultural woodlands did not show clear species dominance. Species included white ash, trembling aspen, scotch pine and white elm, with staghorn sumac, common buckthorn, and hawthorns. Lower layers were occupied by grasses, goldenrods and asters, along with strawberry and St. John's-wort. These community types were found throughout the study area. (*) = manicured / landscaped
CUW1-3* White Cedar Cultural Woodland	This white cedar cultural woodland consisted of scattered white cedars with scotch pine and sugar maple. Grasses, goldenrods, asters, hawkweeds, colts-foot and strawberry occurred in the lower layers. This community type was found south of Kortright Road.
Cultural Plantation	
CUP3-1 Red Pine Coniferous Plantation	This red pine plantation contained white ash and common buckthorn in the subcanopy and understory. Groundcover primarily contained seedlings. This community type was present on Sideroad 20, north of Maltby Road.
CUP3-2 White Pine Coniferous Plantation	White pine dominated this coniferous plantation, while sugar maple was also present in the canopy and sub-canopy. Understory species included Tartarian honeysuckle, common buckthorn, and choke cherry. The sparse groundcover consisted of seedlings and Virginia creeper.
CUP3-3 Scotch Pine Coniferous Plantation	Scotch pine dominated the canopy of this community, while white ash and common buckthorn were present in the sub-canopy and understory. Groundcover species included seedlings, grasses, and goldenrods. This community type was present south of Maltby Road.

Table 1 Vegetation Communities within the Highway 6 Study Area	
Vegetation Unit	Community Description
Swamp Communities	
Mixed Swamp	
SWM1-1 White Cedar – Hardwood Mineral Mixed Swamp	This wetland community consisted of white cedar with tamarack, white birch, poplars, black ash, and white elm in the canopy and sub-canopy. Understory species included glossy buckthorn, white cedar, and red-osier dogwood. Sensitive fern, marsh fern, and marsh horsetail were present in the groundcover. This community type was present at the north edge of the Hanlon Business Park.
Thicket Swamp	
SWT2-2 Willow Mineral Thicket Swamp	This community consisted of willow shrubs, glossy buckthorn, and red-osier dogwood in the canopy, sub-canopy and understory. The groundcover contained sensitive fern, bittersweet nightshade, marsh fern, and marsh horsetail. This community type was found south of Kortright Road.

* Not listed in the ELC manual for southern Ontario (Lee et al., 1998). No rankings are assigned to these units or to cultural associations.

In addition to the ELC units described above, a number of anthropogenic communities, including residential and business areas, also occur within the study area (**Figure 2**).

3.4 WILDLIFE HABITAT

According to electronic mapping received from the MNR (personal communication with JC Laurence, GIS Officer), no significant terrestrial wildlife habitat is known to occur within the Highway 6 study area. Secondary source data was the main method used to determine the presence of potential wildlife habitat within the study area. A summary of species records, by atlas accounts (Dobbyn, 1994; Oldham and Weller, 2001; Bird Studies Canada, 2005), is discussed below. It is important to note that the exact locations of species occurrences are not available from these atlases and, instead, species are recorded within a 10 km² square. It is possible that many of the identified wildlife species may not occur within the limits of the Highway 6 study area. A complete list of species identified in atlases and in the field is provided in **Appendix C**.

Mammals

Historical records indicate that thirty-seven species of mammals have been recorded within the vicinity of the study area (Dobbyn, 1994). All of these species are ranked S5 (secure in Ontario) or S4 (apparently secure in Ontario), with the exception of three species that are considered to be exotic and non-native to Ontario.

Reptiles and Amphibians

Thirty species of reptiles and amphibians have been recorded within the vicinity of the study area (Oldham and Weller, 2001). Six of these species are significant species, as discussed below.

The Queen Snake (*Regina septemvittata*) and Jefferson Salamander are ranked S2 (imperiled in Ontario) and are "Threatened" at provincial and national levels. These species are protected by the provincial *Endangered Species Act*. The Queen Snake prefers clear stony streams with abundant crayfish (Connant and Collins, 1998).

The Jefferson Salamander requires large tracts of mature deciduous upland forest for over-wintering and foraging habitat. In spring, this species migrates to vernal pools to breed and lay their eggs. Marginal forest habitat for this species was observed in the study area, and no likely breeding areas were identified. The Jefferson salamander has been observed 500 m southeast of the study area (personal communication with Donald Kirk, Natural Heritage Ecologist). However as discussed above, the Jefferson Salamander population in Wellington County (South of Guelph) is likely extirpated and the last of the pure salamanders were observed in Wellington County in April 1989.

The Blanding's Turtle (*Emydoidea blandingii*) is ranked S3 (vulnerable in Ontario) and is "Threatened" at the provincial level. The species is protected by the provincial *Endangered Species Act*. The Blanding's Turtle will utilize a variety of habitats, including lakes, marshes, streams and ponds (Connant and Collins, 1998) but there are no recent records for the area and it is not likely to be found in the study area.

The Northern Map Turtle (*Graptemys geographica*), Northern Ribbonsnake (*Thamnophis sauritus septentrionalis*), Eastern Milksnake and Eastern Ribbonsnake are ranked S3 (vulnerable in Ontario) and are species of "Special Concern" at provincial and national levels. No protection for these species or their habitats are afforded by legislation. Map turtles prefer large bodies of water (Connant and Collins, 1998) and, therefore, could potentially utilize habitats within the Speed River, which is located to the north of the study area. Eastern Ribbonsnakes are most often found near wetland areas (Connant and Collins, 1998), and could potentially be found in marshy areas or ditches within the Highway 6 study area. Milksnakes utilize a wide range of habitats, including man-made structures.

The MNR and NHIC database have no records of any other significant wildlife species occurring within the Highway 6 study area.

Birds

A review of the Ontario Breeding Bird Atlas (Bird Studies Canada, 2005) indicates that 118 avian species have been recorded in the 10 km² square that overlaps with the Highway 6 study area. Six of these species are significant species, as discussed below.

The Acadian Flycatcher is ranked S2 and is "Endangered" at provincial and national levels. This species is also listed on Schedule 1 of the federal *Species at Risk Act* and is a migratory bird. As such, it and its habitats are afforded protection under this legislation. Further, the species is protected by the provincial *Endangered Species Act*. This species requires large mature forest blocks (at least 30 ha) for breeding (Whitehead and Taylor, 2002); habitat that is not present within the Highway 6 study area.

The Red-headed Woodpecker is ranked S3. It is a species of "Special Concern" at the provincial level and "Threatened" at the national level. Therefore, this species and its habitats are not afforded any legislative protection. The Red-headed Woodpecker requires large trees and snags or dead limbs, but will utilize a variety of habitats as long as these requirements are met in at least a portion of the habitat (Smith et al., 2000). This species could be found within a number of locations in the Highway 6 study area.

The Caspian Tern is ranked S3 and is "Not at Risk" at provincial and national levels. Therefore, this species and its habitats are not afforded any legislative protection. Although this species has been incidentally observed in the study area, the Caspian Tern requires large bodies of open water and beach areas for nesting (Cuthbert and Wires, 1999); habitat that is not present within the Highway 6 study area.

The Golden-winged Warbler and Common Nighthawk, both ranked S4 (apparently secure in Ontario) and the Chimney Swift, ranked S5 (secure in Ontario), are all "Threatened" at the national level and carry no designation at the provincial level. Therefore, these species and their habitats are not afforded any legislative protection. The Golden-winged Warbler requires relatively open habitats with clumps of trees and/or shrubs associated with a forest edge (Confer, 1992). The Common Nighthawk will utilize a variety of open habitats including fields, disturbed ground, grassland, open woodland, and even flat roofs (Poulin et al., 1996). The Chimney Swift requires cavities for nesting, and is most often observed in rural or urban settings where chimneys are used (Cink and Collins, 2002). Habitats for all three species are present in the Highway 6 study area.

All culverts in the study area were checked, and no nests of migratory birds were observed.

Wildlife Observations

Incidental wildlife observations recorded during the field investigations include the following common species (see **Appendix C**): American Goldfinch, American Crow, American Robin, Common Grackle, Sharp-shinned Hawk, Song Sparrow, Field Sparrow, European Starling, Red-tailed Hawk, Blue Jay, Eastern Wood Pewee, Red-winged Blackbird, Mallard, Eastern Kingbird,

Baltimore Oriole, red squirrel, white-tailed deer, chipmunk, raccoon, green frog, northern leopard frog, and the following butterfly species: inornate ringlet, northern crescent, monarch, sulphur orange, cabbage white, red admiral, and European skipper.

3.5 REVIEW OF NATURAL HERITAGE STRATEGY

Since the fieldwork was completed for this study in 2007, the City of Guelph has initiated a detailed update to the City's Natural Heritage Strategy (City of Guelph's Phase 2 *Natural Heritage Strategy* [2009]). This study has been reviewed to confirm that no additional sensitive features or species were identified in the study area. A summary of the review is provided in **Appendix D**, which lists general Areas of Concern identified by the study. The review concluded that none of the Areas of Concern overlapped with the Highway 6 study area.

4.0 Preliminary Impact Assessment

The Preferred Plan for the Highway 6 improvements includes the construction of interchanges at Laird Road and Stone Road, a partial interchange (ramps to the south) at Kortright Road/Downey Road, and highway underpasses for Kortright Road/Downey Road and College Avenue.

Loss of Terrestrial Habitat

Significant terrestrial features that overlap the Highway 6 study area include a provincially significant wetland, unevaluated wetlands, and woodlots. Where feasible, avoidance of any wetlands and woodlots in the design is the best option to minimize impacts.

Land use within the study area is dominated by cultural areas and isolated patches of remnant forest cover. The Preferred Plan will result in the removal of cultural vegetation communities including meadows, thickets and some woodlands. These areas are the result of human disturbance, and are not considered significant features within the City.

A single butternut tree was observed in the mixed forest located immediately south of the Speed River however, the Preferred Plan does not require construction in this area. It is possible that additional butternut trees may be present within the study area. As a provincially and nationally "Endangered" species, it is recommended that a detailed survey be conducted, during the detail design phase of the study, to confirm the presence/absence of any additional butternut trees in areas where tree clearing is proposed. If butternut were located within the areas to be cleared, the Ministry of Natural Resources should be contacted immediately in order to assess their health and develop an action plan for each tree.

Disturbance to Wildlife and Species of Significance

Habitat for the Eastern Milksnake and Eastern Ribbonsnake is found within the study area, and observations of Eastern Ribbonsnake have been recorded by the MNR. As provincial and national species of "Special Concern", no protection for these species or their habitats are afforded by legislation. However, the role of the MNR is to ensure that during the planning process, regard is given to the habitats of species of conservation concern (i.e., ranked S1, S2, and S3). The MNR and GRCA do not know of any other significant wildlife species recorded within the limits of the Highway 6 study area.

Although six species of significance were identified as part of the existing conditions review, no specific areas of high quality habitat for these species have been identified.

The majority of general wildlife-related impacts from the proposed development would be caused by the direct removal of terrestrial habitat, as outlined above, and increased ambient noise and increased lighting. Depending on the level and duration/frequency of the activity, an

increase in ambient noise can have detrimental effects on wildlife through agitation and flushing responses. Frequent disturbance can cause increased energy consumption, decreased feeding time, physiological stress and decreased reproduction success due to increased predation on young while adults are flushed. Land uses associated with vehicular traffic and the daily presence of site machinery (during construction) pose an impact in this regard. However, given the existing traffic on Highway 6, it is likely that resident wildlife have either adapted to periodic daily noise or have already relocated to areas beyond their individual noise impact threshold.

Any tree clearing carried out within the defined bird nesting period (May 1 to July 31) will require a search of the area to be cleared for nests of migratory birds. Nesting activity can occur after this time but the probability is decreased. No sensitive species were found during the 2007 field survey however, if any sensitive species are found immediately prior to construction, the timing window may be adjusted for that particular species.

A nest search of the area that is scheduled for clearing should be undertaken by qualified ecologists to ensure no active nests covered by the MBCA are destroyed. Nest searches must be completed within three days of clearing. If clearing is not completed within three days following the nest search, the search must be repeated to ensure that no birds have established new nests during that period.

If no nests are found, clearing may proceed in the area searched. If a nest is located a designated buffer will be marked off, within which no activity will be allowed while the nest is active. The radius of the buffer ranges from 5 m to 60 m depending on the species. The nest will be checked every few days to determine its status. Once the nest is determined to be inactive clearing of that area may proceed.

Dust and Siltation

During construction adjacent to vegetated areas, heavy equipment could damage peripheral vegetation from contact, excavation and/or soil compaction. Dust and silt generated from construction activities can also harm natural areas. These potential effects can be mitigated through the use of standard sediment and erosion control measures, outlined in Section 5.1.

5.0 Environmental Protection Measures

5.1 SEDIMENT AND EROSION CONTROL

Various mitigation techniques will be employed during construction to reduce the risk of impacts to natural environment features. Mitigation measures for sedimentation, erosion, and dust control should be implemented to prevent sediment and dust from entering sensitive natural features.

The primary principles associated with sedimentation and erosion protection measures are to: (1) minimize the duration of soil exposure; (2) retain existing vegetation, where feasible; (3) encourage re-vegetation; (4) divert runoff away from exposed soils; (5) keep runoff velocities low; and to (6) trap sediment as close to the source as possible. To address these principles, the following mitigation measures are proposed:

- No equipment will be permitted to enter any natural areas during construction;
- Silt fencing and/or barriers will be used along all construction areas adjacent to natural areas and wetlands;
- All materials requiring stockpiling (fill, topsoil, etc.) will be stabilized and kept a safe distance from any sensitive natural features. The perimeter of the stockpiles will be encircled with silt fencing;
- All exposed soil areas will be stabilized and re-vegetated, through the placement of seed and mulching or seed and an erosion control blanket, promptly upon completion of construction activities;
- Refueling of equipment will be carried out away from any sensitive natural features to avoid potential impacts, in the event that an accidental spill occurs;
- In addition to any specified requirements, additional silt fence should be available on site, prior to grading operations, to provide a contingency supply in the event of an emergency;
- All sediment and erosion controls should be monitored regularly and properly maintained, as required. Controls are to be removed only after the soils of the construction area have been stabilized and adequately protected until cover is re-established;
- The limits of construction adjacent to all natural features to be retained will be flagged and fenced prior to construction, and monitored during construction (along with sediment and erosion control measures) to ensure the limits are maintained with respect to vehicular traffic and soil or equipment stockpiling;

- The Contractor is required to restore any disturbed natural areas to pre-construction conditions; and,
- Use of straw bale and/or rock flow checks in ditches to trap sediments for off-site disposal.

5.2 MINIMIZING DAMAGE TO PERIPHERAL VEGETATION

During construction adjacent to vegetated areas, heavy equipment could damage peripheral vegetation from contact, excavation and/or soil compaction. Prior to heavy machinery working adjacent to these areas, a barrier for tree protection (e.g., snow fencing) should be employed to protect any site vegetation that is to be retained and is in the vicinity of exposure to damage by machinery. This involves fencing the vegetation at, or beyond, the treed drip-line.

6.0 Summary

This Terrestrial Ecosystems Report documents existing terrestrial ecological features within the Highway 6 study area, from 0.5 km south of Maltby Road to the Speed River. Together with the Fisheries and Aquatic Ecosystems Report, these two documents summarize the Natural Sciences component of the Highway 6 planning, preliminary design, and environmental assessment study.

There are no ANSIs, ESAs, provincial or national parks, or conservation areas within the Highway 6 study area. However, the study area overlaps portions of the provincially significant Hanlon Creek Swamp Complex. Additionally, there are a number of woodlots and small unevaluated wetlands.

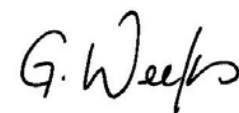
A single butternut tree was recorded just south of the Speed River. It is possible that additional butternut trees may be present within the study area. As a provincially and nationally "Endangered" species, it is recommended that a detailed survey be conducted, during the detail design phase of the study, to confirm the presence/absence of any additional butternut trees in areas where tree clearing is proposed.

Habitat for the Eastern Milksnake and potential habitat for Eastern Ribbonsnake is present within the study area, and species observations have been recorded by the MNR. As a provincial and national species of "Special Concern", no protection for these species or their habitats are afforded by legislation. If the species are observed during construction, activity in the vicinity of the sighting should be ceased and the MNR should be notified immediately. The MNR and GRCA have not identified any other significant wildlife species recorded within the limits of the Highway 6 study area.

Where feasible, avoidance of any wetlands and woodlots in the design is the best option to minimize impacts to natural heritage features. This approach has been incorporated into the evaluation of alternatives for the proposed highway improvements and identification of a Preferred Plan. Only minor vegetation clearing is required to accommodate the Preferred Plan and there are no impacts to wetlands. Where possible, impacts to terrestrial resources will be further minimized during detail design, particularly in the vicinity of Hanlon Creek and west of Highway 6, at Laird Road. Encroachment into terrestrial ecosystems will be quantified in the *Transportation Environmental Study Report (TESR)*.

All of which is respectfully submitted,

STANTEC CONSULTING LTD.



Gwendolyn Weeks, B.Sc.
Environmental Scientist

7.0 References

- Bird Studies Canada. 2005. Ontario Breeding Bird Atlas internet database. Atlas records 2000 to 2005. <http://www.birdsontario.org/atlas> Accessed in July 2007.
- Cink, C.L., and C.T. Collins. 2002. Chimney Swift (*Chaetura pelagica*). In *The Birds of North America*, No. 646 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.
- City of Guelph. 2009. Natural Heritage Strategy: Phase 2: Terrestrial Inventory & Natural Heritage System. (Dougan and Associates)
- Confer, John L. 1992. Golden-winged Warbler. In *The Birds of North America*, No. 20 (A. Poole, P. Stettenheim, and F. Gill, eds.). Philadelphia: The Academy of Natural Sciences; Washington, DC: The American Ornithologists' Union.
- Connant, R. and J.T. Collins. 1998. Reptiles and Amphibians: Eastern / Central North America – Peterson Field Guides. Houghton Mifflin Company. New York, NY.
- Coulson, D., B. Tilt, B. Buckland, P. Ertel (1985), P. Roberts (1985), and W. Bakowsky (1990). 1993. Southern Ontario Wetland Evaluation, Data and Scoring Record – Hanlon Creek Swamp Complex. Third Edition. July 6, August 12-13, 1985; October 19, 1993. Ministry of Natural Resources. 41 pp manuscript + 2 maps + 155 pp supplement.
- Cuthbert, F.J. and L.R. Wires. 1999. Caspian Tern (*Sterna caspia*). In *The Birds of North America*, No. 403 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia.
- Dobbyn, J. 1994. Atlas of the Mammals of Ontario. Federation of Ontario Naturalists.
- Grand River Conservation Authority. 2007. Personal communication with Zoë Green, GIS Technician.
- Grand River Conservation Authority internet database. 2007. <http://www.grandriver.ca> Accessed in July 2007.
- Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological Land Classification for Southwestern Ontario: First Approximation and its Application. Ministry of Natural Resources, South Central Region, Science Development and Transfer Branch. Technical Manual ELC-005.
- Ministry of Natural Resources, Guelph District. 2007. Personal communication with Donald Kirk, Natural Heritage Ecologist, and JC Laurence, GIS Officer.

- Ministry of Transportation, Ontario. 2002. Environmental Reference for Highway Design. Planning and Environmental Office. The Queen's Printer for Ontario.
- Natural Heritage Information Centre internet database. Ministry of Natural Resources. <http://www.mnr.gov.on.ca/MNR/nhic/nhic.html> Accessed in July 2007.
- Oldham, M.J. and W.F. Weller. 2001. Ontario Herpetofaunal Atlas internet database. Ministry of Natural Resources, Natural Heritage Information Centre. <http://www.mnr.gov.on.ca/MNR/nhic/herps/ohs.html> Accessed in July 2007.
- Poulin, R. G., S.D. Grindal, and R.M. Brigham. 1996. Common Nighthawk (*Chordeiles minor*). In *The Birds of North America*, No. 213 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, and The American Ornithologists' Union, Washington, D.C.
- Province of Ontario. 2005. Provincial Policy Statement. 37 pp.
- Rowe, J.S. 1972. Forest Regions of Canada. Department of the Environment. Canadian Forestry Service Publication No. 1300.
- Smith, K.G., J.H. Withgott, and P.G. Rodewald. 2000. Red-headed Woodpecker (*Melanerpes erythrocephalus*). In *The Birds of North America*, No. 518 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.
- Whitehead, D.R., and T. Taylor. 2002. Acadian Flycatcher (*Empidonax vireescens*). In *The Birds of North America*, No. 614 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.



APPENDIX A

PHOTOGRAPHIC RECORD



Dry-fresh Sugar Maple - White Ash Deciduous Forest (FOD5-8).



Norway Spruce - Hardwood Mixed Forest (FOM9-2*).



Deciduous Hedgerow: typical roadside deciduous hedgerows showing variety of tree species.



Dry-fresh White Cedar Coniferous Forest (FOC2-2).



Deciduous Forest typical of study area showing variety of tree species (FOD).



White Pine Coniferous Plantation (CUP3-2).

FILENAME: W:\active\Other_PCs_Active\650 - Hamilton\65000631\graphics\Correll\65000631_01.cdr





Dry-fresh Sugar Maple - Beech Deciduous Forest (FOD5-2).



Mineral Cultural Savannah (CUS1).



Scotch Pine Coniferous Plantation (CUP3-3).



Cattail Mineral Shallow Marsh (MAS2-1)(foreground).
Ash - White Elm Mineral Deciduous Swamp (SWD4-5*)(rear).



White Cedar Cultural Woodlands (CUW1-3*).



Fresh-moist White Cedar - Hardwood Mixed Forest (FOM7-2).

APPENDIX B

ECOLOGICAL LAND CLASSIFICATION DATA SHEETS

FILENAME: W:\active\Other_PCs_Active\650 - Hamilton\65000631\graphics\Correl\65000631_01.cdr

SITE: 165000631 POLYGON: ①
 SURVEYOR(S): GAW DATE: June 14.07 UTM: UTMZ:
 START: END: UTM: UTMN:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL COVER <input type="checkbox"/> OPEN <input type="checkbox"/> SHRUB <input checked="" type="checkbox"/> TREED	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LV <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> DECIDUOUS <input type="checkbox"/> CONIFEROUS <input checked="" type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BARRON <input type="checkbox"/> MEADOW <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE

OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION: SPECIES IN ORDER OF DECREASING DOMINANCE
 (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR
1 CANOPY	2	4
2 SUB-CANOPY	3	4
3 UNDERSTOREY	4-5	2
4 GRD. LAYER	6-7	3

HT CODES: 1 = >25 m 2 = 10-25 m 3 = 5-10 m 4 = 0-5 m 5 = 0-2.5 m 6 = 0-1.5 m 7 = 0-0.5 m
 CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 50% 4 = CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:

A	< 10	A	10-24	O	25-50	> 50
---	------	---	-------	---	-------	------

STANDING SNAGS:

A	< 10	O	10-24	R	25-50	> 50
---	------	---	-------	---	-------	------

DEADFALL / LOGS:

A	< 10	O	10-24	R	25-50	> 50
---	------	---	-------	---	-------	------

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS:

TEXTURE: DEPTH TO MOTTLES / GLEY | g = G=

MOISTURE: DEPTH OF ORGANICS: (cm)

HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:

COMMUNITY CLASS: CODE: FO

COMMUNITY SERIES: CODE: FOM

ECOSITE: CODE: FOM1

VEGETATION TYPE: Fresh-moist white cedar - hardwood mixed forest

INCLUSION CODE: FOM7-2

COMPLEX CODE:

Notes:

SITE: POLYGON: ②
 SURVEYOR(S): DATE: UTM: UTMN:
 START: END: UTMZ:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL COVER <input type="checkbox"/> OPEN <input type="checkbox"/> SHRUB <input checked="" type="checkbox"/> TREED	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LV <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> DECIDUOUS <input type="checkbox"/> CONIFEROUS <input checked="" type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BARRON <input type="checkbox"/> MEADOW <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE

OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION: SPECIES IN ORDER OF DECREASING DOMINANCE
 (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR
1 CANOPY	2	4
2 SUB-CANOPY	3	4
3 UNDERSTOREY	4-5	2
4 GRD. LAYER	6-7	1

HT CODES: 1 = >25 m 2 = 10-25 m 3 = 5-10 m 4 = 0-5 m 5 = 0-2.5 m 6 = 0-1.5 m 7 = 0-0.5 m
 CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 50% 4 = CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:

A	< 10	A	10-24	O	25-50	> 50
---	------	---	-------	---	-------	------

STANDING SNAGS:

A	< 10	O	10-24	R	25-50	> 50
---	------	---	-------	---	-------	------

DEADFALL / LOGS:

A	< 10	O	10-24	R	25-50	> 50
---	------	---	-------	---	-------	------

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS:

TEXTURE: DEPTH TO MOTTLES / GLEY | g = G=

MOISTURE: DEPTH OF ORGANICS: (cm)

HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:

COMMUNITY CLASS: CODE: CU

COMMUNITY SERIES: CODE: CUP

ECOSITE: CODE: CUP3

VEGETATION TYPE: Scotch Pine Caniferous Plantation

INCLUSION CODE: CUP3-3

COMPLEX CODE:

Notes:

SITE: 165000631 POLYGON: ③
 SURVEYOR(S): GAW DATE: June 14.07 UTM: UTMN:
 START: END: UTMZ:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input type="checkbox"/> NATURAL <input checked="" type="checkbox"/> CULTURAL COVER <input type="checkbox"/> OPEN <input type="checkbox"/> SHRUB <input checked="" type="checkbox"/> TREED	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LV <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> DECIDUOUS <input type="checkbox"/> CONIFEROUS <input checked="" type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BARRON <input type="checkbox"/> MEADOW <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE

OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION: SPECIES IN ORDER OF DECREASING DOMINANCE
 (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR
1 CANOPY	3	3
2 SUB-CANOPY	4	4
3 UNDERSTOREY	4-5	4
4 GRD. LAYER	6-7	4

HT CODES: 1 = >25 m 2 = 10-25 m 3 = 5-10 m 4 = 0-5 m 5 = 0-2.5 m 6 = 0-1.5 m 7 = 0-0.5 m
 CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 50% 4 = CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:

A	< 10	A	10-24	O	25-50	> 50
---	------	---	-------	---	-------	------

STANDING SNAGS:

O	< 10	O	10-24	R	25-50	> 50
---	------	---	-------	---	-------	------

DEADFALL / LOGS:

O	< 10	O	10-24	R	25-50	> 50
---	------	---	-------	---	-------	------

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS:

TEXTURE: DEPTH TO MOTTLES / GLEY | g = G=

MOISTURE: DEPTH OF ORGANICS: (cm)

HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:

COMMUNITY CLASS: CODE: CU

COMMUNITY SERIES: CODE: CUM

ECOSITE: CODE: CUM1

VEGETATION TYPE: white cedar cultural woodland

INCLUSION CODE: CUM1-3*

COMPLEX CODE:

Notes:

SITE: POLYGON: ④
 SURVEYOR(S): DATE: UTM: UTMN:
 START: END: UTMZ:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL COVER <input type="checkbox"/> OPEN <input type="checkbox"/> SHRUB <input checked="" type="checkbox"/> TREED	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LV <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> DECIDUOUS <input type="checkbox"/> CONIFEROUS <input checked="" type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BARRON <input type="checkbox"/> MEADOW <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE

OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION: SPECIES IN ORDER OF DECREASING DOMINANCE
 (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR
1 CANOPY	2	4
2 SUB-CANOPY	3	4
3 UNDERSTOREY	4-5	4
4 GRD. LAYER	6-7	4

HT CODES: 1 = >25 m 2 = 10-25 m 3 = 5-10 m 4 = 0-5 m 5 = 0-2.5 m 6 = 0-1.5 m 7 = 0-0.5 m
 CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 50% 4 = CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:

A	< 10	A	10-24	O	25-50	> 50
---	------	---	-------	---	-------	------

STANDING SNAGS:

A	< 10	O	10-24	R	25-50	> 50
---	------	---	-------	---	-------	------

DEADFALL / LOGS:

O	< 10	O	10-24	R	25-50	> 50
---	------	---	-------	---	-------	------

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS:

TEXTURE: DEPTH TO MOTTLES / GLEY | g = G=

MOISTURE: DEPTH OF ORGANICS: (cm)

HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:

COMMUNITY CLASS: CODE: SW

COMMUNITY SERIES: CODE: SWM

ECOSITE: CODE: SWM1

VEGETATION TYPE: white cedar - hardwood mineral mixed swamp

INCLUSION CODE: SWM1-1

COMPLEX CODE:

Notes: Pines present on E side of Harlan (#6) N of road 34: in decline.

SITE: 165000631 POLYGON: 5
 SURVEYOR(S): GAW DATE: June 14, 07
 START: END: UTMZ: UTMN:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION		STAND DESCRIPTION:	
SYSTEM	SUBSTRATE	HT	CVR
<input type="checkbox"/> TERRESTRIAL <input checked="" type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	4	4
<input type="checkbox"/> OPEN WATER <input checked="" type="checkbox"/> SHALLOW WATER <input type="checkbox"/> SURFICIAL DEP. <input type="checkbox"/> BEDROCK	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input checked="" type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	5	4
		6-7	4
		4	GRD. LAYER
		HT CODES: 1 = > 25 m 2 = 10-25 m 3 = 2-10 m 4 = 1-2 m 5 = 0.5-1 m 6 = 0.2-1 m 7 = HT < 0.2 m CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 50% 4 = CVR > 50%	

STAND DESCRIPTION:
 SPECIES IN ORDER OF DECREASING DOMINANCE
 1 CANOPY 4 4 TYPLATI
 2 SUB-CANOPY 5 4
 3 UNDERSTOREY 6-7 4 *CNOSENS, Carex spp marsh fern*
 4 GRD. LAYER 4

HT CODES: 1 = > 25 m 2 = 10-25 m 3 = 2-10 m 4 = 1-2 m 5 = 0.5-1 m 6 = 0.2-1 m 7 = HT < 0.2 m
 CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 50% 4 = CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:	A	< 10	10 - 24	25 - 50	> 50
STANDING SNAGS:	0	0	0	0	0
DEADFALL / LOGS:	0	0	0	0	0
ABUNDANCE CODES:	N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT				
COMM. AGE:	PIONEER <input checked="" type="checkbox"/> YOUNG <input type="checkbox"/> MID-AGE <input type="checkbox"/> MATURE <input type="checkbox"/> OLD GROWTH <input type="checkbox"/>				

SOIL ANALYSIS:
 TEXTURE: DEPTH TO MOTTLES / GLEY g =
 MOISTURE: DEPTH OF ORGANICS: G=
 HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:
 COMMUNITY CLASS: CODE: MA
 COMMUNITY SERIES: CODE: MAS
 ECOSITE: CODE: MAS2
 VEGETATION TYPE: Cattail Mineral Shallow Marsh
 CODE: MAS2-1
 INCLUSION Willow Mineral Thicket Swp. CODE: SWT2-2
 COMPLEX CODE:

Notes:

SITE: POLYGON: 6
 SURVEYOR(S): DATE: UTMZ: UTMN:
 START: END: UTMZ: UTMN:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION		STAND DESCRIPTION:	
SYSTEM	SUBSTRATE	HT	CVR
<input type="checkbox"/> TERRESTRIAL <input checked="" type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	2	4
<input type="checkbox"/> OPEN WATER <input checked="" type="checkbox"/> SHALLOW WATER <input type="checkbox"/> SURFICIAL DEP. <input type="checkbox"/> BEDROCK	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input checked="" type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	3	4
		4-5	4
		4	GRD. LAYER
		HT CODES: 1 = > 25 m 2 = 10-25 m 3 = 2-10 m 4 = 1-2 m 5 = 0.5-1 m 6 = 0.2-1 m 7 = HT < 0.2 m CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 50% 4 = CVR > 50%	

STAND DESCRIPTION:
 SPECIES IN ORDER OF DECREASING DOMINANCE
 1 CANOPY 2 4 ULMAMER, FRANIGR, POPBALS, BEIPAPY
 2 SUB-CANOPY 3 4
 3 UNDERSTOREY 4-5 4
 4 GRD. LAYER 4-7 4 *CORSTOL, Glossy Buckthorn, THUOCCI*
 HT CODES: 1 = > 25 m 2 = 10-25 m 3 = 2-10 m 4 = 1-2 m 5 = 0.5-1 m 6 = 0.2-1 m 7 = HT < 0.2 m
 CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 50% 4 = CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:	A	< 10	10 - 24	25 - 50	> 50
STANDING SNAGS:	0	0	0	0	0
DEADFALL / LOGS:	0	0	0	0	0
ABUNDANCE CODES:	N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT				
COMM. AGE:	PIONEER <input type="checkbox"/> YOUNG <input checked="" type="checkbox"/> MID-AGE <input type="checkbox"/> MATURE <input type="checkbox"/> OLD GROWTH <input type="checkbox"/>				

SOIL ANALYSIS:
 TEXTURE: DEPTH TO MOTTLES / GLEY g =
 MOISTURE: DEPTH OF ORGANICS: G=
 HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:
 COMMUNITY CLASS: CODE: SW
 COMMUNITY SERIES: CODE: SWD
 ECOSITE: CODE: SWD-1
 VEGETATION TYPE: Ash-white elm, deciduous swamp
 CODE: SWD 4-5
 INCLUSION
 COMPLEX CODE:

Notes:

SITE: 165000631 POLYGON: 7
 SURVEYOR(S): GAW DATE: June 14, 07
 START: END: UTMZ: UTMN:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION		STAND DESCRIPTION:	
SYSTEM	SUBSTRATE	HT	CVR
<input type="checkbox"/> TERRESTRIAL <input checked="" type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	3	4
<input type="checkbox"/> OPEN WATER <input checked="" type="checkbox"/> SHALLOW WATER <input type="checkbox"/> SURFICIAL DEP. <input type="checkbox"/> BEDROCK	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input checked="" type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	4	4
		4	4
		5	4
		6-7	4
		4	GRD. LAYER
		HT CODES: 1 = > 25 m 2 = 10-25 m 3 = 2-10 m 4 = 1-2 m 5 = 0.5-1 m 6 = 0.2-1 m 7 = HT < 0.2 m CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 50% 4 = CVR > 50%	

STAND DESCRIPTION:
 SPECIES IN ORDER OF DECREASING DOMINANCE
 1 CANOPY 3 4 *Salix* > Glossy buckthorn > CORSTOL
 2 SUB-CANOPY 4 4 As Above
 3 UNDERSTOREY 5 4 As Above
 4 GRD. LAYER 6-7 4 *CNOSENS, nightshade, marsh fern, marsh horsetail*
 HT CODES: 1 = > 25 m 2 = 10-25 m 3 = 2-10 m 4 = 1-2 m 5 = 0.5-1 m 6 = 0.2-1 m 7 = HT < 0.2 m
 CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 50% 4 = CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:	A	< 10	10 - 24	25 - 50	> 50
STANDING SNAGS:	4	0	0	0	0
DEADFALL / LOGS:	4	0	0	0	0
ABUNDANCE CODES:	N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT				
COMM. AGE:	PIONEER <input checked="" type="checkbox"/> YOUNG <input type="checkbox"/> MID-AGE <input type="checkbox"/> MATURE <input type="checkbox"/> OLD GROWTH <input type="checkbox"/>				

SOIL ANALYSIS:
 TEXTURE: DEPTH TO MOTTLES / GLEY g =
 MOISTURE: DEPTH OF ORGANICS: G=
 HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:
 COMMUNITY CLASS: CODE: SW
 COMMUNITY SERIES: CODE: SWT
 ECOSITE: CODE: SWT2
 VEGETATION TYPE: willow mineral Thicket Swamp
 CODE: SWT2-2
 INCLUSION
 COMPLEX CODE:

Notes:

SITE: POLYGON: 8
 SURVEYOR(S): DATE: UTMZ: UTMN:
 START: END: UTMZ: UTMN:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION		STAND DESCRIPTION:	
SYSTEM	SUBSTRATE	HT	CVR
<input type="checkbox"/> TERRESTRIAL <input checked="" type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	2	4
<input type="checkbox"/> OPEN WATER <input checked="" type="checkbox"/> SHALLOW WATER <input type="checkbox"/> SURFICIAL DEP. <input type="checkbox"/> BEDROCK	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input checked="" type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	3	4
		4	4
		4-5	4
		4	GRD. LAYER
		HT CODES: 1 = > 25 m 2 = 10-25 m 3 = 2-10 m 4 = 1-2 m 5 = 0.5-1 m 6 = 0.2-1 m 7 = HT < 0.2 m CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 50% 4 = CVR > 50%	

STAND DESCRIPTION:
 SPECIES IN ORDER OF DECREASING DOMINANCE
 1 CANOPY 2 4 *Scotch Pine* > PIGGLAU
 2 SUB-CANOPY 3 4 *Common Buckthorn*
 3 UNDERSTOREY 4-5 4 PRUVIVI
 4 GRD. LAYER 6-7 4 PARINSE, TAROFF, Seedlings
 HT CODES: 1 = > 25 m 2 = 10-25 m 3 = 2-10 m 4 = 1-2 m 5 = 0.5-1 m 6 = 0.2-1 m 7 = HT < 0.2 m
 CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 50% 4 = CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:	A	< 10	10 - 24	25 - 50	> 50
STANDING SNAGS:	0	0	0	0	0
DEADFALL / LOGS:	0	0	0	0	0
ABUNDANCE CODES:	N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT				
COMM. AGE:	PIONEER <input type="checkbox"/> YOUNG <input checked="" type="checkbox"/> MID-AGE <input type="checkbox"/> MATURE <input type="checkbox"/> OLD GROWTH <input type="checkbox"/>				

SOIL ANALYSIS:
 TEXTURE: DEPTH TO MOTTLES / GLEY g =
 MOISTURE: DEPTH OF ORGANICS: G=
 HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:
 COMMUNITY CLASS: CODE: CU
 COMMUNITY SERIES: CODE: CUP
 ECOSITE: CODE: CUP3
 VEGETATION TYPE: Scotch Pine Cultural Plantation
 CODE: CUP3-3
 INCLUSION
 COMPLEX CODE:

Notes:

ELC SITE: 165000631 POLYGON: 9
 SURVEYOR(S): GAW DATE: June 14.07
 COMMUNITY DESCRIPTION & CLASSIFICATION: START: END: UTMZ: UTMN: UTMN:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> ALVAR <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH/BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input type="checkbox"/> NATURAL <input checked="" type="checkbox"/> CULTURAL <input type="checkbox"/> COVER <input type="checkbox"/> OPEN <input type="checkbox"/> SHRUB <input checked="" type="checkbox"/> TREED	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LVD. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input checked="" type="checkbox"/> DECIDUOUS <input type="checkbox"/> CONIFEROUS <input type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BCG <input type="checkbox"/> BARREN <input type="checkbox"/> MEADOW <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE: OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION: SPECIES IN ORDER OF DECREASING DOMINANCE (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1 CANOPY	3	2	Locust, ACESASA, Scotch pine, FRAMMER
2 SUB-CANOPY	4	2	LONATA, Scotch pine
3 UNDERSTOREY	5	4	Grasses, Goldenrods, Asters
4 GRD. LAYER	6-7	4	Oneye daisy, Strawberry, Fleabane, butter-cups

HT CODES: 1=25m 2=10-25m 3=2-10m 4=1-10m 5=0.5-1m 6=0.2-1m 7=HT0.2m
 CVR CODES: 0=NONE 1=0% < CVR < 10% 2=10 < CVR < 25% 3=25 < CVR < 50% 4=50 < CVR < 80%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:	A < 10	O 10-24	R 25-50	> 50
STANDING SNAGS:	O < 10	O 10-24	R 25-50	> 50
DEADFALL / LOGS:	O < 10	O 10-24	R 25-50	> 50

ABUNDANCE CODES: N=NONE . R=RARE O=OCCASIONAL A=ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS: TEXTURE: DEPTH TO MOTTLES / GLEY g = G=
 MOISTURE: DEPTH OF ORGANICS: DEPTH TO BEDROCK: (cm) (cm)

HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION: CODE: CU
 COMMUNITY SERIES: CODE: CUS
 ECOSITE: CODE: CUS1
 VEGETATION TYPE: Mineral Cultural Savannah

INCLUSION CODE: CUS1
 COMPLEX CODE: CUS1

Notes: No clear dominance of any one species / combination of species. Disturbance related.

ELC SITE: POLYGON: 10
 SURVEYOR(S): DATE: UTMZ: UTMN: UTMN:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> ALVAR <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH/BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL <input type="checkbox"/> COVER <input type="checkbox"/> OPEN <input type="checkbox"/> SHRUB <input checked="" type="checkbox"/> TREED	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LVD. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input checked="" type="checkbox"/> DECIDUOUS <input type="checkbox"/> CONIFEROUS <input type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BCG <input type="checkbox"/> BARREN <input type="checkbox"/> MEADOW <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE: OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION: SPECIES IN ORDER OF DECREASING DOMINANCE (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1 CANOPY	2	4	ACESASA >> FAGGRAN
2 SUB-CANOPY	3	2	"
3 UNDERSTOREY	4.5	1	" PRUVINI
4 GRD. LAYER	6-7	4	GERROBE, PRUVINI, Seedling CARPENN

HT CODES: 1=25m 2=10-25m 3=2-10m 4=1-10m 5=0.5-1m 6=0.2-1m 7=HT0.2m
 CVR CODES: 0=NONE 1=0% < CVR < 10% 2=10 < CVR < 25% 3=25 < CVR < 50% 4=50 < CVR < 80%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:	A < 10	O 10-24	R 25-50	> 50
STANDING SNAGS:	R < 10	R 10-24	R 25-50	> 50
DEADFALL / LOGS:	A < 10	O 10-24	R 25-50	> 50

ABUNDANCE CODES: N=NONE . R=RARE O=OCCASIONAL A=ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS: TEXTURE: DEPTH TO MOTTLES / GLEY g = G=
 MOISTURE: DEPTH OF ORGANICS: DEPTH TO BEDROCK: (cm) (cm)

HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION: CODE: FO
 COMMUNITY SERIES: CODE: FOD
 ECOSITE: CODE: FOD5
 VEGETATION TYPE: Dry-fresh Sugar Maple-Beech Deciduous Forest

INCLUSION CODE: FOD5-2
 COMPLEX CODE: FOD5-2

Notes: Managed

ELC SITE: 165000631 POLYGON: 11
 SURVEYOR(S): GAW DATE: June 14.07
 COMMUNITY DESCRIPTION & CLASSIFICATION: START: END: UTMZ: UTMN: UTMN:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> ALVAR <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH/BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input type="checkbox"/> NATURAL <input checked="" type="checkbox"/> CULTURAL <input type="checkbox"/> COVER <input type="checkbox"/> OPEN <input type="checkbox"/> SHRUB <input checked="" type="checkbox"/> TREED	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LVD. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input checked="" type="checkbox"/> DECIDUOUS <input type="checkbox"/> CONIFEROUS <input type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BCG <input type="checkbox"/> BARREN <input type="checkbox"/> MEADOW <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE: OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION: SPECIES IN ORDER OF DECREASING DOMINANCE (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1 CANOPY	2	4	ULMAMER, FRAX, ACESASA, POPYREM, POPRALS
2 SUB-CANOPY	3	4	" " Ev. Buckthorn
3 UNDERSTOREY	4-5	4	Goldenrods, Asters
4 GRD. LAYER	6-7	4	GERROBE, Strawberry

HT CODES: 1=25m 2=10-25m 3=2-10m 4=1-10m 5=0.5-1m 6=0.2-1m 7=HT0.2m
 CVR CODES: 0=NONE 1=0% < CVR < 10% 2=10 < CVR < 25% 3=25 < CVR < 50% 4=50 < CVR < 80%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:	A < 10	A 10-24	O 25-50	> 50
STANDING SNAGS:	O < 10	O 10-24	R 25-50	> 50
DEADFALL / LOGS:	O < 10	O 10-24	R 25-50	> 50

ABUNDANCE CODES: N=NONE . R=RARE O=OCCASIONAL A=ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS: TEXTURE: DEPTH TO MOTTLES / GLEY g = G=
 MOISTURE: DEPTH OF ORGANICS: DEPTH TO BEDROCK: (cm) (cm)

HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION: CODE: FO
 COMMUNITY SERIES: CODE: FOD
 ECOSITE: CODE: FOD
 VEGETATION TYPE: Deciduous Forest

INCLUSION CODE: FOD
 COMPLEX CODE: FOD

Notes: No clear dominance of any one species / combination of species. Disturbance related.

ELC SITE: POLYGON: 12
 SURVEYOR(S): DATE: UTMZ: UTMN: UTMN:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> ALVAR <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH/BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input type="checkbox"/> NATURAL <input checked="" type="checkbox"/> CULTURAL <input type="checkbox"/> COVER <input type="checkbox"/> OPEN <input type="checkbox"/> SHRUB <input checked="" type="checkbox"/> TREED	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LVD. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input checked="" type="checkbox"/> DECIDUOUS <input type="checkbox"/> CONIFEROUS <input type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BCG <input type="checkbox"/> BARREN <input type="checkbox"/> MEADOW <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE: OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION: SPECIES IN ORDER OF DECREASING DOMINANCE (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1 CANOPY	3	3	FRAMMER, POPYREM, Scotch pine, ULMAMER
2 SUB-CANOPY	4-5	3	RHYTYPH, Ev. Buckthorn, Crataegus
3 UNDERSTOREY	6-7	4	Grasses, Goldenrods, Strawberry, St. J. wort
4 GRD. LAYER	1-2	2	10-25m 2=2-10m 3=2-10m 4=1-10m 5=0.5-1m 6=0.2-1m 7=HT0.2m

HT CODES: 1=25m 2=10-25m 3=2-10m 4=1-10m 5=0.5-1m 6=0.2-1m 7=HT0.2m
 CVR CODES: 0=NONE 1=0% < CVR < 10% 2=10 < CVR < 25% 3=25 < CVR < 50% 4=50 < CVR < 80%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:	O < 10	O 10-24	R 25-50	> 50
STANDING SNAGS:	O < 10	O 10-24	R 25-50	> 50
DEADFALL / LOGS:	O < 10	R 10-24	R 25-50	> 50

ABUNDANCE CODES: N=NONE . R=RARE O=OCCASIONAL A=ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS: TEXTURE: DEPTH TO MOTTLES / GLEY g = G=
 MOISTURE: DEPTH OF ORGANICS: DEPTH TO BEDROCK: (cm) (cm)

HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION: CODE: CU
 COMMUNITY SERIES: CODE: CUW
 ECOSITE: CODE: CUWJ
 VEGETATION TYPE: Mineral Cultural Woodland

INCLUSION CODE: CUW
 COMPLEX CODE: CUWJ

Notes: No clear spp. dominance.

POLYGON: 13
 SITE: 165000631
 SURVEYOR(S): GAW
 DATE: June 14.07
 END
 START: UTMZ: UTMN:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LV. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> DECIDUOUS <input type="checkbox"/> CONIFEROUS <input type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> BOG <input type="checkbox"/> MEADOW <input type="checkbox"/> BARREN <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input checked="" type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE
 OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION: SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1 CANOPY	2	4	POPTREM, ULMAMER, ACESASA, FRAX.
2 SUB-CANOPY	3	4	" " " "
3 UNDERSTOREY	4-5	4	Goldenrods, Asters
4 GRD. LAYER	6-7	4	Strawberry, Garlic Mustard

HT CODES: 1 = >25m 2 = 10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-1m 7 = HT<0.2m
 CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 50% 4 = CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS: A < 10 A 10-24 R 25-50 > 50

STANDING SNAGS: 0 < 10 0 10-24 25-50 > 50

DEADFALL / LOGS: 0 < 10 0 10-24 25-50 > 50

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS: TEXTURE: DEPTH TO MOTTLES / GLEY g = G=

MOISTURE: DEPTH OF ORGANICS: (cm)

HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION: CODE: FO

COMMUNITY SERIES: CODE: FOD

ECOSITE: CODE: FOD

VEGETATION TYPE: Deciduous Forest CODE: FOD

INCLUSION CODE: CODE:

COMPLEX CODE: CODE:

Notes: No clear spp. dominance.

POLYGON: 14
 SITE: SURVEYOR(S):
 DATE: END
 START: UTMZ: UTMN:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input type="checkbox"/> NATURAL <input checked="" type="checkbox"/> CULTURAL	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LV. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> DECIDUOUS <input type="checkbox"/> CONIFEROUS <input type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> BOG <input type="checkbox"/> MEADOW <input type="checkbox"/> BARREN <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input checked="" type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE
 OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION: SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1 CANOPY	3	4	PINIRO >>> ACESASA
2 SUB-CANOPY	4	1	" "
3 UNDERSTOREY	5	1	LONTATA, Eu. Buchthorn, PRUVIVI
4 GRD. LAYER	6-7	1	PARINSE Seedlings

HT CODES: 1 = >25m 2 = 10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-1m 7 = HT<0.2m
 CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 50% 4 = CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS: A < 10 A 10-24 25-50 > 50

STANDING SNAGS: 0 < 10 R 10-24 25-50 > 50

DEADFALL / LOGS: 0 < 10 R 10-24 25-50 > 50

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS: TEXTURE: DEPTH TO MOTTLES / GLEY g = G=

MOISTURE: DEPTH OF ORGANICS: (cm)

HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION: CODE: CU

COMMUNITY SERIES: CODE: CUP

ECOSITE: CODE: CUP3

VEGETATION TYPE: White Pine Coniferous CODE: CUP3-2

INCLUSION CODE: CODE:

COMPLEX CODE: CODE:

Notes:

POLYGON: 15
 SITE: 165000631
 SURVEYOR(S): GAW
 DATE: June 14.07
 END
 START: UTMZ: UTMN:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input type="checkbox"/> NATURAL <input checked="" type="checkbox"/> CULTURAL	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LV. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> DECIDUOUS <input type="checkbox"/> CONIFEROUS <input type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> BOG <input type="checkbox"/> MEADOW <input type="checkbox"/> BARREN <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input checked="" type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE
 OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION: SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1 CANOPY	3	4	PINRESI
2 SUB-CANOPY	4	1	FRAAMER, Eu. Buchthorn
3 UNDERSTOREY	5	1	" "
4 GRD. LAYER	6-7	1	Seedlings

HT CODES: 1 = >25m 2 = 10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-1m 7 = HT<0.2m
 CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 50% 4 = CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS: A < 10 0 10-24 25-50 > 50

STANDING SNAGS: 0 < 10 0 10-24 25-50 > 50

DEADFALL / LOGS: 0 < 10 0 10-24 25-50 > 50

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS: TEXTURE: DEPTH TO MOTTLES / GLEY g = G=

MOISTURE: DEPTH OF ORGANICS: (cm)

HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION: CODE: CU

COMMUNITY SERIES: CODE: CUP

ECOSITE: CODE: CUP3

VEGETATION TYPE: Red Pine Coniferous CODE: CUP3-1

INCLUSION CODE: CODE:

COMPLEX CODE: CODE:

Notes:

POLYGON: 16
 SITE: SURVEYOR(S):
 DATE: END
 START: UTMZ: UTMN:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input type="checkbox"/> NATURAL <input checked="" type="checkbox"/> CULTURAL	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LV. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> DECIDUOUS <input type="checkbox"/> CONIFEROUS <input type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> BOG <input type="checkbox"/> MEADOW <input type="checkbox"/> BARREN <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input checked="" type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE
 OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION: SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1 CANOPY	2	4	PICGLAU
2 SUB-CANOPY	3	4	ULMAMER, FRAAMER, TILAMER, PRUSERO
3 UNDERSTOREY	4-5	4	FRAAMER, TILAMER, PRUVIVI, Eu. Buchthorn
4 GRD. LAYER	6-7	4	Goldenrods, Asters, Seedlings

HT CODES: 1 = >25m 2 = 10-25m 3 = 2-10m 4 = 1-2m 5 = 0.5-1m 6 = 0.2-1m 7 = HT<0.2m
 CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 50% 4 = CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS: A < 10 A 10-24 0 25-50 > 50

STANDING SNAGS: 0 < 10 0 10-24 0 25-50 > 50

DEADFALL / LOGS: 0 < 10 0 10-24 0 25-50 > 50

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS: TEXTURE: DEPTH TO MOTTLES / GLEY g = G=

MOISTURE: DEPTH OF ORGANICS: (cm)

HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION: CODE: FO

COMMUNITY SERIES: CODE: FOM

ECOSITE: CODE: FOM9 *

VEGETATION TYPE: white spruce - Hardwood mixed forest CODE: FOM9-1 *

INCLUSION CODE: CODE:

COMPLEX CODE: CODE:

Notes: Associated with a residence: disturbance related.

SITE: 165000631 POLYGON: 17
 SURVEYOR(S): GAW DATE: June 14.07
 START: END UTMZ: UTM: UTMN:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> ALVAR <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input type="checkbox"/> NATURAL <input checked="" type="checkbox"/> CULTURAL COVER <input type="checkbox"/> OPEN <input type="checkbox"/> SHRUB <input checked="" type="checkbox"/> TREED	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LV. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> DECIDUOUS <input checked="" type="checkbox"/> CONIFEROUS <input type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BARREN <input type="checkbox"/> MEADOW <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE
 OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION:
 SPECIES IN ORDER OF DECREASING DOMINANCE
 (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR
1 CANOPY	2	3
2 SUB-CANOPY	3	3
3 UNDERSTOREY		
4 GRD. LAYER	7	4

HT CODES: 1=25 m 2=10-25 m 3=2-10 m 4=1-2 m 5=0.5-1 m 6=0.2-1 m 7=HT<0.3 m
 CVR CODES: 0=NONE 1=0% < CVR < 10% 2=10 < CVR < 25% 3=25 < CVR < 50% 4= CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS: / < 10 10-24 25-50 > 50

STANDING SNAGS: / < 10 10-24 25-50 > 50

DEADFALL / LOGS: / < 10 10-24 25-50 > 50

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS:
 TEXTURE: DEPTH TO MOTTLES / GLEY g = G=
 MOISTURE: DEPTH OF ORGANICS: (cm)
 HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:
 COMMUNITY CLASS: CODE: CU
 COMMUNITY SERIES: CODE: CUW
 ECOSITE: CODE: CUW
 VEGETATION TYPE: Managed cultural woodland CODE: CUW*

INCLUSION CODE:
 COMPLEX CODE:

Notes:

SITE: POLYGON: 18
 SURVEYOR(S): DATE: UTM: UTMN:
 START: END UTMZ: UTMN:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input type="checkbox"/> TERRESTRIAL <input checked="" type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> ALVAR <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL COVER <input type="checkbox"/> OPEN <input type="checkbox"/> SHRUB <input checked="" type="checkbox"/> TREED	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LV. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> DECIDUOUS <input checked="" type="checkbox"/> CONIFEROUS <input type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BARREN <input type="checkbox"/> MEADOW <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE
 OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION:
 SPECIES IN ORDER OF DECREASING DOMINANCE
 (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR
1 CANOPY	2	3
2 SUB-CANOPY	3	4
3 UNDERSTOREY	4-5	4
4 GRD. LAYER	6-7	4

HT CODES: 1=25 m 2=10-25 m 3=2-10 m 4=1-2 m 5=0.5-1 m 6=0.2-1 m 7=HT<0.3 m
 CVR CODES: 0=NONE 1=0% < CVR < 10% 2=10 < CVR < 25% 3=25 < CVR < 50% 4= CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS: / < 10 10-24 25-50 > 50

STANDING SNAGS: / < 10 10-24 25-50 > 50

DEADFALL / LOGS: / < 10 10-24 25-50 > 50

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS:
 TEXTURE: DEPTH TO MOTTLES / GLEY g = G=
 MOISTURE: DEPTH OF ORGANICS: (cm)
 HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:
 COMMUNITY CLASS: CODE: SW
 COMMUNITY SERIES: CODE: SWM
 ECOSITE: CODE: SWM1
 VEGETATION TYPE: White Cedar - Hardwood Mineral Mixed Swamp CODE: SWM1-1

INCLUSION CODE:
 COMPLEX CODE:

Notes:

SITE: 165000631 POLYGON: 19
 SURVEYOR(S): GAW DATE: June 14.07
 START: END UTMZ: UTM: UTMN:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> ALVAR <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input type="checkbox"/> NATURAL <input checked="" type="checkbox"/> CULTURAL COVER <input type="checkbox"/> OPEN <input type="checkbox"/> SHRUB <input checked="" type="checkbox"/> TREED	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LV. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> DECIDUOUS <input checked="" type="checkbox"/> CONIFEROUS <input type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BARREN <input type="checkbox"/> MEADOW <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE
 OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION:
 SPECIES IN ORDER OF DECREASING DOMINANCE
 (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR
1 CANOPY	3	3
2 SUB-CANOPY	4	3
3 UNDERSTOREY	5-7	4
4 GRD. LAYER		

HT CODES: 1=25 m 2=10-25 m 3=2-10 m 4=1-2 m 5=0.5-1 m 6=0.2-1 m 7=HT<0.3 m
 CVR CODES: 0=NONE 1=0% < CVR < 10% 2=10 < CVR < 25% 3=25 < CVR < 50% 4= CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS: / < 10 10-24 25-50 > 50

STANDING SNAGS: / < 10 10-24 25-50 > 50

DEADFALL / LOGS: / < 10 10-24 25-50 > 50

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS:
 TEXTURE: DEPTH TO MOTTLES / GLEY g = G=
 MOISTURE: DEPTH OF ORGANICS: (cm)
 HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:
 COMMUNITY CLASS: CODE: CU
 COMMUNITY SERIES: CODE: CUW
 ECOSITE: CODE: CUT1
 VEGETATION TYPE: European Buckthorn cultural thicket CODE: CUT1-7*

INCLUSION CODE:
 COMPLEX CODE:

Notes:

SITE: POLYGON: 20
 SURVEYOR(S): DATE: UTM: UTMN:
 START: END UTMZ: UTMN:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> ALVAR <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL COVER <input type="checkbox"/> OPEN <input type="checkbox"/> SHRUB <input checked="" type="checkbox"/> TREED	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LV. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> DECIDUOUS <input checked="" type="checkbox"/> CONIFEROUS <input type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BARREN <input type="checkbox"/> MEADOW <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE
 OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION:
 SPECIES IN ORDER OF DECREASING DOMINANCE
 (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR
1 CANOPY	2	4
2 SUB-CANOPY	3	4
3 UNDERSTOREY	4-5	4
4 GRD. LAYER	6-7	4

HT CODES: 1=25 m 2=10-25 m 3=2-10 m 4=1-2 m 5=0.5-1 m 6=0.2-1 m 7=HT<0.3 m
 CVR CODES: 0=NONE 1=0% < CVR < 10% 2=10 < CVR < 25% 3=25 < CVR < 50% 4= CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS: / < 10 10-24 25-50 > 50

STANDING SNAGS: / < 10 10-24 25-50 > 50

DEADFALL / LOGS: / < 10 10-24 25-50 > 50

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS:
 TEXTURE: DEPTH TO MOTTLES / GLEY g = G=
 MOISTURE: DEPTH OF ORGANICS: (cm)
 HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:
 COMMUNITY CLASS: CODE: FO
 COMMUNITY SERIES: CODE: FOD
 ECOSITE: CODE: FOD7
 VEGETATION TYPE: Fresh-moist Ash Lowland Deciduous Forest CODE: FOD7-2

INCLUSION CODE:
 COMPLEX CODE:

Notes:

SITE: 165000631 POLYGON: 21
 SURVEYOR(S): GAW DATE: June 14 07 UTM: UTMN
 START: END UTMZ:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALLUS <input type="checkbox"/> GREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL <input type="checkbox"/> COVER <input type="checkbox"/> OPEN <input type="checkbox"/> SHRUB <input checked="" type="checkbox"/> TREED	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LV. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> DECIDUOUS <input type="checkbox"/> CONIFEROUS <input type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BOG <input type="checkbox"/> BARRON <input type="checkbox"/> MEADOW <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE
 OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION:
 SPECIES IN ORDER OF DECREASING DOMINANCE
 (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR
1 CANOPY	1	4
2 SUB-CANOPY	2	4
3 UNDERSTOREY	3	4
4 GRD. LAYER	5-7	4

HT CODES: 1=25m 2=10-25m 3=2-10m 4=1-2m 5=0-1m 6=0-2m HT:0.5m 7=HT:0.2m
 CVR CODES: 0=NONE 1=0% < CVR < 10% 2=10 < CVR < 25% 3=25 < CVR < 50% 4=CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:	A	< 10	A	10-24	A	25-50	R	> 50
STANDING SNAGS:								
DEADFALL / LOGS:								

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS:
 TEXTURE: DEPTH TO MOTTLES / GLEY g = G=
 MOISTURE: DEPTH OF ORGANICS: (cm)
 HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:
 COMMUNITY CLASS: CODE: FO
 COMMUNITY SERIES: CODE: FOD
 ECOSITE: CODE: FOD5
 VEGETATION TYPE: Dry-fresh Sugar Maple - White Ash Deciduous Forest
 CODE: FOD5-8

INCLUSION: CODE:
 COMPLEX: CODE:

Notes:

SITE: POLYGON: 22
 SURVEYOR(S): DATE: UTM: UTMN
 START: END UTMZ:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALLUS <input type="checkbox"/> GREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input type="checkbox"/> NATURAL <input checked="" type="checkbox"/> CULTURAL <input type="checkbox"/> COVER <input type="checkbox"/> OPEN <input type="checkbox"/> SHRUB <input checked="" type="checkbox"/> TREED	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LV. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> DECIDUOUS <input type="checkbox"/> CONIFEROUS <input type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BOG <input type="checkbox"/> BARRON <input type="checkbox"/> MEADOW <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE
 OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION:
 SPECIES IN ORDER OF DECREASING DOMINANCE
 (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR
1 CANOPY	2	3
2 SUB-CANOPY	3	2
3 UNDERSTOREY	4-5	4
4 GRD. LAYER	6-7	4

HT CODES: 1=25m 2=10-25m 3=2-10m 4=1-2m 5=0-1m 6=0-2m HT:0.5m 7=HT:0.2m
 CVR CODES: 0=NONE 1=0% < CVR < 10% 2=10 < CVR < 25% 3=25 < CVR < 50% 4=CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:	O	< 10	R	10-24	O	25-50	> 50
STANDING SNAGS:							
DEADFALL / LOGS:							

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS:
 TEXTURE: DEPTH TO MOTTLES / GLEY g = G=
 MOISTURE: DEPTH OF ORGANICS: (cm)
 HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:
 COMMUNITY CLASS: CODE: CU
 COMMUNITY SERIES: CODE: CUW
 ECOSITE: CODE: CUWJ
 VEGETATION TYPE: willow - Manitoba Maple Cultural Woodland
 CODE: CUWJ-4

INCLUSION: CODE:
 COMPLEX: Cultural Meadow
 CODE: CUWJ

Notes: Along River

SITE: 165000631 POLYGON: 23
 SURVEYOR(S): GAW DATE: June 14 07 UTM: UTMN
 START: END UTMZ:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALLUS <input type="checkbox"/> GREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL <input type="checkbox"/> COVER <input type="checkbox"/> OPEN <input type="checkbox"/> SHRUB <input checked="" type="checkbox"/> TREED	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LV. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> DECIDUOUS <input type="checkbox"/> CONIFEROUS <input type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BOG <input type="checkbox"/> BARRON <input type="checkbox"/> MEADOW <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE
 OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION:
 SPECIES IN ORDER OF DECREASING DOMINANCE
 (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR
1 CANOPY	2	4
2 SUB-CANOPY	3	4
3 UNDERSTOREY	4-5	4
4 GRD. LAYER	6-7	4

HT CODES: 1=25m 2=10-25m 3=2-10m 4=1-2m 5=0-1m 6=0-2m HT:0.5m 7=HT:0.2m
 CVR CODES: 0=NONE 1=0% < CVR < 10% 2=10 < CVR < 25% 3=25 < CVR < 50% 4=CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:	A	< 10	A	10-24	O	25-50	R	> 50
STANDING SNAGS:								
DEADFALL / LOGS:								

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS:
 TEXTURE: DEPTH TO MOTTLES / GLEY g = G=
 MOISTURE: DEPTH OF ORGANICS: (cm)
 HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:
 COMMUNITY CLASS: CODE: FO
 COMMUNITY SERIES: CODE: FOD
 ECOSITE: CODE: FOD7
 VEGETATION TYPE: Fresh-moist Willow-Ash-Maple Lowland Dec. Forest
 CODE: FOD7-6

INCLUSION: CODE:
 COMPLEX: CODE:

Notes:

SITE: POLYGON: 24
 SURVEYOR(S): DATE: UTM: UTMN
 START: END UTMZ:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALLUS <input type="checkbox"/> GREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL <input type="checkbox"/> COVER <input type="checkbox"/> OPEN <input type="checkbox"/> SHRUB <input checked="" type="checkbox"/> TREED	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LV. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> DECIDUOUS <input type="checkbox"/> CONIFEROUS <input type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BOG <input type="checkbox"/> BARRON <input type="checkbox"/> MEADOW <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE
 OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION:
 SPECIES IN ORDER OF DECREASING DOMINANCE
 (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR
1 CANOPY	2	4
2 SUB-CANOPY	3	3
3 UNDERSTOREY	4-5	3
4 GRD. LAYER	6-7	3

HT CODES: 1=25m 2=10-25m 3=2-10m 4=1-2m 5=0-1m 6=0-2m HT:0.5m 7=HT:0.2m
 CVR CODES: 0=NONE 1=0% < CVR < 10% 2=10 < CVR < 25% 3=25 < CVR < 50% 4=CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:	A	< 10	A	10-24	O	25-50	> 50
STANDING SNAGS:							
DEADFALL / LOGS:							

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS:
 TEXTURE: DEPTH TO MOTTLES / GLEY g = G=
 MOISTURE: DEPTH OF ORGANICS: (cm)
 HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:
 COMMUNITY CLASS: CODE: FO
 COMMUNITY SERIES: CODE: FOM
 ECOSITE: CODE: FOM7-
 VEGETATION TYPE: Fresh-moist white cedar-Hardwood mixed forest
 CODE: FOM7-2

INCLUSION: CODE:
 COMPLEX: CODE:

Notes: Butternut (JUGLONE) observed

SITE: 16500063 POLYGON: 25
 SURVEYOR(S): GAW DATE: June 14 07
 START: END UTMZ: UTM: UTMN:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> GREVISE / CAVE <input type="checkbox"/> ALVAR <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LV. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> DECIDUOUS <input checked="" type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BOG <input type="checkbox"/> MEADOW <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input checked="" type="checkbox"/> PLANTATION

SITE
 OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION:
 SPECIES IN ORDER OF DECREASING DOMINANCE
 (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR
1 CANOPY	1	4
2 SUB-CANOPY	3	4
3 UNDERSTOREY	3	4
4 GRD. LAYER	5-7	4

HT CODES: 1 = 25 m 2 = 10-25 m 3 = 24-10 m 4 = 1-10 m 5 = 0.2-10 m 6 = 0.2-10 m 7 = 1-10 m 8 = 0.2-10 m
 CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 60% 4 = CVR > 60%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:	A	< 10	A	10-24	O	25-50	> 50
STANDING SNAGS:							
DEADFALL / LOGS:							

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT
 COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS:
 TEXTURE: DEPTH TO MOTTLES / GLEY g = G=
 MOISTURE: DEPTH OF ORGANICS: (cm)
 HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:
 COMMUNITY CLASS: CODE: FO
 COMMUNITY SERIES: CODE: FOM
 ECOSITE: CODE: FOM9*
 VEGETATION TYPE: Norway Spruce - Hardwood mixed Forest
 CODE: FOM9.2*
 CODE: CODE:
 CODE: CODE:

Notes:

SITE: POLYGON: 26
 SURVEYOR(S): DATE: UTM: UTMN:
 START: END UTMZ: UTM:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> GREVISE / CAVE <input type="checkbox"/> ALVAR <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input type="checkbox"/> NATURAL <input checked="" type="checkbox"/> CULTURAL	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LV. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> DECIDUOUS <input checked="" type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BOG <input type="checkbox"/> MEADOW <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input checked="" type="checkbox"/> PLANTATION

SITE
 OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION:
 SPECIES IN ORDER OF DECREASING DOMINANCE
 (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR
1 CANOPY	2	4
2 SUB-CANOPY	3	2
3 UNDERSTOREY	4-5	4
4 GRD. LAYER	6-7	4

HT CODES: 1 = 25 m 2 = 10-25 m 3 = 24-10 m 4 = 1-10 m 5 = 0.2-10 m 6 = 0.2-10 m 7 = 1-10 m 8 = 0.2-10 m
 CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 60% 4 = CVR > 60%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:	A	< 10	A	10-24	A	25-50	> 50
STANDING SNAGS:							
DEADFALL / LOGS:							

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT
 COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS:
 TEXTURE: DEPTH TO MOTTLES / GLEY g = G=
 MOISTURE: DEPTH OF ORGANICS: (cm)
 HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:
 COMMUNITY CLASS: CODE: CU
 COMMUNITY SERIES: CODE: CUP
 ECOSITE: CODE: CUP3
 VEGETATION TYPE: Scotch Pine Coniferous Plantation
 CODE: CUP3-3
 CODE: CODE:
 CODE: CODE:

Notes:

SITE: 16500063 POLYGON: 27
 SURVEYOR(S): GAW DATE: June 14 07
 START: END UTMZ: UTM: UTMN:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> GREVISE / CAVE <input type="checkbox"/> ALVAR <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LV. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> DECIDUOUS <input checked="" type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BOG <input type="checkbox"/> MEADOW <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input checked="" type="checkbox"/> PLANTATION

SITE
 OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION:
 SPECIES IN ORDER OF DECREASING DOMINANCE
 (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR
1 CANOPY	2	4
2 SUB-CANOPY	3	4
3 UNDERSTOREY	4-5	2
4 GRD. LAYER	6-7	1

HT CODES: 1 = 25 m 2 = 10-25 m 3 = 24-10 m 4 = 1-10 m 5 = 0.2-10 m 6 = 0.2-10 m 7 = 1-10 m 8 = 0.2-10 m
 CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 60% 4 = CVR > 60%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:	A	< 10	A	10-24	O	25-50	> 50
STANDING SNAGS:							
DEADFALL / LOGS:							

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT
 COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS:
 TEXTURE: DEPTH TO MOTTLES / GLEY g = G=
 MOISTURE: DEPTH OF ORGANICS: (cm)
 HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:
 COMMUNITY CLASS: CODE: FO
 COMMUNITY SERIES: CODE: FCC
 ECOSITE: CODE: FCC2
 VEGETATION TYPE: Dry-fresh White Cedar Coniferous Forest
 CODE: FCC2.2
 CODE: CODE:
 CODE: CODE:

Notes:

SITE: POLYGON: 28
 SURVEYOR(S): DATE: UTM: UTMN:
 START: END UTMZ: UTM:

ELC
 COMMUNITY DESCRIPTION & CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL <input type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LACUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> TERRACE <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> GREVISE / CAVE <input type="checkbox"/> ALVAR <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING-LV. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> DECIDUOUS <input checked="" type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BOG <input type="checkbox"/> MEADOW <input type="checkbox"/> PRAIRIE <input type="checkbox"/> THICKET <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input checked="" type="checkbox"/> PLANTATION

SITE
 OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION:
 SPECIES IN ORDER OF DECREASING DOMINANCE
 (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR
1 CANOPY	2	4
2 SUB-CANOPY	3	4
3 UNDERSTOREY	4-5	4
4 GRD. LAYER	6-7	4

HT CODES: 1 = 25 m 2 = 10-25 m 3 = 24-10 m 4 = 1-10 m 5 = 0.2-10 m 6 = 0.2-10 m 7 = 1-10 m 8 = 0.2-10 m
 CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 60% 4 = CVR > 60%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:	A	< 10	A	10-24	O	25-50	> 50
STANDING SNAGS:							
DEADFALL / LOGS:							

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT
 COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS:
 TEXTURE: DEPTH TO MOTTLES / GLEY g = G=
 MOISTURE: DEPTH OF ORGANICS: (cm)
 HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:
 COMMUNITY CLASS: CODE: FO
 COMMUNITY SERIES: CODE: FOD
 ECOSITE: CODE: FOD10*
 VEGETATION TYPE: Fresh-moist Manitoba Maple-Balsam Poplar - Ash - Deciduous Forest
 CODE: FOD10-1*
 CODE: CODE:
 CODE: CODE:

Notes:

SITE: 165000631 POLYGON: 29
 SURVEY(S): GAW DATE: June 14, 07 UTMZ: UTMN:
 START: END: UTMZ: UTMN:

ELC
 COMMUNITY DESCRIPTION CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input type="checkbox"/> TERRESTRIAL <input checked="" type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LAQUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input checked="" type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING/LVD. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> CONFEROUS <input type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BARRON <input type="checkbox"/> MEADOW <input type="checkbox"/> THicket <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> FOREST <input type="checkbox"/> PLANTATION

SITE

OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION: SPECIES IN ORDER OF DECREASING DOMINANCE (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR	HT	CVR	HT	CVR
1 CANOPY	2	3	FRANIGR > BETPAPY > ACERUBR			
2 SUB-CANOPY	3	4	Glossy Buckhorn			
3 UNDERSTOREY	4-5	4	ONOSENS SOLRUGO Tall Use			
4 GRD. LAYER	6-7	4	ONOSENS Lady Fern, field horsetail			

HT CODES: 1 = >25 m 2 = 10-25 m 3 = 2-10 m 4 = 1-10 m 5 = 0.5-1 m 6 = 0.2-0.5 m 7 = 0-0.2 m
 CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 50% 4 = CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:	A	< 10	A	10 - 24	O	25 - 50	> 50
STANDING SNAGS:							
DEADFALL / LOGS:							

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS:

TEXTURE: DEPTH TO MOTTLES / GLEY g =

MOISTURE: DEPTH OF ORGANICS: G = (cm)

HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:

COMMUNITY CLASS: CODE: SW

COMMUNITY SERIES: CODE: SWD

ECOSITE: CODE: SWD2

VEGETATION TYPE: Black Ash - Red Maple - White Birch Deciduous Swamp
 CODE: SWD2-3*

INCLUSION CODE:

COMPLEX CODE:

Notes:

SITE: POLYGON: 30
 SURVEY(S): DATE: UTMZ: UTMN:
 START: END: UTMZ: UTMN:

ELC
 COMMUNITY DESCRIPTION CLASSIFICATION

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input type="checkbox"/> TERRESTRIAL <input checked="" type="checkbox"/> WETLAND <input type="checkbox"/> AQUATIC	<input type="checkbox"/> ORGANIC <input checked="" type="checkbox"/> MINERAL SOIL <input type="checkbox"/> PARENT MIN. <input type="checkbox"/> ACIDIC BEDRK. <input type="checkbox"/> BASIC BEDRK. <input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> LAQUSTRINE <input type="checkbox"/> RIVERINE <input type="checkbox"/> BOTTOMLAND <input type="checkbox"/> VALLEY SLOPE <input type="checkbox"/> TABLELAND <input type="checkbox"/> ROLL UPLAND <input type="checkbox"/> CLIFF <input type="checkbox"/> TALUS <input type="checkbox"/> CREVICE / CAVE <input type="checkbox"/> ROCKLAND <input type="checkbox"/> BEACH / BAR <input type="checkbox"/> SAND DUNE <input type="checkbox"/> BLUFF	<input type="checkbox"/> NATURAL <input type="checkbox"/> CULTURAL	<input type="checkbox"/> PLANKTON <input type="checkbox"/> SUBMERGED <input type="checkbox"/> FLOATING/LVD. <input type="checkbox"/> GRAMINOID <input type="checkbox"/> FORB <input type="checkbox"/> LICHEN <input type="checkbox"/> BRYOPHYTE <input type="checkbox"/> CONFEROUS <input type="checkbox"/> MIXED	<input type="checkbox"/> LAKE <input type="checkbox"/> POND <input type="checkbox"/> RIVER <input type="checkbox"/> STREAM <input type="checkbox"/> MARSH <input type="checkbox"/> SWAMP <input type="checkbox"/> FEN <input type="checkbox"/> BARRON <input type="checkbox"/> MEADOW <input type="checkbox"/> THicket <input type="checkbox"/> SAVANNAH <input type="checkbox"/> WOODLAND <input type="checkbox"/> PLANTATION

SITE

OPEN WATER
 SHALLOW WATER
 SURFICIAL DEP.
 BEDROCK

STAND DESCRIPTION: SPECIES IN ORDER OF DECREASING DOMINANCE (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)

LAYER	HT	CVR	HT	CVR	HT	CVR
1 CANOPY	4	3	Reed Canary			
2 SUB-CANOPY	5	4	"			
3 UNDERSTOREY	6	4	Sp. Ice pyweed, Jewelweed, ONOSENS			
4 GRD. LAYER	7	4	"			

HT CODES: 1 = >25 m 2 = 10-25 m 3 = 2-10 m 4 = 1-10 m 5 = 0.5-1 m 6 = 0.2-0.5 m 7 = 0-0.2 m
 CVR CODES: 0 = NONE 1 = 0% < CVR < 10% 2 = 10 < CVR < 25% 3 = 25 < CVR < 50% 4 = CVR > 50%

STAND COMPOSITION: BA:

SIZE CLASS ANALYSIS:		< 10	/	10 - 24	/	25 - 50	/	> 50
STANDING SNAGS:								
DEADFALL / LOGS:								

ABUNDANCE CODES: N = NONE . R = RARE O = OCCASIONAL A = ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS:

TEXTURE: DEPTH TO MOTTLES / GLEY g =

MOISTURE: DEPTH OF ORGANICS: G = (cm)

HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:

COMMUNITY CLASS: CODE: MA

COMMUNITY SERIES: CODE: MAM

ECOSITE: CODE: MAM2

VEGETATION TYPE: Mixed Mineral Meadow Marsh
 CODE: MAM2-11*

INCLUSION CODE:

COMPLEX CODE:

Notes:

TERRESTRIAL ECOSYSTEMS EXISTING CONDITIONS REPORT
 HIGHWAY 6 (HANLON EXPRESSWAY) IMPROVEMENTS, GUELPH
 (GWP 3002-05-00)
 DECEMBER 2007 (UPDATED MAY 2009)



APPENDIX C
 WILD LIFE LIST FROM BACKGROUND SOURCES

Highway 6 (Hanlon Expressway) - GWP 3002-05-00
Wildlife List - 2007

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	REGION	AREA	COMMENTS
BUTTERFLIES								
European Skipper	<i>Thymelicus lineola</i>	SE	G5					Stantec
Cabbage White	<i>Pieris rapae</i>	SE	G5					Stantec
Orange Sulphur	<i>Colias eurytheme</i>	S5	G5					Stantec
Northern Crescent	<i>Phycoides pascoensis</i>	S5	G5					Stantec
Red Admiral	<i>Vanessa atalanta</i>	SZB	G5					Stantec
Common Ringlet	<i>Coenonympha tullia</i>	S5	G5					Stantec
Monarch	<i>Danaus plexippus</i>	S4	G4	NIAC	SC			Stantec
AMPHIBIANS								
Mudpuppy	<i>Necturus maculosus</i>	S4	G5	NIAC	NAR		10	OHSA
Red-spotted Newt	<i>Notophthalmus viridescens</i>	S5	G5T5					OHSA
Blue-spotted Salamander	<i>Ambystoma laterale</i>	S4	G5					OHSA
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	S2	G5	THR	THR	6		OHSA / MNR
Spotted Salamander	<i>Ambystoma maculatum</i>	S4	G5					OHSA
Four-toed Salamander	<i>Hemidactylum scutatum</i>	S4	G5	NIAC	NAR			OHSA
Northern Redback Salamander	<i>Plethodon cinereus</i>	S5	G5					OHSA
American Toad	<i>Bufo americanus</i>	S5	G5					OHSA
Tetraploid Gray Treefrog	<i>Hyla versicolor</i>	S5	G5					OHSA
Western Chorus Frog	<i>Pseudacris triseriata</i>	S4	G5		NAR			OHSA
Spring Peeper	<i>Pseudacris crucifer</i>	S5	G5					OHSA
Bullfrog	<i>Rana catesbeiana</i>	S4	G5				1	OHSA
Northern Green Frog	<i>Rana clamitans</i>	S5	G5					Stantec
Pickereel Frog	<i>Rana palustris</i>	S4	G5	NIAC	NAR			OHSA
Wood Frog	<i>Rana sylvatica</i>	S5	G5					OHSA
Northern Leopard Frog	<i>Rana pipiens</i>	S5	G5	NIAC	NAR			Stantec
Mink Frog	<i>Rana septentrionalis</i>	S5	G5					OHSA
REPTILES								
Snapping Turtle	<i>Chelydra serpentina</i>	S5	G5					OHSA
Midland Painted Turtle	<i>Chrysemys picta marginata</i>	S5	G5T5					OHSA
Common Map Turtle	<i>Graptemys geographica</i>	S3	G5	SC	SC		30-50	OHSA
Blanding's Turtle	<i>Emydoidea blandingi</i>	S3?	G4	THR				OHSA
Eastern Gartersnake	<i>Thamnophis sirtalis</i>	S5	G5					OHSA
Ribbon Snake	<i>Thamnophis sauritus</i>	S3	G5	SC	SC			OHSA
Northern Watersnake	<i>Nerodia sipedon sipedon</i>	S5	G5T5		NAR		1	OHSA
Queen Snake	<i>Regina septemvittata</i>	S2	G5	THR	THR	6		OHSA
Redbelly Snake	<i>Storeria occipitomaculata</i>	S5	G5					OHSA

Highway 6 (Hanlon Expressway) - GWP 3002-05-00
Wildlife List - 2007

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	REGION	AREA	COMMENTS
Brown Snake	<i>Storeria dekayi</i>	S5	G5		NAR			OHSA
Smooth Greensnake	<i>Ophedrys vernalis</i>	S4	G5					OHSA
Ringneck Snake	<i>Diadophis punctatus</i>	S4	G5			7		OHSA
Eastern Milksnake	<i>Lampropeltis triangulum</i>	S3	G5	SC	SC			OHSA / MNR
BIRDS								
Canada Goose	<i>Branta canadensis</i>	S5	G5					OBBA
Wood Duck	<i>Aix sponsa</i>	S5	G5					OBBA
American Black Duck	<i>Anas rubripes</i>	S5	G5					OBBA
Mallard	<i>Anas platyrhynchos</i>	S5	G5					Stantec
Ruffed Grouse	<i>Bonasa umbellus</i>	S5	G5				25	OBBA
Wild Turkey	<i>Meleagris gallopavo</i>	S4	G5					OBBA
Pied-billed Grebe	<i>Podilymbus podiceps</i>	S4	G5					OBBA
American Bittern	<i>Botaurus lentiginosus</i>	S4	G4				10	OBBA
Great Blue Heron	<i>Ardea herodias</i>	S5	G5					OBBA
Green Heron	<i>Butorides virescens</i>	S4	G5					OBBA
Turkey Vulture	<i>Cathartes aura</i>	S4	G5					OBBA
Osprey	<i>Pandion haliaetus</i>	S4	G5			7		OBBA
Sharp-shinned Hawk	<i>Accipiter striatus</i>	S5	G5	NIAC	NAR		30	Stantec
Cooper's Hawk	<i>Accipiter cooperii</i>	S4	G5	NIAC	NAR		4-50+	OBBA
Broad-winged Hawk	<i>Buteo platypterus</i>	S5	G5				100	OBBA
Red-tailed Hawk	<i>Buteo jamaicensis</i>	S5	G5	NIAC	NAR			Stantec
American Kestrel	<i>Falco sparverius</i>	S5	G5					OBBA
Virginia Rail	<i>Rallus limicola</i>	S4	G5					OBBA
Sora	<i>Porzana carolina</i>	S4	G5					OBBA
Killdeer	<i>Charadrius vociferus</i>	S5	G5					OBBA
Spotted Sandpiper	<i>Actitis macularia</i>	S5	G5					OBBA
Wilson's Snipe	<i>Gallinago delicata</i>	S5	G5					OBBA
American Woodcock	<i>Scolopax minor</i>	S5	G5					OBBA
Ring-billed Gull	<i>Larus delawarensis</i>	S5	G5					OBBA
Caspian Tern	<i>Sterna caspia</i>	S3	G5	NAR	NAR			OBBA
Rock Pigeon	<i>Columba livia</i>	SE	G5					OBBA
Mourning Dove	<i>Zenaidura macroura</i>	S5	G5					OBBA
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	S4	G5					OBBA
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	S4	G5					OBBA
Eastern Screech-Owl	<i>Megascops asio</i>	S5	G5		NAR			OBBA
Great Horned Owl	<i>Bubo virginianus</i>	S5	G5					OBBA
Long-eared Owl	<i>Asio otus</i>	S4	G5					OBBA
Common Nighthawk	<i>Chordeiles minor</i>	S4	G5		THR			OBBA

**Highway 6 (Hanlon Expressway) - GWP 3002-05-00
Wildlife List - 2007**

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	REGION	AREA	COMMENTS
Chimney Swift	<i>Chaetura pelagica</i>	S5	G5		THR			OBBA
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	S5	G5					OBBA
Belted Kingfisher	<i>Ceryle alcyon</i>	S5	G5					OBBA
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	S3	G5	SC	THR			OBBA
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	S4	G5					OBBA
Downy Woodpecker	<i>Picoides pubescens</i>	S5	G5					OBBA
Hairy Woodpecker	<i>Picoides villosus</i>	S5	G5				10	OBBA
Northern Flicker	<i>Colaptes auratus</i>	S5	G5					OBBA
Pileated Woodpecker	<i>Dryocopus pileatus</i>	S4S5	G5				30-50	OBBA
Eastern Wood-Pewee	<i>Contopus virens</i>	S5	G5					Stantec
Acadian Flycatcher	<i>Empidonax virescens</i>	S2	G5	END	END		30	OBBA
Alder Flycatcher	<i>Empidonax alnorum</i>	S5	G5					OBBA
Willow Flycatcher	<i>Empidonax traillii</i>	S5	G5					OBBA
Least Flycatcher	<i>Empidonax minimus</i>	S5	G5					OBBA
Eastern Phoebe	<i>Sayornis phoebe</i>	S5	G5					OBBA
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	S5	G5					OBBA
Eastern Kingbird	<i>Tyrannus tyrannus</i>	S5	G5					Stantec
Blue-headed Vireo	<i>Vireo solitarius</i>	S5	G5		6,7		100	OBBA
Warbling Vireo	<i>Vireo gilvus</i>	S5	G5					OBBA
Red-eyed Vireo	<i>Vireo olivaceus</i>	S5	G5					OBBA
Blue Jay	<i>Cyanocitta cristata</i>	S5	G5					Stantec
American Crow	<i>Corvus brachyrhynchos</i>	S5	G5					Stantec
Horned Lark	<i>Eremophila alpestris</i>	S5	G5					OBBA
Tree Swallow	<i>Tachycineta bicolor</i>	S5	G5					OBBA
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	S5	G5					OBBA
Bank Swallow	<i>Riparia riparia</i>	S5	G5					OBBA
Cliff Swallow	<i>Hirundo pyrrhonota</i>	S5	G5					OBBA
Barn Swallow	<i>Hirundo rustica</i>	S5	G5					OBBA
Black-capped Chickadee	<i>Poecile atricapilla</i>	S5	G5					OBBA
Red-breasted Nuthatch	<i>Sitta canadensis</i>	S5	G5				10	OBBA
White-breasted Nuthatch	<i>Sitta carolinensis</i>	S5	G5				10	OBBA
Brown Creeper	<i>Certhia americana</i>	S5	G5				30	OBBA
House Wren	<i>Troglodytes aedon</i>	S5	G5					OBBA
Winter Wren	<i>Troglodytes troglodytes</i>	S5	G5				30	OBBA
Sedge Wren	<i>Cistothorus platensis</i>	S4	G5		NAR			OBBA
Marsh Wren	<i>Cistothorus palustris</i>	S5	G5					OBBA
Eastern Bluebird	<i>Sialia sialis</i>	S4S5	G5	NIAC	NAR			OBBA
Veery	<i>Catharus fuscescens</i>	S4	G5				10	OBBA
Wood Thrush	<i>Hylocichla mustelina</i>	S5	G5				4	OBBA

**Highway 6 (Hanlon Expressway) - GWP 3002-05-00
Wildlife List - 2007**

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	REGION	AREA	COMMENTS
American Robin	<i>Turdus migratorius</i>	S5	G5					Stantec
Gray Catbird	<i>Dumetella carolinensis</i>	S5	G5					OBBA
Northern Mockingbird	<i>Mimus polyglottos</i>	S4	G5					OBBA
Brown Thrasher	<i>Toxostoma rufum</i>	S5	G5					OBBA
European Starling	<i>Sturnus vulgaris</i>	SE	G5					Stantec
Cedar Waxwing	<i>Bombycilla cedrorum</i>	S5	G5					OBBA
Blue-winged Warbler	<i>Vermivora pinus</i>	S4	G5					OBBA
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	S4	G4		THR			OBBA
Nashville Warbler	<i>Vermivora ruficapilla</i>	S5	G5					OBBA
Yellow Warbler	<i>Dendroica petechia</i>	S5	G5					OBBA
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	S5	G5					OBBA
Yellow-rumped Warbler	<i>Dendroica coronata</i>	S5	G5			7	30	OBBA
Black-throated Green Warbler	<i>Dendroica virens</i>	S5	G5				30	OBBA
Pine Warbler	<i>Dendroica pinus</i>	S5	G5				30	OBBA
Black-and-white Warbler	<i>Mniotilta varia</i>	S5	G5				100	OBBA
American Redstart	<i>Setophaga ruticilla</i>	S5	G5				30	OBBA
Ovenbird	<i>Seiurus aurocapilla</i>	S5	G5				20	OBBA
Northern Waterthrush	<i>Seiurus noveboracensis</i>	S5	G5				20	OBBA
Mourning Warbler	<i>Oporornis philadelphia</i>	S5	G5				30	OBBA
Common Yellowthroat	<i>Geothlypis trichas</i>	S5	G5					OBBA
Scarlet Tanager	<i>Piranga olivacea</i>	S5	G5				30	OBBA
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	S4	G5					OBBA
Chipping Sparrow	<i>Spizella passerina</i>	S5	G5					OBBA
Clay-colored Sparrow	<i>Spizella pallida</i>	S4	G5			7		OBBA
Field Sparrow	<i>Spizella pusilla</i>	S5	G5					Stantec
Vesper Sparrow	<i>Poocetes gramineus</i>	S4	G5					OBBA
Savannah Sparrow	<i>Passerculus sandwichensis</i>	S5	G5					OBBA
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	S4	G5					OBBA
Song Sparrow	<i>Melospiza melodia</i>	S5	G5					Stantec
Swamp Sparrow	<i>Melospiza georgiana</i>	S5	G5					OBBA
White-throated Sparrow	<i>Zonotrichia albicollis</i>	S5	G5				20	OBBA
Northern Cardinal	<i>Cardinalis cardinalis</i>	S5	G5					OBBA
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	S5	G5					OBBA
Indigo Bunting	<i>Passerina cyanea</i>	S5	G5					OBBA
Bobolink	<i>Dolichonyx oryzivorus</i>	S4	G5				10	OBBA
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	S5	G5					Stantec
Eastern Meadowlark	<i>Sturnella magna</i>	S5	G5					OBBA
Common Grackle	<i>Quiscalus quiscula</i>	S5	G5					Stantec
Brown-headed Cowbird	<i>Molothrus ater</i>	S5	G5					OBBA

Highway 6 (Hanlon Expressway) - GWP 3002-05-00
Wildlife List - 2007

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	REGION	AREA	COMMENTS
Orchard Oriole	<i>Icterus spurius</i>	SZB	G5					OBBA
Baltimore Oriole	<i>Icterus galbula</i>	S5	G5					Stantec
Purple Finch	<i>Carpodacus purpureus</i>	S5	G5					OBBA
House Finch	<i>Carpodacus mexicanus</i>	SE	G5					OBBA
Pine Siskin	<i>Carduelis pinus</i>	S5	G5			7		OBBA
American Goldfinch	<i>Carduelis tristis</i>	S5	G5					Stantec
House Sparrow	<i>Passer domesticus</i>	SE	G5					OBBA
MAMMALS								
Virginia Opossum	<i>Didelphis virginiana</i>	S4	G5					AMO
Masked Shrew	<i>Sorex cinereus</i>	S5	G5					AMO
Smoky Shrew	<i>Sorex fumeus</i>	S5	G5					AMO
Water Shrew	<i>Sorex palustris</i>	S5	G5			7		AMO
Northern Short-tailed Shrew	<i>Blarina brevicauda</i>	S5	G5					AMO
Hairy-tailed Mole	<i>Parascalops breweri</i>	S4	G5					AMO
Star-nosed Mole	<i>Condylura cristata</i>	S5	G5					AMO
Little Brown Bat	<i>Myotis lucifugus</i>	S5	G5					AMO
Red Bat	<i>Lasiurus borealis</i>	S4	G5					AMO
Big Brown Bat	<i>Eptesicus fuscus</i>	S5	G5					AMO
Hoary Bat	<i>Lasiurus cinereus</i>	S4	G5					AMO
Eastern Cottontail	<i>Sylvilagus floridanus</i>	S5	G5					AMO
Snowshoe Hare	<i>Lepus americanus</i>	S5	G5			7	20	AMO
European Hare	<i>Lepus europaeus</i>	SE	G5					AMO
Eastern Chipmunk	<i>Tamias striatus</i>	S5	G5					Stantec
Woodchuck	<i>Marmota monax</i>	S5	G5					AMO
Grey Squirrel	<i>Sciurus carolinensis</i>	S5	G5					AMO
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	S5	G5					Stantec
Northern Flying Squirrel	<i>Glaucomys sabrinus</i>	S5	G5			7		AMO
Beaver	<i>Castor canadensis</i>	S5	G5					AMO
White-footed Mouse	<i>Peromyscus leucopus</i>	S5	G5					AMO
Deer Mouse	<i>Peromyscus maniculatus</i>	S5	G5					AMO
Muskrat	<i>Ondatra zibethicus</i>	S5	G5					AMO
Meadow Vole	<i>Microtus pennsylvanicus</i>	S5	G5					AMO
Norway Rat	<i>Rattus norvegicus</i>	SE	G5					AMO
House Mouse	<i>Mus musculus</i>	SE	G5					AMO
Meadow Jumping Mouse	<i>Zapus hudsonicus</i>	S5	G5					AMO
Woodland Jumping Mouse	<i>Napaeozapus insignis</i>	S5	G5					AMO
Porcupine	<i>Erethizon dorsatum</i>	S5	G5			7		AMO
Coyote	<i>Canis latrans</i>	S5	G5					AMO

Highway 6 (Hanlon Expressway) - GWP 3002-05-00
Wildlife List - 2007

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	REGION	AREA	COMMENTS
Red Fox	<i>Vulpes vulpes</i>	S5	G5					AMO
Raccoon	<i>Procyon lotor</i>	S5	G5					Stantec
Ermine	<i>Mustela erminea</i>	S5	G5					AMO
Long-tailed Weasel	<i>Mustela frenata</i>	S4	G5					AMO
Mink	<i>Mustela vison</i>	S5	G5					AMO
Striped Skunk	<i>Mephitis mephitis</i>	S5	G5					AMO
White-tailed Deer	<i>Odocoileus virginianus</i>	S5	G5					Stantec
SUMMARY								
Total Butterflies: 7								
Total Amphibians: 17								
Total Reptiles: 13								
Total Birds: 118								
Total Breeding Birds:								
Total Mammals: 37								
Explanation of Status and Acronyms								
COSSARO: Committee on the Status of Species at Risk in Ontario								
COSEWIC: Committee on the Status of Endangered Species in Canada								
REGION: Rare in a Site Region								
S1: Extremely rare in Ontario; usually fewer than 5 occurrences								
S1S2: Extremely rare to very rare in Ontario								
S2: Very rare in Ontario; usually be5-20 occurrences								
S2S3: Very rare to uncommon in Ontario								
S3: Rare to uncommon in Ontario; usually between 20-100 occurrences								
S3S4: Rare to common in Ontario								
S4: Common in Ontario; apparently secure, usually more than 100 occurrences								
S4S5: Common to very common in Ontario								
S5: Very common in Ontario, demonstrably secure								
SE: Exotic; not believed to be a native component of Ontario's fauna								
SH: Hypothetical; not positively confirmed in Ontario								
SHB: Hypothetical breeder; not positively confirmed breeding in Ontario								
SZ: Not of practical conservation concern as there are no clearly definable occurrences								
SZB: No clearly definable occurrences of breeding								
SZN: no clearly definable occurrences of a non-breeding species								
?: Not yet ranked; or, following a ranking, rank inexact or uncertain								

**Highway 6 (Hanlon Expressway) - GWP 3002-05-00
Wildlife List - 2007**

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	REGION	AREA	COMMENTS
G1:	Extremely rare globally; usually fewer than 5 occurrences in the overall range							
G1G2:	Extremely rare to very rare globally							
G2:	Very rare globally; usually between 5-10 occurrences in the overall range							
G2G3:	Very rare to uncommon globally							
G3:	Rare to uncommon globally; usually between 20-100 occurrences							
G3G4:	Rare to common globally							
G4:	Common globally; usually more than 100 occurrences in the overall range							
G4G5:	Common to very common globally							
G5:	Very common globally; demonstrably secure							
T:	Denotes that the rank applies to a subspecies or variety							
END:	Endangered							
THR:	Threatened							
VUL:	Vulnerable							
SC:	Special Concern							
NAR:	Not At Risk							
NIAC:	Not In Any Category of risk							
IND:	Indeterminant, insufficient information to assign status							
DD:	Data Deficient							
6:	Rare in Site Region 6							
7:	Rare in Site Region 7							
Area:	Minimum patch size for area-sensitive species (ha)							
NOTE								
All rankings for birds refer to breeding birds unless the ranking is followed by N								



APPENDIX D
SUMMARY OF
MTO REVIEW OF
THE CITY OF GUELPH'S
PHASE 2 NATURAL HERITAGE STRATEGY

Summary of MTO Review of Natural Heritage Strategy Phase 2: Terrestrial Inventory and Natural Heritage System

Figure*	Areas of Concern	Areas Where No Concern is Evident
5 - Ecological Land Classification	Cultural meadows at Kortright Rd., College Ave., Paisley Rd., Westwood Rd., Willow Rd, and Speedvale Ave.	No aquatic/swamp vegetative communities noted, except south-east of Kortright Rd.
6 - 2004-2005 Amphibian Survey Results	None	Areas from College Ave. to Paisley Rd. were surveyed, where no presence was recorded
7 - Primary Criteria Application	Natural Areas from Paisley Rd to Hanlon Creek.	No Endangered or Threatened Species, or their habitat were noted in the Hanlon Expressway study area.
	Permanent streams/woodlots/floodplains from Paisley Rd. to Wellington St. and south-east of Kortright Rd.	No areas of natural and scientific interest were noted in Hanlon Expressway study area.
	South-west of Kortright Rd., some provincially rare vegetation species have been recorded in the Hanlon Creek Floodplain.	
9 - Secondary Criteria Application	Waterfowl over wintering areas around Wellington St.	No natural slope concentrations (=>15%) in the Hanlon Expressway study area.
	A natural area between Wellington St. and Paisley contains a wetland. There has also been some significant wildlife observations in this area.	No local rare significant vegetation species in the Hanlon Expressway study area.
	Also there is a natural area with a wetland located within the Hanlon Creek Valley.	
9A -Presence of Significant Species	The natural area between Wellington St. and Paisley Rd. have had both wildlife and vegetation observations including:	All areas north-west and south-east of the natural area between Wellington St. and Paisley Rd. have no significant wildlife or vegetation observations in the Hanlon Expressway study area.
	Vegetation: Black Maple, Heart-leaved Aster	
	Wildlife: American Redstart, Baltimore Oriole, Eastern Kingbird, Eastern Meadowlark, Field Sparrow, Northern Flicker, Savannah Sparrow.	
11 - Ecological Linkages/Connectivity	Ecological linkages/connectivity at Hanlon Creek and between Wellington St. and Paisley Rd along the North-west drain and across the Hanlon.	No significant linkages north of Paisley or south of Hanlon Creek.
	Confirmed deer migration movement corridors at the Hanlon Creek crossing.	

* Figure number in City of Guelph, 2009. Natural Heritage Strategy.