

PW-EI-1

From: Carmela Radice [mailto:Carmela.Radice@mississauga.ca]
Sent: June 28, 2013 10:14 AM
To: Lockyer, Kathryn
Subject: Council Resolution 0110-2013 - June 19, 2013

Dear Kathryn Lockyer,

The Council of the Corporation of the City of Mississauga at its meeting on June 19, 2013, adopted the attached Resolution 0110-2013 and the recommendations in the Corporate Report dated May 26, 2013, as amended June 24, 2013 entitled "Lisgar District Basement Water Infiltration Update and Proposed Sump Pump Subsidy Program (Ward 10)".

Sincerely,

Carmela Radice
Legislative Coordinator
Legislative Services Division | Office of the City Clerk | City of Mississauga
905-615-3200, ext. 5426 | Carmela.Radice@mississauga.ca

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LEGISLATIVE SERVICES	
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CAO	<input checked="" type="checkbox"/>
Corporate Services	<input checked="" type="checkbox"/> Council
Public Works	<input checked="" type="checkbox"/> September 12, 2013
Employee and Business Services	
Health Services	File
Human Services	
Peel Living	

REFERRAL TO _____
RECOMMENDED _____
DIRECTION REQUIRED _____
RECEIPT RECOMMENDED



RESOLUTION 0110-2013
adopted by the Council of
The Corporation of the City of Mississauga
at its meeting on June 19, 2013

0110-2013 Moved by: Pat Saito

Seconded by: George Carlson

1. That the City of Mississauga offer a sump pump subsidy for the owners of those homes in the Lisgar District with reported basement water infiltration problems through a one-half cost sharing arrangement between the City of Mississauga and the homeowner, with a maximum contribution of \$3,000 per household to be provided by the City of Mississauga.
2. That a by-law be enacted authorizing the Commissioner of Transportation and Works or delegate to enter into any agreements and ancillary documents between the City of Mississauga and homeowners related to the Lisgar District Sump Pump Subsidy Program.
3. That a capital project be established: Lisgar District Sump Pump Subsidy Program (PN 13-142) with a gross and net budget of \$277,500 and that \$277,500 be allocated from the Capital Reserve Fund (Account 33121) to PN 13-142 and that the appropriate by-law be enacted.
4. That a copy of the report as amended dated May 26, 2013 from the Commissioner of Transportation and Works titled Lisgar District Basement Water Infiltration Update and Proposed Sump Pump Subsidy Program be forwarded to the Region of Peel and Conservation Halton for information.

Carried

PW-E1-3


Clerk's Files

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Corporate Report

DATE: May 26, 2013, as amended June 24, 2013 

TO: Chair and Members of General Committee
Meeting Date: June 12, 2013

FROM: Martin Powell, P. Eng.
Commissioner of Transportation and Works

SUBJECT: **Lisgar District Basement Water Infiltration Update and Proposed
Sump Pump Subsidy Program
(Ward 10)**

- RECOMMENDATION:**
1. That the City of Mississauga offer a sump pump subsidy for the owners of those homes in the Lisgar District with reported basement water infiltration problems through a one-half cost sharing arrangement between the City of Mississauga and the homeowner, with a maximum contribution of \$3,000 per household to be provided by the City of Mississauga.
 2. That a by-law be enacted authorizing the Commissioner of Transportation and Works or delegate to enter into any agreements and ancillary documents between the City of Mississauga and homeowners related to the Lisgar District Sump Pump Subsidy Program.
 3. That a capital project be established: Lisgar District Sump Pump Subsidy Program (PN 13-142) with a gross and net budget of \$277,500 and that \$277,500 be allocated from the Capital Reserve Fund (Account 33121) to PN 13-142 and that the appropriate by-law be enacted.

4. That a copy of the report dated May 26, 2013, as amended June 24, 2013 from the Commissioner of Transportation and Works titled *Lisgar District Basement Water Infiltration Update and Proposed Sump Pump Subsidy Program* be forwarded to the Region of Peel and Conservation Halton for information.

**REPORT
HIGHLIGHTS:**

- The ongoing engineering study has dismissed a number of speculated potential causes to basement water infiltration in the Lisgar District
- The key finding from the engineering study to date is that water levels in the foundation drain collector (FDC) system have been observed to rise and fall quickly during certain storm events, leading to the theory that this could result in an increase to the amount and duration of water around residential basements
- Additional monitoring and actions are required through 2013 to assess remaining potential causes to basement water infiltration in the Lisgar District
- To assist homeowners who have had reported basement water infiltration in the Lisgar District and who wish to install a sump pump in their basement, a 50/50 cost-shared Sump Pump Subsidy Program is proposed
- The proposed Sump Pump Subsidy Program would provide a maximum subsidy of \$3000 per home with a ~~and the entire~~ program budget of ~~would be capped at~~ \$277,500 (first come, first served), assuming an uptake by 50% of eligible homeowners

BACKGROUND:

The Lisgar District is situated in the northwest quadrant of the City and is bounded by the CPR tracks to the north, Britannia Road West to the south, Ninth Line to the west and Tenth Line to the east. The development of this residential area occurred primarily between 1986 and 2004 with infill lands being developed after this period.

The servicing of the Lisgar District is designed based on a three-pipe system: sanitary sewer, storm sewer and foundation drain collector

(FDC). The sanitary sewer system collects household wastewater and basement floor drainage; the storm sewer system conveys road surface runoff (based on a 2-year return period design capacity) into the Sixteen Mile Creek and; the FDC system drains the weeping tiles surrounding the foundation of homes to a storm drainage outlet separate from the Sixteen Mile Creek system. Designs based on a three-pipe system approach are used in municipalities across Ontario and elsewhere.

For more than two decades after development first began in the Lisgar District, water related complaints were uncommon. However, from 2008 onwards, a significant number of cases were reported. In particular, the rain events of October and November 2011 resulted in over 140 reported incidents of water in the basements of homes. A total of 185 incidents of water in basements within the Lisgar District have been reported to the Risk Management Section between 2008 and January 2013. The general affected areas are shown in Appendices 1 and 2. Several claims alleging negligence have been filed against the City. The specific cause(s) of this water infiltration issue is currently unknown.

An engineering consulting firm, AMEC, was retained in the fall of 2011 to undertake extensive field work and analysis to determine the cause(s) associated with the infiltration of water into the basements of homes. Further, actions are being undertaken by the City as preventative measures. These include inspections and maintenance works on the FDC and storm sewer systems, Sixteen Mile Creek and the Osprey Marsh Stormwater Management Pond.

Two community meetings organized by Councillor McFadden's office, on December 14, 2011 and April 16, 2013, were held to provide updates to the residents.

This report will provide a summary of the study findings and preventative and maintenance measures undertaken so far. It will also propose the implementation of a sump pump subsidy to assist homeowners with reported cases of basement water infiltration, and who wish to install a sump pump in their basement, for General Committee's consideration.

COMMENTS:Engineering Study

To determine the potential cause(s) of water infiltration into the basements of homes, the engineering consulting firm of AMEC was retained to undertake an engineering study focused on developing an understanding on the operation and interaction of four separate systems as shown below:

- Roadway storm sewer
- Overland flow route
- Sixteen Mile Creek Tributary and Osprey Marsh Stormwater Management Pond
- FDC

The study relies on the installation of extensive monitoring equipment, which began in December 2011, to capture rainfall, stream flows in Sixteen Mile Creek, storm sewer water levels, FDC water levels and groundwater levels, temperature and characteristics.

The usefulness of monitoring data is highly dependent on the weather. The year 2012 was a particularly dry year which led to less than ideal monitoring conditions. However, based on available information and data, a number of potential causes that were contemplated at the onset of the study have been ruled out. The study findings so far have also revealed and refined areas on which to focus.

In general, the consultant has found that:

- Water levels in the FDC system have been observed to rise and fall quickly during certain storm events, leading to the theory that this could result in an increase to the amount and duration of water around residential basements (this is unexpected as the FDC system was designed only to convey water from the weeping tiles around the foundation of homes and water levels should not fluctuate so rapidly or so substantially in response to rainfall)
- Large storms do not necessarily correspond to basement water infiltration and storm intensity, duration and soil moisture conditions all play a contributing role
- The development of the Lisgar GO station does not appear to

- be a contributor to basement water infiltration
- Surcharge from the sanitary sewer system does not appear to be a direct contributor to basement water infiltration
- Several cross connections (sanitary system connected to the storm or FDC system) have been found but too few to cause widespread problems
- Sixteen Mile Creek is not a direct source of basement water infiltration, although it may be a contributing indirect factor

There are a number of potential causes where further monitoring and analysis are needed to determine their influence on basement water infiltration. This includes the following:

- The relationship between basement water infiltration and high water levels in Osprey Marsh Stormwater Management Pond and Sixteen Mile Creek - while the creek is not a direct source, further work is necessary to determine if an indirect relationship exists
- The capacity of the FDC system downstream of Britannia Road, and the potential impact of its connection to the existing storm sewer system at Erin Centre Boulevard
- A comparison of FDC flow rates south of Britannia Road to those in the Lisgar district to determine what differences, if any, exist
- Leakage of water from the storm sewer system into the FDC system
- Private property issues (aging basement foundation, changes to building such as basement walkouts, changes to lot grading)

The following table summarizes the potential causes that were considered along with those where further assessment is required.

Table 1: Summary of Potential Causes/Factors

Potential Cause/Factor	Influence		
	Low/NA	Contributing	Primary
Groundwater	✓		
GO Station	✓		
Sanitary System	✓		
Cross-Connections	✓		
Sixteen Mile Creek Backwater	Further Assessment Required		
SWM Pond Backwater			
FDC Leakage / Hydraulics / Tailwater / Depths			
Lot Grading			
Basement Construction/Changes			
Stormwater to Utility Trench			

Work Undertaken by the City

Many actions have been completed or are underway in response to the basement water infiltration. They include:

- Preventative maintenance work on the FDC and storm sewer system including CCTV (video) inspection and flushing of FDC pipes, identifying cross-connections through smoke and dye testing, sealing of FDC manhole lids and cracks, improving overland flow route
- High Water Protocol
- Sixteen Mile Creek maintenance activities (vegetation trimming, storm outlet sediment removal, bridges and crossings sediment removal, debris/obstruction removal)
- Osprey Marsh Stormwater Management Pond works (reconfiguration of outlet, inspection and maintenance of FDC manholes and maintenance works at pond outlet to improve flow)

Claims

A number of homeowners have submitted a claim with Risk Management seeking compensation for their damages. In addition, a Class Action lawsuit has been commenced seeking damages in the amount of \$200 million on behalf of all residents in the Lisgar District. To date, the City has not found any evidence of negligence

and unless the legal test for liability against the City is met, there is no justification for paying out any claims associated with basement water infiltration in the Lisgar District.

Next Steps

While the cause(s) of basement water infiltration has not been isolated, a number of potential causes have been ruled out. As part of the next phase of investigation, further analysis and testing to confirm theories will be undertaken. An extended period of data collection is needed in 2013 in hopes of acquiring the desired information that would contribute to their determination. To facilitate this, the following efforts will continue or be expanded:

- Existing FDC monitors remain with additional FDC level monitors to be installed along the downstream part of the system to assess the influence of outlet water levels
- Monitoring of water levels in Osprey Marsh Stormwater Management Pond and Sixteen Mile Creek
- Additional groundwater monitoring in the bedding of FDC/sanitary sewer laterals
- Additional monitoring in the sanitary sewer system to eliminate this as a potential contributor or factor
- Completion of leakage/dye testing for storm sewers in select areas
- Completion of video inspections and smoke/dye testing
- Investigation of basement walkout drainage systems and lot grading

It is anticipated that this phase of investigation will last until the fall of 2013 if ideal monitoring conditions occur. During this time, it is recommended that no further significant physical improvements be undertaken due to insufficient usable data collected through 2012. However, physical works will be considered as results of this investigation become known.

Sump Pump Subsidy Program

The investigations to date by the consultant have led staff to propose a sump pump subsidy program to assist the owners of the approximately

185 homes with reported basement water infiltration. Installation of a sump pump will provide homeowners who may desire to install basement sump pumps, with an additional safeguard against basement water infiltration until the investigation is completed and system wide solutions are found. It may also assist residents with reinstating their homeowner's insurance.

If approved by Council, the City will offer these homeowners a financial subsidy to install a sump pump up to 50% of the cost, to a maximum of \$3,000 per household. This is based on an estimated maximum unit cost of \$6,000 which is similar to that used in and experienced with the Rebate Program for Cooksville Creek as part of its Flooding Remediation and Action Plan.

The estimated City's financial contribution to the sump pump subsidy program, assuming an uptake rate of 50%, will be approximately \$278,000 as shown in Table 2. It is anticipated that the City will be able to administer this program using current staffing resources.

Table 2: Sump Pump Subsidy Program

Rebate Program	Cost / Unit	City / Homeowner %	# of Homes with Reported Infiltration	Est. % Uptake	City Cost
Sump Pump Subsidy	\$6000	50/50	185	50	\$277,500

If a sump pump subsidy program is approved by Council, staff will develop the eligibility criteria, application process and program details with an implementation date no later than September 2013.

STRATEGIC PLAN: Not applicable.

FINANCIAL IMPACT: City funding in the amount of \$277,500 will be required to cost share the City's portion of the sump pump subsidy program. A capital project will be established: Lisgar District Sump Pump Subsidy

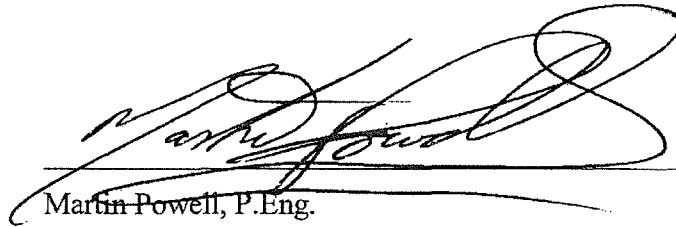
Program (PN 13-142), with a gross and net budget of \$277,500 which will be allocated from the Capital Reserve Fund (Account 33121) to PN 13-142.

CONCLUSION:

The City is committed to actively investigate the cause(s) of basement water infiltration in homes within the Lisgar District. In the interim, a sump pump subsidy program is recommended to be offered to the owners of homes with reported water infiltration.

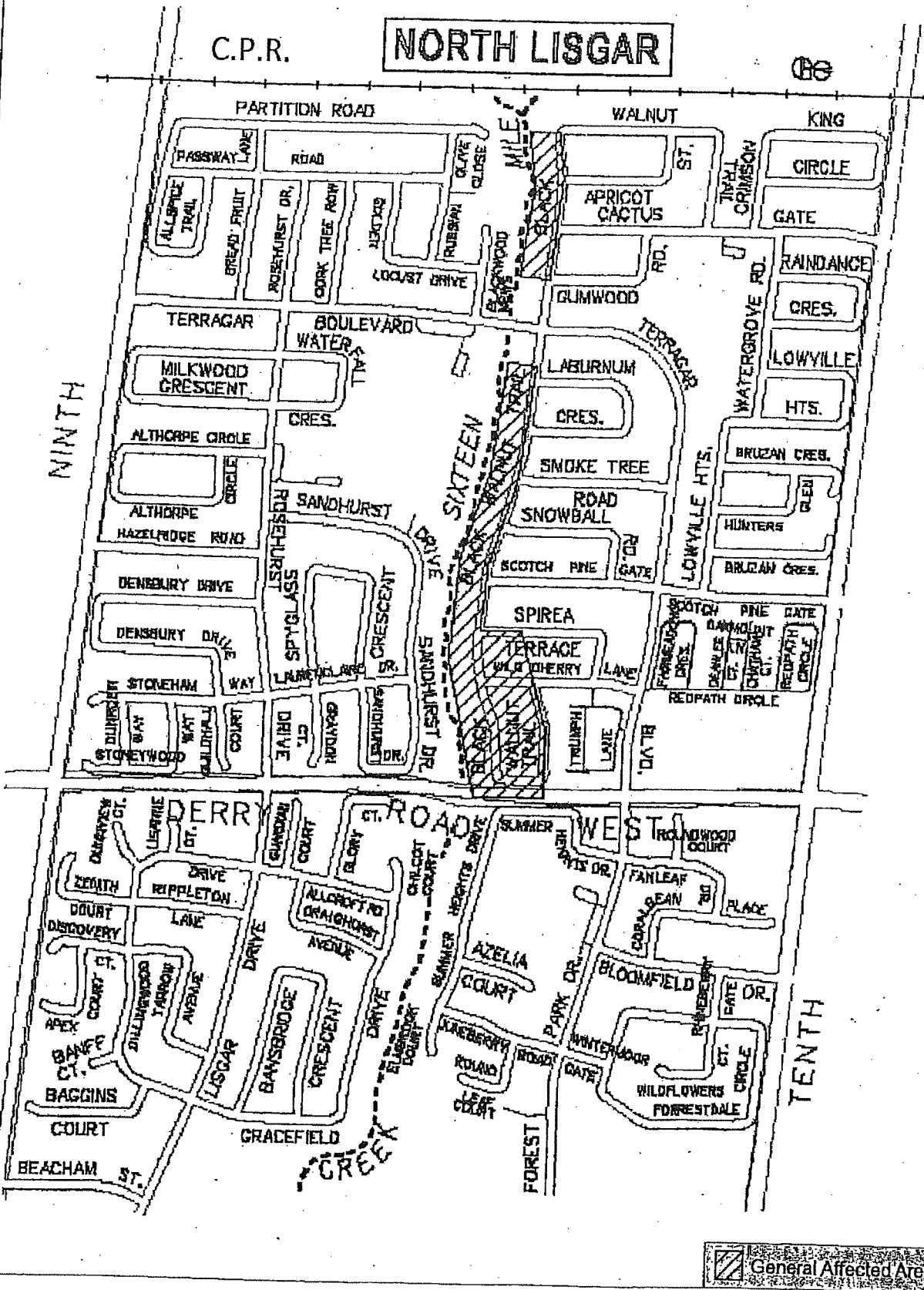
ATTACHMENTS:

- Appendix 1: General Affected Area – North Lisgar
- Appendix 2: General Affected Area – South Lisgar



Martin Powell, P.Eng.
Commissioner of Transportation and Works

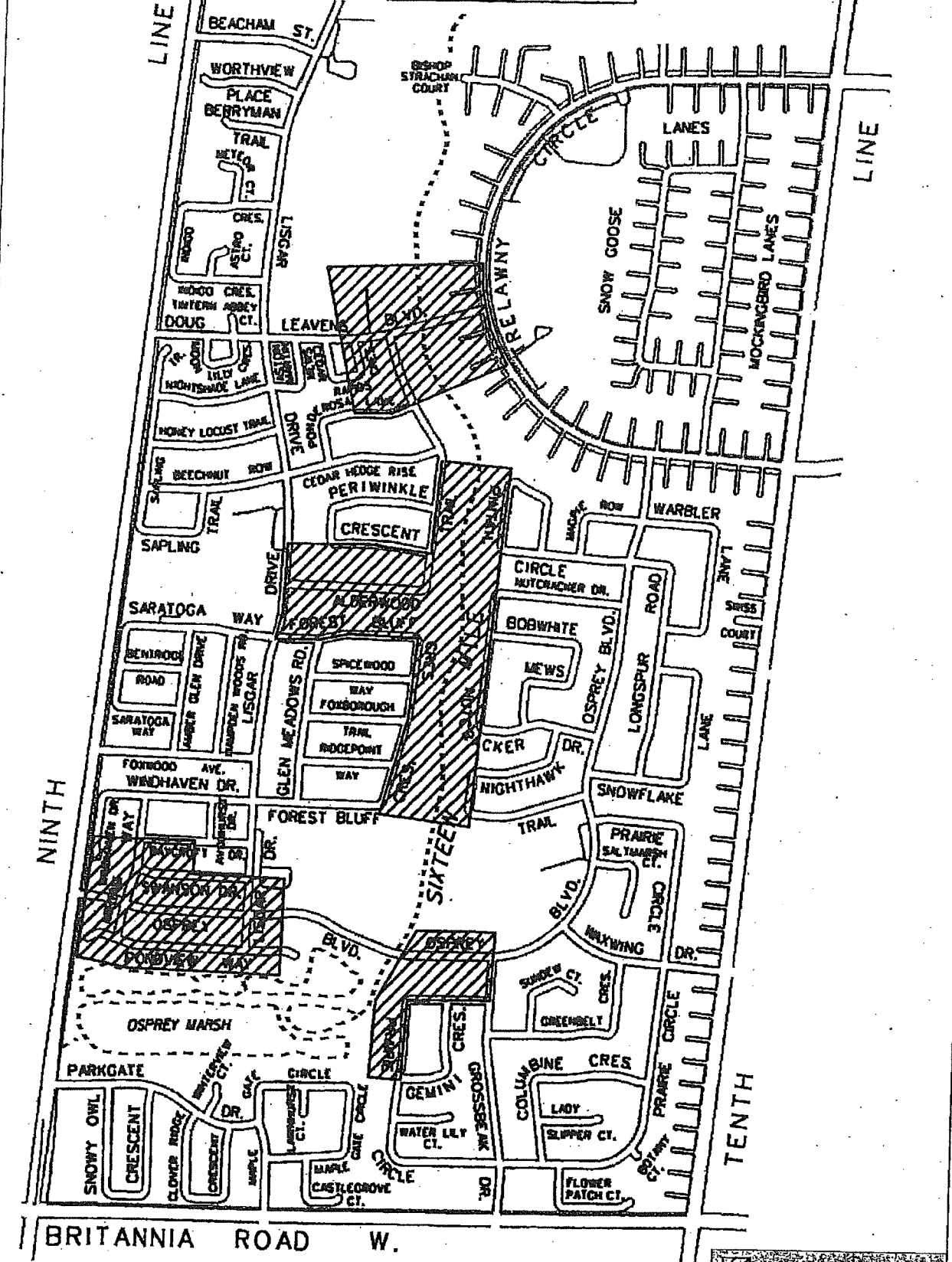
*Prepared By: Lincoln Kan, P.Eng.
Manager, Environmental Services*



General Affected Area

SOUTH LISGAR

Appendix 2
General Affected Area - South Lisgar



 General Affected Area