



**Vegetation Monitoring
Floristic Composition & Structure
Bridgewater (formerly The Preserve)
Parts of Lots 48, 49 and 50 Concession 11
Town of Collingwood**

Prepared for:
Consulate Development Group
C/O
Orion Environmental Solutions

Prepared by:
Azimuth Environmental
Consulting, Inc.

September 2018

AEC 18-156

September 21, 2018

AEC 18-156

John Sorokolit, Consulate Development Group
C/O Orion Environmental Solutions
1930 George Johnston Road
Minesing, ON
L9X 1C1

Attention: Paul Neals

Re: **Vegetation Monitoring – Floristic Composition and Structure of Vegetation Communities MAM4-2b, MAM5-2 and MAM2, Bridgewater (formerly The Preserve) Development, Parts of Lots 48, 49 and 50 Concession 11, Town of Collingwood, Simcoe County**

Dear Mr. Neals:

As requested, Azimuth Environmental Consulting, Inc. (Azimuth) has completed field studies to provide baseline data for the vegetation community monitoring recommended in Section 4.2 Post-construction (Performance) Monitoring of the Azimuth/Savanta report: *Environmental Impact Study ADDENDUM, the Preserve at Georgian Bay, Part of Lots 48, 49 and 50 Concession 11, Town of Collingwood (Formerly Township of Nottawasaga), County of Simcoe* (July 13, 2007) – specifically to:

- Monitor the floristic composition and structure of vegetation communities MAM4-2b, MAM5-2 and MAM2 using photo plot methodology.

The following report outlines methods, results and provides baseline vegetation data for post-construction monitoring. This report addresses Task 4 of the Existing Conditions Update report for the Bridgewater Development produced by Azimuth July 16, 2018.

If you require additional information please do not hesitate to contact us.



Yours truly,

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

A handwritten signature in blue ink that reads "Jim Broadfoot".

Jim Broadfoot, H. B.Sc.
Terrestrial Ecologist

Attach:

cc: Colin Travis, Travis & Associates
John Sorokolit, Consulate Development Group

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Excel Table – Bridgewater (Collingwood) Veg Mon Data (baseline) August 10, 2018
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1.0 INTRODUCTION

Azimuth was retained by the Consulate Development Group to completed field studies to establish baseline data for the vegetation community monitoring recommended in Section 4.2 Post-construction (Performance) Monitoring of the Azimuth/Savanta report: *Environmental Impact Study ADDENDUM, the Preserve at Georgian Bay, Part of Lots 48, 49 and 50 Concession 11, Town of Collingwood (Formerly Township of Nottawasaga), County of Simcoe* (July 13, 2007). As per the report's recommendation, this monitoring relates to vegetation communities MAM4-2b, MAM5-2 and MAM2. The 2007 report recommend monitoring using photo plot methodology. This was completed as part of this baseline study but the scope of the study was expanded to also provide quantitative data for future comparison and to provide context to the photographs.

2.0 METHODS

Three plots were established in each of the following vegetation communities: MAM4-2b, MAM5-2 and MAM2, as shown on Figure 1. Plot locations were established in an unbiased manner as follows. Plots were established along a transect aligned through the long axis of each community. Plot location along the transect was established through a coin flip: heads - 20 pace interval; tails - 30 pace interval.

The northwest corner of each plot was marked using a wooden survey stake. Each stake was assigned a plot number based on its affixed, pre-numbered metal tag. Stakes were painted orange.

Data were collected on August 10, 2018 (Observer – J. Broadfoot). The following sections describe the approach to photo monitoring and collection of quantitative data.

2.1 Photo Monitoring

Five photos were taken per plot. Photos include a “ground view” of vegetation within a 1 m² square sample plot and horizontal views taken in cardinal directions (*i.e.*, west, north, east, south).

2.2 Quantitative Monitoring

Three sampling methods were applied to gather data for each plot related to ground cover, the shrub/sapling layer and tree cover.



2.2.1 Ground Cover

The percent of ground covered by grasses/sedges/rushes (collective group), forbs (by species), woody plants, and bare ground within a 1 m² plot having its northwest corner defined by the plot marker stake, was visually estimated. Ground cover percent was estimated by taxonomic group that have overlapping canopies and hence total cover reported by plot can exceed 100%. Cover estimates included canopies of plants rooted within and adjacent to the limits of the plot.

2.2.2 Shrub/Sapling Layer

Point-quarter sapling methods were employed to assess relative abundance and average spacing of shrubs/saplings in the vicinity of each plot. The plot marker stake was defined as the “point”. The distance from the point to the closest stem of a woody plant having height greater than 50cm was measured in each of four quadrants surrounding the point. Woody plants were identified to species.

2.2.3 Tree Cover

Prism sampling was utilized to derive an estimate of basal area (m²/ha) of trees in the vicinity of each plot. Data were collected using a 2 factor, clear metric wedge prism. The plot marker stake was utilized as the prism plot centre. Trees were defined as woody plants having diameter at breast height $\geq$ 10cm. Trees were identified to species.

3.0 RESULTS

3.1 Photo Monitoring

The attached CD-ROM contains photographs for each plot (JPEG images). Photos are assigned file numbers as follows: *i.e.*, *P562 GR COV August 10, 2018* = Plot Number 562, GRound COVER photo, Date taken; *P562 HORIZ N August 10, 2018* = Plot Number 562, HORIZontal photo, N direction (E – East, S – South, W – West), Date taken. Photos are saved on the CD-ROM by vegetation community.

The photographs can be utilized for comparative purposed through time. It is important that subsequent photo monitoring is done in early August to ensure that comparisons are made among photos reflecting the same stage of development of plants. Otherwise, the visual comparison would not clearly reflect temporal trends in plant community composition and structure but rather would be confounded by inherent differences in growth stage/phenology during the growing season.



3.2 Quantitative Monitoring

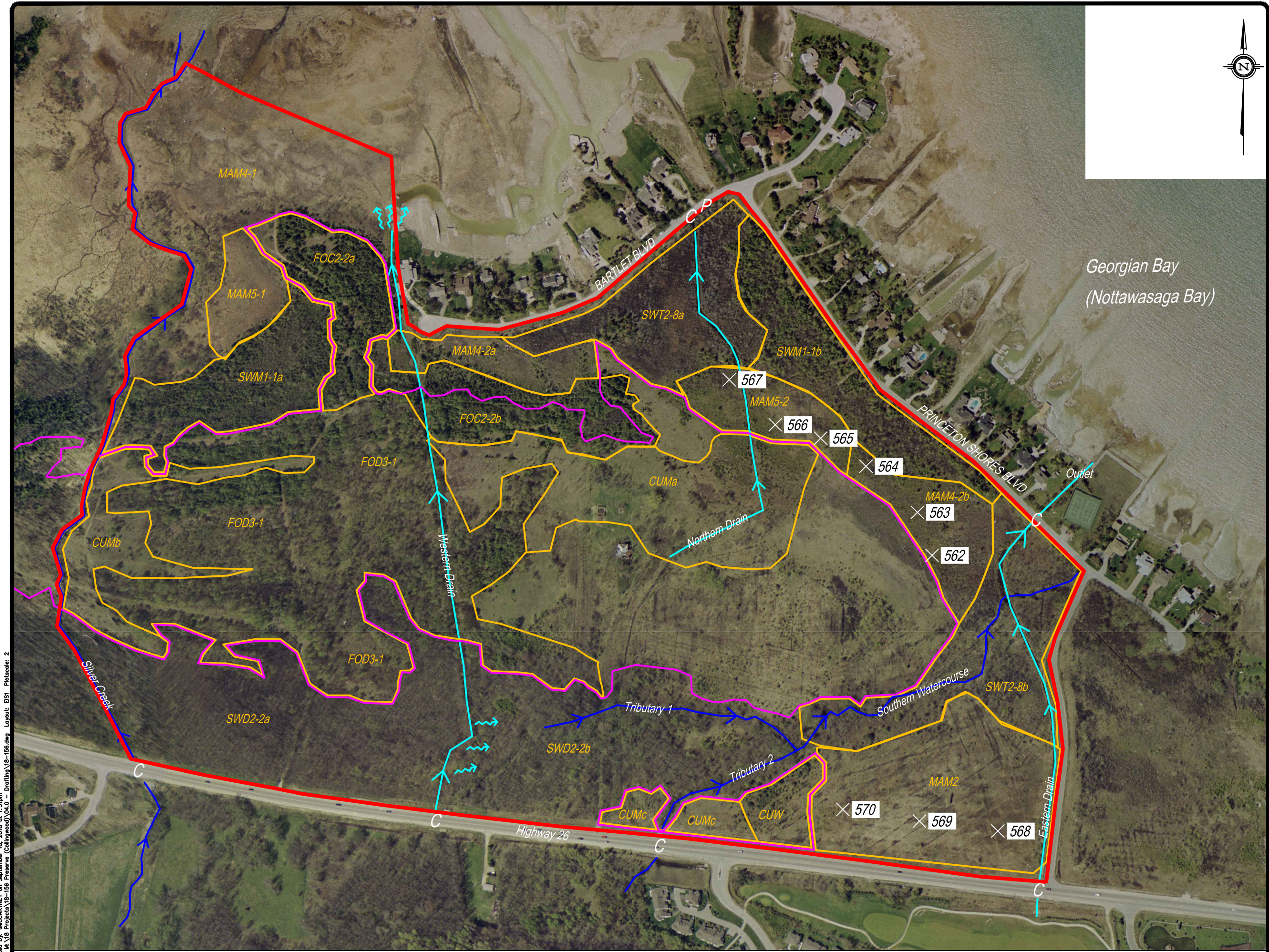
Table 1 (Excel file provided on attached CD-ROM) provides data collected by plot for ground cover, shrub/sapling layer and tree cover. The table also provides notes related to the relative abundance and location of invasive plant species noted in the vicinity of each plot. These data can be utilized for comparative purposes through time as development proceeds and to provide insights into the plant community in the vicinity of plots revealed in the photographs. It is important that the quantitative sampling is done in early August to ensure that future comparisons are made among plant coverage data reflecting the same stage of development of plants. Otherwise, the comparison would not clearly reflect temporal trends in plant community composition and structure but rather would be confounded by inherent differences in growth stage/phenology during the growing season.

While conducting the vegetation monitoring it was noted that populations of invasive Purple Loosestrife and Common Reed have become established in areas where they were not noted as abundant during field work completed as part of the 2007 EIS. This increase in abundance, particularly of Common Reed was most notable within community MAM2 adjacent to Highway 26. Though a patch of Purple Loosestrife was noted in community MAM2 in prior to 2006, 2018 field observations indicate that this species has become more abundant and widespread within the community.

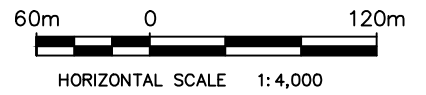
4.0 DISCUSSION

The information provided above and data provided on the attached CD-ROM represent baseline data related to the composition and structure of wetland vegetation communities located in proximity to areas approved for development. Data collected following the same sampling protocol as described in this report, at approximately the same time of the year (*i.e.*, early August) can be used for comparative purposes assessing trends in plant community composition and structure.





- LEGEND:**
- Approx. Property Boundary
 - Watercourse
 - Drains
 - Wetland
 - Vegetation Communities
 - ×# Vegetation Monitoring Plot, 2018 (white)



Vegetation Monitoring Plot Locations

Bridgewater,
Collingwood, ON

DATE ISSUED:	September 2018	Figure No. 1
CREATED BY:	JLM	
PROJECT NO.:	18-156	
REFERENCE:	First Base Solutions	