IDENTIFICATION OF CANDIDATE PRIME AGRICULTURAL AREAS USING A LAND EVALUATION AND AREA REVIEW (LEAR) METHODOLOGY

PREPARED FOR:
TOWN OF MONO

PREPARED BY:
COLVILLE CONSULTING INC.

CO6O31
AUGUST 2011
IDENTIFICATION OF CANDIDATE PRIME AGRICULTURAL AREAS

USING A

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EXECUTIVE SUMMARY

The Ministry of Municipal Affairs and Housing (MMAH) has requested that the Town of Mono identify its prime agricultural areas in its Official Plan (OP) in order to conform to the Provincial Policy Statement (PPS). To comply with the MMAH request, the Town of Mono has undertaken a Land Evaluation and Area Review (LEAR) study to identify candidate prime agricultural areas.

In the spring of 2008, Colville Consulting Inc. was retained to develop a LEAR methodology for the Town using The Guide to the Land Evaluation and Area Review (LEAR) System for Agriculture (OMAFRA, 2002), the Land Evaluation and Area Review for the Greenbelt Study Area (2006) and other LEAR methodologies developed for other municipalities across the Province as a guide.

A LEAR Committee was formed consisting of three local individuals with extensive general knowledge of the agricultural community, soil conditions, climate differential and environmental conditions throughout the municipality. OMAFRA staff were also consulted as the methodology was developed. Many of Ministry's comments were incorporated into the Town's LEAR. OMAFRA recommended the creation of a local LEAR committee to provide advice throughout the preparation of the document.

A number of iterations of preliminary LEAR maps were developed with the LEAR Committee using different LE:AR ratios and threshold values. Eventually a LE Score weighting of 70% and an AR Score weighting of 30% and a threshold value of 6.5 was determined to best represent the prime agricultural areas in the Town of Mono. All Evaluation Units with a LEAR score of 6.5 and higher were considered as candidates for inclusion within the Town's prime agricultural area. During the summer of 2009 the LEAR Committee completed a field review of the LEAR map and recommended a number of adjustments.

In the spring of 2010 the OMAFRA staff provided comments on the adjusted draft LEAR map. Following consideration of these comments, additional input from the LEAR Committee a final LEAR map and a refinement of the candidate prime agricultural areas boundaries, four candidate prime agricultural areas were delineated within the Town of Mono. It is recommended that these four areas be included within the Town of Mono's Prime Agricultural Areas designation.
Identification of Prime Agricultural Areas using a LEAR Methodology for the Town of Mono
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1. INTRODUCTION

The following is the final report for the Identification of Candidate Prime Agricultural Areas using a Land Evaluation and Area Review (LEAR) Methodology for the Town of Mono completed by Colville Consulting Inc. A significant number of acronyms are used throughout this report and are summarised in Appendix A.

1.1 Background

The Ministry of Municipal Affairs and Housing (MMAH) has requested that the Town of Mono identify its prime agricultural areas in its Official Plan in order to conform to the Provincial Policy Statement (PPS). Currently there is no "Agricultural" designation in the Town’s Official Plan. Agricultural related policies are contained within the Rural Areas designation.

To comply with the MMAH request, the Town of Mono has begun the process of identifying its’ prime agricultural areas. The PPS defines prime agricultural areas as “areas where prime agricultural lands predominate. This includes: areas of prime agricultural lands and associated Canada Land Inventory Class 4-7 soils; and additional areas where there is a local concentration of farms which exhibit characteristics of ongoing agriculture. Prime agricultural areas may be identified by the Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA) using evaluation procedures established by the Province as amended from time to time, or may also be identified through an alternative agricultural land evaluation system approved by the Province”.

The most common method of identifying prime agricultural areas used by municipalities is termed the Agricultural Land Evaluation System (ALES). Generally, this system reviews soil surveys and Canada Land Inventory (CLI) mapping prepared by the Province and delineates areas outside of urban and settlement areas that are 250 ha in size or more in which prime agricultural lands predominate. Prime agricultural lands include specialty crop areas and/or CLI Classes 1, 2, and 3 soils.

As permitted by the PPS, many municipalities are using an alternative method to identify their prime agricultural areas. This alternative method is commonly referred to as a Land Evaluation and Area Review (LEAR). The LEAR methodology was developed by OMAFRA in 1997 and revised in June 2002 (Guide to the Land Evaluation and Area Review System for Agriculture).

It was developed as a tool for municipalities to use when identifying prime agricultural areas for protection in their official plans. The LEAR system is comprised of two main components; the land evaluation (LE) which relates to the soil’s agricultural capability (i.e., the CLI Capability Classes 1-7); and the area review (AR) which relates to other factors important to agriculture (e.g., agricultural production, fragmentation, conflicting land uses, etc.). The two components are then combined to obtain a LEAR score. Those areas with scores above a pre-determined threshold value are considered for inclusion within the municipalities Prime Agricultural Area.

In August 2006, the OMAFRA published the Land Evaluation and Area Review for the Greenbelt Study Area. The published study area covers a significant portion of the Town of Mono although the results did not include the northeast and southwest portions of the Town (see Figure 1). The LEAR analysis for the Greenbelt Study did include all of Dufferin County however; for various reasons OMAFRA was able to provide the final LEAR Scores and mapping for only a portion of the Town of Mono. The Town was unable to use the Greenbelt Study LEAR for the following reasons:

- the published LEAR Study did not include the northeast and southwest portions of the Town; two areas which are considered to include the better agricultural areas;
1.2 Objectives

The objectives of this review are:

- to develop a LEAR methodology suitable for the Town of Mono; and
- to identify candidate Prime Agricultural Areas within the Town of Mono.

The identification of candidate Prime Agricultural Areas will allow the Town of Mono to comply with the MMAH request to identify its prime agricultural areas in its Official Plan and conform to the PPS.
Figure 1
Greenbelt LEAR
Town of Mono
2. METHODOLOGY

2.1 Discussion

In April of 2008, Colville Consulting Inc. developed a LEAR methodology for the town of Mono using The Guide to the Land Evaluation and Area Review (LEAR) System for Agriculture (OMAFRA, 2002) and following a review of other LEAR methodologies developed for other municipalities across the Province. In general, the guide recommends:

- identifying a clearly defined study area;
- dividing the study area into Evaluation Units (EU);
- identifying the criteria to be used which will define the LE and AR components of the LEAR and assigning appropriate values and weightings to these criteria;
- that the LE component be based primarily on soil CLI Capability ratings although other factors such as climate can be used where appropriate (e.g., specialty crop areas);
- that the AR component be comprised of Provincial factors (such as the percentage of the Evaluation Unit in agricultural use, the percentage of surrounding lands in agricultural use, and fragmentation) and other factors considered relevant to the local municipality;
- calculating the LEAR score for each Evaluation Unit using a ratio of 1:1 for the LE and AR components with the LE component representing at least 50% of the total LEAR score; and
- determining a threshold value, in consultation with OMAFRA, above which lands will be considered for inclusion in the municipality’s Prime Agricultural Areas.

2.2 OMAFRA Consultations

Throughout the process staff with the OMAFRA was consulted. A number of discussions were held and formal comments were received on both the LEAR methodology and the candidate prime agricultural areas mapping (see Appendix B).

On April 24, 2008, the methodology developed was circulated to OMAFRA to seek input and comments prior to completing the GIS analysis. The Ministry provided comments on the methodology on May 26, 2008. Their comments are provided in Appendix B. The Ministry’s comments were considered and appropriate changes to the original methodology were made.

2.3 LEAR Committee

One of the Ministry’s recommendations was to establish a LEAR Committee made up of local groups or individuals who have local knowledge of the Town and the agricultural community. Upon receiving this advice, the municipal Council invited five individuals from the local agricultural community to form the LEAR Committee. Of the five invited, three agreed to participate on the Committee. The members have extensive general knowledge of the agricultural community, soil conditions, climate differential and environmental conditions throughout the municipality.

The Committee members included Mr. Don Watson, Mr. Bob Shirley and Mr. Gerald Reid. The Committee members contributed valuable information throughout the LEAR process and their input was integral in defining the proposed candidate prime agricultural areas.
2.4 Study Area

The Study Area is defined by the boundaries of the Town of Mono (see Figure 2). It includes the Rural and other non-urban designations such as Mineral Resource Extraction Area, Environmental Protection, Extractive and Open Space. It includes the area within the Niagara Escarpment Commission (NEC) boundaries, the Greenbelt Policy Area and those lands within the Oak Ridges Moraine Conservation Plan area. It does not include the built up areas surrounding Orangeville or the built up areas of Camilla, Mono Centre and Rosemont or the Mono Cliffs Provincial Park. More specifically it does not include the following land use designations: Commercial; Plaza Commercial; Commercial Light Industrial; Industrial; Major Institutional; Hamlet; Suburban and Special Suburban; and Special Resort.

The lands adjacent to the Town’s boundaries were reviewed to determine whether it was likely that they would have any influence on the results of the LEAR evaluation. The Township of Amaranth, the Township of Mulmur, the Township of Adjala-Tosorontio, the Town of Caledon and the Town of Orangeville all have lands adjacent to the Town of Mono. It was concluded that the adjacent lands would have a minimal influence on the LEAR calculations and therefore were not considered for the LEAR evaluation. The methodology used to determine the AR factors was modified accordingly.

Most of the surrounding municipalities have an agricultural designation in the municipality’s Official Plan. The information will be used to refine the candidate prime agricultural areas to ensure consistency across municipal boundaries.

2.5 Evaluation Units

For much of Southern Ontario, the survey lot and concession fabric divides lands into 80 ha blocks or Lots. These represent the original farm lots during the time of settlement. Land division and ownership has significantly modified the original lot fabric. As is often the case, the original 80 ha parcel has been divided into two or more, and in some cases, several parcels. The Guide to the LEAR System for Agriculture (2002) recommends that, where available, the LEAR evaluation use the individual landowner parcel fabric serve as the basis for data collection and analysis. Each individual parcel regardless of size would form the EU.

The Greenbelt LEAR developed by the OMAFRA in 2006 originally performed the analysis in 2004 using the landowner parcel fabric as the EU. Due to licensing restrictions related to parcel data, OMAFRA determined that it could not “provide the LEAR Parcel Fabric to municipalities and the general public”. OMAFRA modified their methodology and the second version used the original survey lot fabric as the EU (i.e., 80 ha lots). A comparative analysis between the two methods was completed by OMAFRA and it was determined that “the results of this second version of the LEAR analysis reflect those produced from the first LEAR analysis in that similar areas reflect similar LEAR scores”. Therefore, the lot and concession fabric was used for the Town of Mono LEAR and each EU consists of an 80 ha block. The Town and the LEAR Committee concurred with this decision.

2.6 LEAR Components

The LEAR is comprised of two main components; the Land Evaluation (LE) and the Area Review (AR). Each EU is assigned a LE and an AR score as well as an overall LEAR score.
Figure 2
Study area
Town of Mono

Legend
- Water Course
- Road Segment
- Parcels
- Building
- Residential Area
- Greenbelt Planning Area
- Greenbelt Hamlet Area
- Wooded Area (SOLRIS)

Projection: UTM Zone 17
Datum: NAD83
Mapping Date: August 3, 2010
Print Date: August 3, 2010
Map Name: Figure2-StudyAreaTownofMono.mxd
Project: MSD1454
Prepared By: JJJ

1:65,000
1,000 2,000
1,000 2,000
Meters
2.6.1 Land Evaluation Factor

The Town of Mono’s LEAR used the soil CLI Capability ratings provided in digital format to the Town by the OMAFRA in April of 2008. This data is derived from the soil capability classification mapping which is mapped at a scale of 1:50,000 and shows soil capability class ratings (CLI Classes 1-7). Organic soils, water bodies and urban or built-up areas are mapped but are not considered by the CLI Capability Classification System.

The comments received from the OMAFRA suggested that Organic Soils, Not Mapped Areas and Parcels less than 2 ha should be excluded “as they are not CLI soils factors and are accounted for elsewhere in the study” (Neumann, C., OMAFRA. May 24, 2008). The original methodology did include parcels less than 2 ha. We agree with the OMAFRA that they are accounted for in the AR component and it was decided to not include these parcels in the LE analysis. However, we have decided to keep Organic soils and Not Mapped Area in the LE analysis.

The CLI mapping does show Organic soils and Not Mapped Areas. Although the CLI Capability Classification system does not provide a rating (Class 1-7) it does include these areas in the mapping. It illustrates that these areas have no potential for agriculture which we think is important when characterizing an area’s agricultural resource base. This is also consistent with The Guide to the Land Evaluation and Area Review System for Agriculture (OMAFRA, 2002) which states that environmental features, such as wetlands (commonly organic soils), watercourses, forests and aggregate areas should be included “to maintain consistency in determining the LE”. The Not Mapped areas often include smaller sites which may have been committed to non-farm uses such as recreational areas and seasonal residential. We have also included water bodies within the Not Mapped category. The guide also suggests that these areas be included in the LE analysis.

Some consideration was given to including climatic information (e.g., Crop Heat Units) as part of the LE component. Following discussions with the LEAR Committee it was concluded that the climatic differences across the Town of Mono were not strong enough to warrant its inclusion in the process. Therefore it was recommended that LE component be limited to just CLI Soil Capability ratings. And since a single LE factor is being used a weighting of 1.0 is applied.

For the Town of Mono LEAR evaluation, LE scoring for each EU is determined by:

- assigning an appropriate Productivity Index to each of the seven CLI Classes and the other areas mapped (i.e., Organic soil, water bodies and built up areas). The Productivity Indices assigned are based on the Hoffman Productivity Indices for CLI Classes 1-4. For classes 5-7 the Productivity Indices assigned were derived from extrapolation of the Hoffman Productivity Indices. A value of zero (0) was assigned to Organic soil, water bodies and built up areas.

- calculating the area and percentage of each soil capability class within the EU;

- multiplying the percentage of each soil capability class within the EU by the Productivity Indices and obtaining a sum for the EU; and

- comparing the sum to a range of productivity indices which correspond to the level of productivity of the various CLI Classes and assigning the corresponding LE score.

Table 1 illustrates the scoring method. In this example, the EU contains 23% CLI Class 2 soil, 40% Class 3 soil, 17% Class 4 soil and 20% Organic soil. Column A shows the Productivity Indices for the CLI Classes as derived from the Hoffman Productivity Indices. Column B shows the percentage of each CLI Class.
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MAY 2011

In a LEAR system, the AR component can include a variety of factors ranging from an assessment of land use characteristics and the level of fragmentation to socio-economic factors involving factors such as the level or presence of agricultural investments, agricultural census data, and the proximity to farm services. The AR factors can influence the suitability of an evaluation unit for agricultural uses. An EU which is not actively farmed and with a high level of fragmentation would have a lower priority for inclusion in the prime agricultural area than an EU comprised of one or two parcels, is actively farmed and is surrounded by other actively farmed lands.

The Town of Mono LEAR uses five Area Review (AR) factors. These factors include:
- the percentage of EU in agricultural use;
- the percentage of the lands surrounding the EU in agricultural use;
- the percentage of surrounding lands with conflicting land uses;
- the Lot Fragmentation / Parcel Size; and
- the number of non-farm residences within 300 m of EU.

The values in Column C are determined by multiplying the percentage of each CLI Class by the Productivity Index. The sum of Column C is the Productivity Index for the EU. In this case it is 0.53 which is equivalent in productivity to a CLI Class 4 soil and would therefore receive a LE Score of 5.

### Table 1. LE Scoring Method

<table>
<thead>
<tr>
<th>Soil Capability Class (CLI) &amp; Areas Not Suitable for Agriculture</th>
<th>Productivity Index Rating (A)</th>
<th>Percentage CLI in EU (B)</th>
<th>Productivity Index for EU (C)</th>
<th>Total Productivity Index for EU (D)</th>
<th>LE Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.90 - 1.00</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>0.80</td>
<td>0.23</td>
<td>0.18</td>
<td>0.73 - 0.89</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>0.65</td>
<td>0.40</td>
<td>0.26</td>
<td>0.58 - 0.74</td>
<td>6.5</td>
</tr>
<tr>
<td>4</td>
<td>0.50</td>
<td>0.17</td>
<td>0.09</td>
<td>0.43 - 0.57</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>0.35</td>
<td>0.00</td>
<td>0.00</td>
<td>0.28 - 0.42</td>
<td>3.5</td>
</tr>
<tr>
<td>6</td>
<td>0.20</td>
<td>0.00</td>
<td>0.00</td>
<td>0.10 - 0.27</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00 - 0.09</td>
<td>0</td>
</tr>
<tr>
<td>Q (Organic Soils)</td>
<td>0.00</td>
<td>0.20</td>
<td>0.00</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Not Mapped Areas</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total (Add Columns)</td>
<td>100%</td>
<td>0.53</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The CLI information was obtained from OMAFRA's Provincial Soil Resource Database. In reviewing the data, it was observed that there were several inconsistencies between the soil series mapped and the CLI capability rating applied to the soil polygon. For example, some soil polygons were rated CLI Class 2 although they were mapped on strong slopes (15-30%). The appropriate CLI Class for soils on these soils is at least CLI Class 5T. As a result, it was decided to review in detail each of the digital records for the soil polygons mapped in the Town of Mono and correct the CLI capability rating where appropriate. The LE analysis uses the updated CLI capability ratings.

#### 2.6.2 Area Review Factor

In a LEAR system, the AR component can include a variety of factors ranging from an assessment of land use characteristics and the level of fragmentation to socio-economic factors involving factors such as the level or presence of agricultural investments, agricultural census data, and the proximity to farm services. The AR factors can influence the suitability of an evaluation unit for agricultural uses. An EU which is not actively farmed and with a high level of fragmentation would have a lower priority for inclusion in the prime agricultural area than an EU comprised of one or two parcels, is actively farmed and is surrounded by other actively farmed lands.

The Town of Mono LEAR uses five Area Review (AR) factors. These factors include:

- the percentage of EU in agricultural use;
- the percentage of the lands surrounding the EU in agricultural use;
- the percentage of surrounding lands with conflicting land uses;
- the Lot Fragmentation / Parcel Size; and
- the number of non-farm residences within 300 m of EU.
This LEAR assigns the highest weight to those AR Factors which are considered by the LEAR Committee to be of most important to agriculture in the Town of Mono. Those AR factors considered to be of the most importance include those relating to lands assumed to be in agricultural production or be suitable for agricultural production (i.e., AR Factors 1 and 2) and parcel size (AR Factor 5). Factors based on conflict potential are assigned slightly lower weights. Approximately 50% of the AR score is based on the percentage of lands in agricultural production in the Town of Mono and 50% is influenced by the presence of conflicting land uses and the degree of fragmentation within each EU. The total weighting does not exceed 1.0. The AR Factors and their weights are described below.

**AR Factors 1 and 2**

The percentage of each EU in agricultural use (AR Factor 1) was determined by eliminating those areas identified in the Ontario Ministry of Natural Resources (OMNR) NRVIS mapping as either woodlands or wetlands. Areas which are designated for non-rural uses were also screened out (see above – Study Area). These areas were identified using the Town of Mono’s Official Plan, Schedule A. This provides for a conservative estimate of the lands in agricultural production in the Town of Mono. The same method was used to determine the percentage of surrounding lands in agricultural production (AR Factor 2).

OMAFRA considers AR Factors 1 and 2 to be the most important AR factors when identifying prime agricultural lands. For the Town of Mono LEAR it is recommended that the total weight of these two factors represent 50% of the AR score. The original recommendations provided to the Town and OMAFRA weighted Factors 1 & 2 equally (i.e., 25%). However, at the request of OMAFRA the weightings were slightly adjusted. The weight given to AR Factor 1 represents 30% of the AR score and for Factor 2 the weight is 20% of the AR score. Tables 2 and 3 show the scoring and weighting for these two factors.

**Table 2. AR Factor 1 - Percentage of EU in Agricultural Production**

<table>
<thead>
<tr>
<th>Percentage of Land in Agricultural Use</th>
<th>Points</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>85 - 100%</td>
<td>10.0</td>
<td>30%</td>
</tr>
<tr>
<td>70 - 84%</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td>55 - 69%</td>
<td>7.5</td>
<td></td>
</tr>
<tr>
<td>40 - 54%</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>25 - 39%</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>10 - 24%</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>0 - 9%</td>
<td>1.0</td>
<td></td>
</tr>
</tbody>
</table>

Calculate the % of the EU in agricultural production and assign points to each EU based on the percentage. Multiply by weight to determine score for this factor.
AR Factor 3

AR Factor 3 is a measure of the conflict potential within an EU from existing land uses that may not be compatible with agricultural uses. Conflicting land uses include those areas designated Commercial, Plaza Commercial, Commercial Light Industrial, Industrial, Major Institutional, Hamlet, Suburban and Special Suburban, and Special Resort. Following discussions with the LEAR Committee, it was also decided to include areas where four or more non-farm residential lots abut each other. OMAFRA considers these areas to be rural clusters which are more sensitive to agricultural uses than are single residential lots. For this AR Factor only, the LEAR Committee suggested that rural clusters should include abutting lots less than 4 ha (10 acres) in size because, in their opinion, lots of this size are a conflicting land use.

To determine the AR score for this factor, the percentage of land within 300 m of the EU that contains a conflicting land use was calculated. Points are awarded based on this percentage. To obtain a score for this factor the points are multiplied by the weighting (i.e., by 15%).

Table 4. AR Factor 3 - Percentage of Surrounding Lands with Conflicting Land Use

<table>
<thead>
<tr>
<th>Percentage Conflicting Land Use</th>
<th>Points</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 9%</td>
<td>10.0</td>
<td>15%</td>
</tr>
<tr>
<td>10 - 24%</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td>25 - 39%</td>
<td>7.5</td>
<td></td>
</tr>
<tr>
<td>40 - 54%</td>
<td>6.0</td>
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</tr>
<tr>
<td>55 - 69%</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>70 - 84%</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>85 - 100%</td>
<td>1.0</td>
<td></td>
</tr>
</tbody>
</table>

AR Factor 4

Non-farm residences are scattered throughout the Town of Mono. They are often considered to be conflicting uses. They also represent the level of fragmentation in an area. Generally, the more non-farm residences there are in an area, the greater the degree of fragmentation. For this AR Factor, all lots up to 0.8 ha in size are considered to be non-farm residential units. As shown in Table 5, the weight for this AR Factor is 15%. Points are awarded based on the number of non-farm residential units within 300 m of an
EU. Higher AR scores occur where there are fewer non-farm residential units. These areas are likely to represent areas more suitable for agricultural uses.

Table 5. AR Factor 4 - Number of non-farm residences within 300 m of EU

<table>
<thead>
<tr>
<th># of Units</th>
<th>Points</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 1</td>
<td>10.0</td>
<td></td>
</tr>
<tr>
<td>2 - 4</td>
<td>8.0</td>
<td></td>
</tr>
<tr>
<td>5 - 7</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>8 - 10</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>≥ 11</td>
<td>2.0</td>
<td>15%</td>
</tr>
</tbody>
</table>

AR Factor 5

The final AR Factor included in the Town of Mono LEAR measures the value of each EU based on the number and size of the parcels within it. It identifies those EU which are comprised of parcels more suitable to agriculture based on their size. The greater the size of the parcels within the EU the higher the score it receives. The parcels within each EU are sorted by their size. The percentage of each size category is calculated and multiplied by the points shown in Table 6. The points are summed and a total score for the AR factor is determined. The weight for this factor is 20%. Table 6 shows the method used to calculate this AR Factor.

Table 6. AR Factor 5 - Lot Fragmentation / Parcel Size

<table>
<thead>
<tr>
<th>Parcel Size (Ha)</th>
<th>Percentage of EU (A)</th>
<th>Parcel Size Points (B)</th>
<th>Fragmentation Score for each parcel within EU (A x B)</th>
<th>Weight</th>
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<tr>
<td>&gt; 35</td>
<td></td>
<td>10</td>
<td></td>
<td></td>
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<tr>
<td>30 - 35</td>
<td></td>
<td>9</td>
<td></td>
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<tr>
<td>25 - 30</td>
<td></td>
<td>8</td>
<td></td>
<td></td>
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<tr>
<td>20 - 25</td>
<td></td>
<td>7</td>
<td></td>
<td></td>
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<tr>
<td>15 - 20</td>
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<td>6</td>
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<tr>
<td>10 - 15</td>
<td></td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 - 10</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 - 5</td>
<td></td>
<td>2.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.8 - 2</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>&lt; 0.8</td>
<td></td>
<td>0</td>
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</table>

The AR value is obtained by adding the totals for each AR Factor.

Identification of Prime Agricultural Areas Using a LEAR Methodology for the Town of Mono
May 2011

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2.7 LE:AR Ratio

The Guide to the Land Evaluation and Area Review System for Agriculture (OMAFRA, 2002) generally recommends a ratio of 1:1 for LE and AR scores when evaluating the LEAR score. However, each municipality can adjust the LE to AR ratio to best represent its own unique circumstances. For example, it can choose to strengthen the LE component and reduce the influence of the AR factors. The LE factor can never represent less than 50% of the total LEAR score.

The original recommendation for the Town of Mono LEAR was to use a 1:1 ratio for the LE and AR. That is, for each EU, 50% of the LE score was added to 50% of the total AR score to obtain and LEAR score. The maximum LEAR score that an EU can have using the Town of Mono LEAR methodology is 10.

2.8 LEAR Score

For the original iterations using a ratio of 1:1, the LEAR score was calculated by adding the LE score X 50% and the AR score X 50% to achieve a value between 0 and 10.

2.9 Threshold Values

The Town of Mono LEAR uses a single threshold value to determine its prime agricultural lands. A threshold value of 6.5 was used to identify the candidate prime agricultural areas. All EU’s with a value of 6.5 or higher were considered as candidates for inclusion within the prime agricultural area. This value is in line with other LEAR studies developed by municipalities in Ontario and has been accepted by OMAFRA for other LEAR studies.

2.10 Prime Agricultural Areas

As a general rule, OMAFRA recommends that prime agricultural areas be a minimum of 250 ha in size. However, prime agricultural areas can be smaller or larger depending on the types of agricultural activities within the municipality. For example, the delineation of smaller prime agricultural areas may be more suitable for specialty crop areas. It is also recommended that the EU size be smaller than the prime agricultural area minimum size. As stated in section 2.4 the EU size for this LEAR Study is 80 ha.
3. RESULTS

3.1 LEAR Methodology Development
The methodology presented above follows the direction of The Guide to the Land Evaluation and Area Review (LEAR) System for Agriculture (OMAFRA, 2002) and evaluates the Town’s “Rural” areas using many of the factors and weightings used by other OMAFRA approved LEAR studies. The comments provided by OMAFRA staff (see Appendix B) specific to the preliminary methodology developed in April 2008 were considered and most were incorporated into the methodology presented above. Other modifications to the original methodology were made following consultations with the LEAR Committee and a review of similar LEAR studies and relevant literature.

A list of the literature cited and referenced is provided in Section 5 of this report. The various sources of data as well as a description of all data limitations and assumptions that were used to determine the LEAR scores is provided in Appendix C.

3.2 Prime Agricultural Area Size
For the Town of Mono LEAR Study, the prime agricultural areas will be a minimum size of 250 ha. There are no specialty crop areas or other regionally or locally significant areas of agricultural activity in the Town which would justify a smaller area.

The EU’s are 80 ha in size, therefore a minimum of three adjacent EU’s with a LEAR score 6.5 or more is required in order to define an area of suitable size (i.e., 250 ha).

3.3 Method Used to Identify Candidate Prime Agricultural Areas
An initial GIS analysis identified candidate prime agricultural areas within the Town of Mono using the factors and weightings described in the previous section. The initial LEAR mapping results (Figure 3) show the EUs that achieve a LEAR score of 6.5 or greater. Few candidate areas of approximately 250 ha or more (shown in green on Figure 3) were identified. The initial mapping results were shown to OMAFRA and the LEAR Committee. It was agreed that the candidate areas identified using a 1:1 LE to AR ratio did not adequately represent the prime agricultural areas in the Town of Mono. As a result, adjustments to the LE and AR weightings were required.

Using an iterative process, a number of scenarios using different LE:AR ratios and different threshold values were presented to the LEAR Committee. The LEAR Committee determined that the LEAR score should be based on a ratio of 70% LE and 30% AR. This is consistent with other LEAR studies (Ottawa-Carilton LEAR July, 1997). The LEAR score for each EU is thus determined by adding 70% of the LE score and 30% of the AR score (see the following flow chart on page 15).
Figure 3
Initial LEAR
LE 50%, AR 50%
Town of Mono

Legend
- Road Segment
- Parcel

LEAR Oct28 2008 50LE 50AR
LEARLabel

Project: USM Zone 17
Datum: NAD 83
Mapping Date: August 3, 2010
Plan Date: August 3, 2010
Map Name: Figure3_initial_LEAR_50LE_50AR.mxd
Prepared By: ZJJ

MapName: Figure3_initial_LEAR_50LE_50AR.mxd
Project: MS014164
Prepared By: ZJJ

Legend
- Road Segment
- Parcel
Diagram summarizing LE, AR and LEAR Score calculation process.

In summary, LEAR Committee agreed that the LEAR for the Town of Mono should be based on:

- a LE weighting of 70%;
- an AR weighting of 30%; and
- a minimum LEAR Score for an EU of 6.5;

### 3.4 Candidate Prime Agricultural Areas

The LEAR methodology identified a reasonable group of candidate prime agricultural areas. Figure 4 shows the resulting LEAR map with the identified candidate prime agricultural areas.

Over the summer of 2009, the LEAR Committee used the adjusted LEAR map (Figure 4) to field check the results. In completing their field review the LEAR Committee recommended the inclusion of additional areas and the exclusion of other areas within the candidate prime agricultural areas. These proposed modifications are shown in Figure 5.

Further discussions with the LEAR Committee resulted in a refinement of the candidate prime agricultural areas which are shown in Figure 6. This figure shows the four identified candidate prime agricultural areas on an ortho-photo base map of the Town of Mono. The figure also shows the:

- Greenbelt Planning Area;
- Niagara Escarpment Development Control Area;
- Oak Ridges Moraine Boundary;
- Town of Mono roads; and
- land parcels for the Town of Mono.
Figure 4
LEAR Study
LE 70%, AR 30%
Town of Mono

Legend
- Road Segment:

0 - 6.4
6.5 - 8.4

Projection: LPS Zone 17
Datum: NAD83

Mapping Date: August 3, 2010

Project Name: Figure 4-LEAR_70LE_30AR
Prepared By: JJJ

1:65,000
The proposed candidate prime agricultural areas were provided to the OMAFRA (as shown in Figure 6) for their review and comment in the spring of 2010. OMAFRA staff comments are provided in Appendix B. Based on the comments received and additional consideration by the LEAR Committee a number of minor adjustments were made to the four identified candidate prime agricultural areas. The OMAFRA staff had requested that additional consideration be given to including additional lands to the candidate prime agricultural areas, particularly in the northwest of the Town. After additional consideration of all areas within the Town of Mono, the LEAR Committee did not support the inclusion of additional lands.

The final refinement of the candidate prime agricultural areas involved including or eliminating portions of the EU which are not suitable for inclusion within the prime agricultural area. Lands which were considered for inclusion included:

- those EU's or portions of that did not receive a LEAR score of 6.5 although were contiguous with EU's which achieved this score;
- areas not included by the LEAR Committee but were chosen so that easily identifiable boundaries could be established between candidate prime agricultural areas and other land use designations;
- properties adjacent to identified candidate prime agricultural areas with relatively large fields in agricultural production; and
- properties located between identified candidate prime agricultural areas and other land use designations where the logical extension of the prime agricultural area to another land use designation was appropriate.

Areas which were considered for exclusion included:

- small non-agricultural lots and residential clusters;
- lands fragmented by natural heritage features and non-agricultural uses which are not feasible for agriculture; and
- areas where their inclusion could result in conflicts between agriculture and non-agricultural uses.

The Town of Mono planning staff were consulted during the inclusion/exclusion process. A review of the municipal boundaries was also completed in effort to establish some consistency between municipalities. Figure 7 shows the Town of Amaranth’s Agricultural areas and the Town of Mono’s proposed Prime Agricultural Area.

A description of the four candidate areas and the rationale used for their inclusion is provided below and the final boundaries for each are shown in Figure 8.

### 3.4.1 Area 1 - North of Orangeville and South of 10th Sideroad

This candidate area is generally located north of Orangeville and south of the 10th Sideroad. The western boundary is the Mono/Amaranth Townline. The eastern boundary roughly extends to the west half of Concession 2E and extends into the NEC Control Area. Portions of the Greenbelt’s Protected Countryside and Natural Heritage area are included within the southwest corner of this candidate area.

Although there were six EU’s north of Highway 10 that were originally identified as potential candidate prime agricultural areas (Figure 4), these EU’s were not included within the candidate prime agricultural area. This area was reviewed in detail by the LEAR Committee and based on their strong recommendations these lands were excluded. The rationale for this decision is based on:
3.4.5 Other Potential Candidate Prime Agricultural Areas

Following a review of the proposed candidate prime agricultural areas (Figure 6), the OMAFRA requested that other lands particularly in the north west of the Town of Mono be reconsidered for inclusion.

3.4.4 Area 4 - North East Corner

This candidate prime agricultural area is located in the northwest of the Town of Mono. The LEAR analysis only identified two EU's which had a LEAR score of 6.5 or higher (Figure 4). However the LEAR Committee concluded that five contiguous EU’s should be considered for inclusion.

The identified candidate area is consistent with the adjacent land use designations to the north (the Township of Mulmur) and east (the Township of Adjala-Tosorontino).

3.4.3 Area 3 - Mono Cliffs Area

This candidate area is located in the central portion of the Town of Mono. The eastern half of this area is located within the NEC Control Area. The two EU’s in the northeast corner of the area (lots 20 & 21) were squared off to the 5th Line EHS to form an easily identifiable boundary.

Although requested by the OMAFRA to consider including additional lands (17 & 18 and the half lots immediately east of 5th Line EHS), based on the strong recommendations from the LEAR Committee these lands were not included within the candidate prime agricultural area.

3.4.2 Area 2 - Camilla Area

The majority of this candidate area is located to the west and north of the Hamlet of Camilla. This area nicely abuts the Township of Amaranth’s prime agricultural area (see Figure 7). Lot 19, Concession 3W was included within the candidate prime agricultural area despite not achieving a threshold value of 6.5 or higher. It is surrounded by candidate prime agricultural areas on three sides and abuts the Town of Amaranth’s prime agricultural area.

Eight EU’s and portions of four others which did not have LEAR scores of 6.5 or greater were included by the LEAR Committee (Figure 5). Again their inclusion is based on their first-hand knowledge of these agricultural lands.

3.4.1 Area 1 - Town Centre

This candidate prime agricultural area is located in the Town Centre of Mono. The LEAR analysis only identified one EU which had a LEAR score of 8.8 or higher (Figure 4). However the LEAR Committee concluded that five contiguous EU’s should be considered for inclusion.

The identified candidate area is consistent with the adjacent land use designations to the north (the Township of Adjala-Tosorontino) and west (the Township of Mulmur). The Town Centre is not in agricultural production and is reverting to old meadow and scrubland.

Highway 10 will form a good, identifiable boundary between the rural lands to the north and agricultural lands to the south.

Unsuitable soil conditions. Based on first-hand knowledge the LEAR Committees determined that there are inconsistencies between the soil classification information and what they know of these lands;

the lands are not well suited to cultivation due to adverse topography, poor drainage, and discontinuous agricultural fields;

much of the area is not in agricultural production and is reverting to old meadow and scrubland; and

a mix of non-farm land uses including commercial uses.

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Figure 6
Draft LEAR candidate prime agriculture areas
Town of Mono
Figure 7
Official Plan Land Use Schedule for Adjacent Municipalities

Township of Amaranth Official Plan Designations:
- Agricultural
- Government/Excess
- Rural
- Residential/Commercial
- Commercial
- Canadian Border
- Ontario Boundary
- Thornhill Boundary
- Miscellaneous

Town of Mono Official Plan Designations:
- Agricultural
- Vacant (Not Zoned)
- Vacant (Zoned)
- Residential/Commercial
- Commercial
- Country Residential
- Commercial
- Residential
- Vacant (Not Zoned)
- Rural

Projection: UTM Zone 17
Datum: NAD 83
Map: Figure7-Mono-AmaranthOP.mxd
Prepared By: ZJJ
Print Date: December 16, 2010
Mapping Date: December 16, 2010
Project: MSO44F

Figure 8
Final LEAR candidate prime agriculture areas
Town of Mono
The LEAR Committee considered this request but could not find a good rationale to include any additional lands. The factors considered for not including additional lands which include:

- unsuitable soil conditions due to topography, poor drainage, stoniness, etc.;
- discontinuous agricultural fields and not feasible farmland;
- the presence of mixed commercial uses and non-farm residential development;
- the presence of several wayside pits in the area; and
- consistency with the Township of Amaranth land designations on abutting (see Figure 7).

### 3.5 Proposed Prime Agricultural Areas

Figure 9 shows the proposed land use Prime Agricultural Areas designation for the Town of Mono.
IDENTIFICATION OF PRIME AGRICULTURAL AREAS USING A LEAR METHODOLOGY FOR THE TOWN OF MONO
MAY 2011
Figure 9
Official Plan Land Use Including Prime Agricultural Lands
4.0 CONCLUSIONS

This study was carried out to comply with the MMAH request for the Town of Mono to identify its' prime agricultural areas and have these areas recognized in the Town’s Official Plan in order to conform to the 2005 Provincial Policy Statement (PPS).

The LEAR methodology was designed specifically for the Town of Mono and recognizes the limitations for agriculture in the Town. The study determined that the amount of high capability soils (CLI Classes 1-3) is relatively small due to the Town’s physiography. Therefore the LEAR strengthened the LE component making it worth 70% of the total LEAR score. This in effect gave those evaluation units containing higher capability soil a higher potential for being included within the prime agricultural area.

Using the LEAR methodology developed for the Town of Mono and the input and guidance provided by the OMAFRA and the LEAR Committee, four candidate prime agricultural areas were identified. It is recommended that these four areas be considered for the Town of Mono’s Prime Agricultural Areas designation.

This report was prepared by:

Sean Colville, B.Sc., P.Ag.
Colville Consulting Inc.
5.0 LITERATURE CITED


Appendices
Appendix A

List of Acronyms
IDENTIFICATION OF PRIME AGRICULTURAL AREAS USING A LEAR METHODOLOGY FOR THE TOWN OF MONO
MAY 2011

LEAR - Land Evaluation and Area Review
LE - Land Evaluation
AR - Area Review
EU - Evaluation Unit
OMAFRA - Ontario Ministry of Agriculture, Food and Rural Affairs
MMAH - Ministry of Municipal Affairs and Housing
MNR - Ministry of Natural Resources
PPS - Provincial Policy Statement
ALES - Agricultural Land Evaluation System
CLI - Canada Land Inventory
GTA - Greater Toronto Area
NRVIS - Natural Resources and Values Information System
ha - hectare
m - meter
NEC - Niagara Escarpment Commission
GIS - Geographical Information System
PAA - Prime Agricultural Areas

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Appendix C

Data Sources
LEAR Study Data Limitations and Assumptions

Soils Data
- Dufferin County soils survey mapping data was dated from 1964
- The provincial soils resource database did not provide correct CLI values with respect to corresponding slope information
- Each of the soil polygons slope values were reviewed and CLI values were corrected accordingly

Evaluation Unit
- Was established to be a lot and concession boundary
- Boundary discrepancies found to exist between parcel fabric and evaluation unit
- Lot and concession boundaries included road right of ways where parcel fabric, zoning and official plan did not slightly affecting the area of the unit
- Road right of ways were treated as voids in the LEAR analysis

Parcel Fabric, Zoning and Official Plan
- Data continuously going through updates that may not have been reflected in the final LEAR values
- Implementing these updates would have meant starting the analysis over each time an update was made

Aerial Imagery
- Dated from 2008
- Used for verification of ground features limited to the date of production

Wooded Areas
- Dated from 2002
- Classification of woodland types treed and plantation were considered as non agricultural lands in Area Review calculations

LE Factors
- Soil Capability Class (CLI) and evaluation unit was used to help identify suitable agricultural lands

AR 1 & 2 Factors
- MNR NRYIS, Town of Mono Zoning and Official plan data was used to help identify areas in agricultural production

AR 3 - 5 Factors
- Town of Mono parcel fabric, data was used to help identify conflicting land uses degree of fragmentation and agricultural parcel size
## Data References

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