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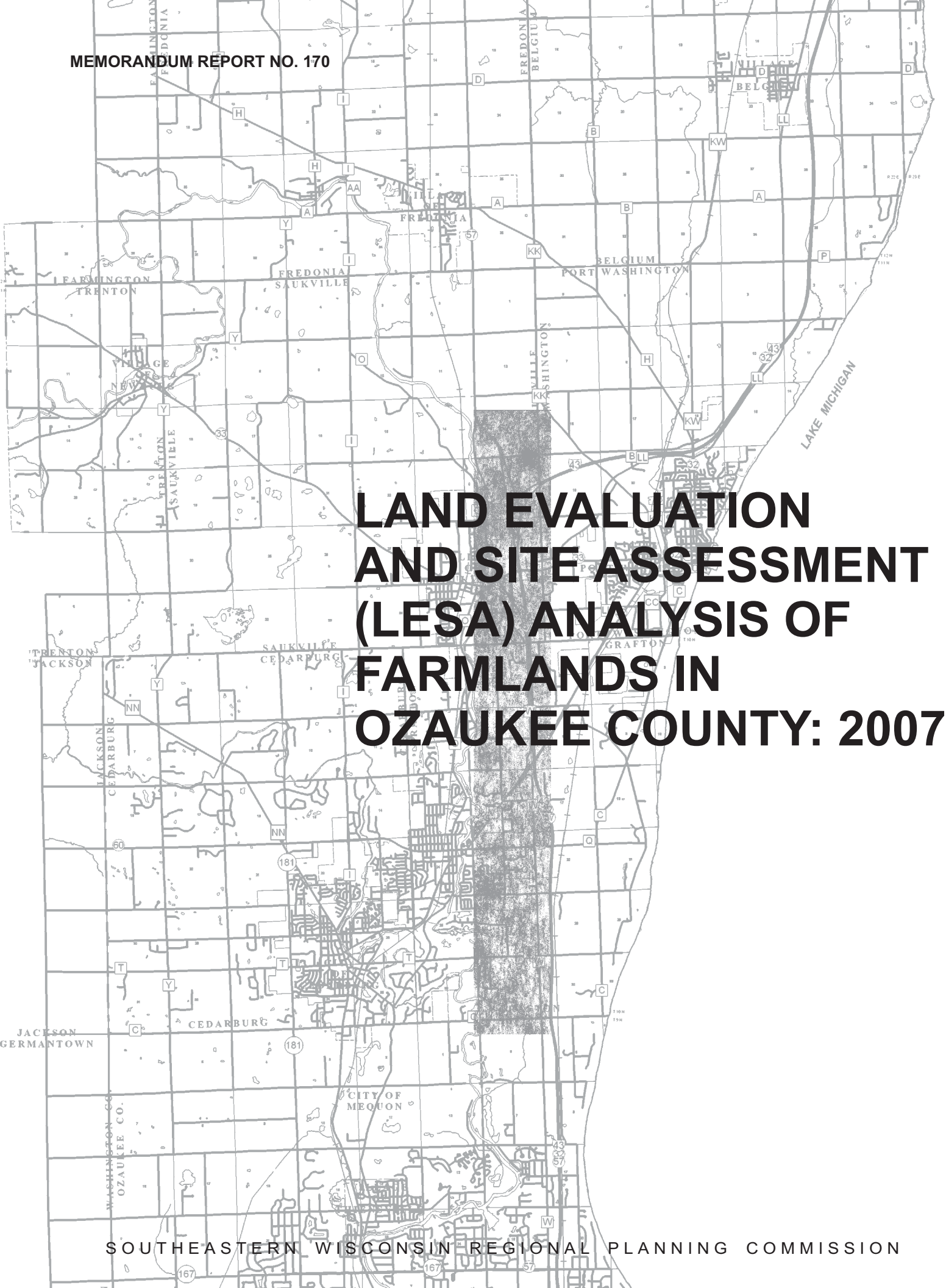

LAND EVALUATION AND SITE ASSESSMENT (LESA) ANALYSIS OF FARMLANDS IN OZAUKEE COUNTY: 2007

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Special acknowledgment is due Paul J. Clavette, SEWRPC Principal Systems Analyst, and Michael G. Gosetti, SEWRPC GIS Supervisor, for their efforts in conducting the LESA analysis.

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MEMORANDUM REPORT NO. 170

LAND EVALUATION AND SITE ASSESSMENT (LESA) ANALYSIS OF FARMLANDS IN OZAUKEE COUNTY: 2007

Prepared by the

Southeastern Wisconsin Regional Planning Commission

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Analysis conducted in cooperation with the Ozaukee County Department of Planning, Resources, and Land Management and the USDA-Natural Resources Conservation Service.

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SEWRPC Memorandum Report No. 170

Land Evaluation and Site Assessment (LESA) Analysis of Farmlands in Ozaukee County: 2007

INTRODUCTION AND PURPOSE

Ozaukee County, working with the USDA – Natural Resources Conservation Service (NRCS) and the Southeastern Wisconsin Regional Planning Commission (SEWRPC), conducted an analysis of farmlands in the County in 2006 and 2007. The analysis was conducted as part of the multi-jurisdictional comprehensive planning process for Ozaukee County, a joint cooperative planning process among the County; 14 cities, towns, and villages; SEWRPC; and UW-Extension. This document describes the LESA analysis conducted for Ozaukee County, including the LESA committee, the factors analyzed, the scales and weights assigned to each factor, a statistical analysis of preliminary results and resulting adjustments to the analysis, and final LESA scores.

The NRCS developed the Land Evaluation and Site Assessment (LESA) system in 1981. LESA is an analytical tool designed to provide a systematic and objective procedure for rating and ranking the agricultural importance of a parcel. The system combines soil science aspects (the land evaluation component) with non-soil factors relating to agricultural productivity, development pressure, and factors measuring other public values (collectively referred to as site assessment components). The results of the Ozaukee County analysis are intended to be used by County and local governments to help identify areas that should be designated for farmland protection in County and local comprehensive plans.

LESA is a system designed to aid Town Board members, plan commissioners, and other County and local officials to make decisions about farmland protection. LESA is intended to be an objective tool to evaluate farm parcels as part of a larger decision-making process. It is not intended to be the only tool used to identify parcels that are most suitable for long-term agricultural use. Local land use decisions should be based on a combination of local knowledge and expertise, together with available technical data, including the results of the LESA analysis. Local officials should consult other information developed as part of the comprehensive planning process, particularly information related to existing land uses, environmentally sensitive areas, and natural limitations to building development, together with the results of the LESA analysis, when developing the Land Use and Agricultural, Natural, and Cultural Resources elements of local comprehensive plans.

The results of the LESA analysis have been provided to the Towns of Belgium, Cedarburg, Fredonia, Grafton, Port Washington, and Saukville and to the City of Mequon for their consideration in preparing the Land Use and Agricultural, Natural, and Cultural Resources elements of their local comprehensive plans. The results of the analysis were also provided to the work groups and advisory committees overseeing preparation of the Ozaukee County comprehensive plan for incorporation into the plan; and to cities and villages participating in the multi-jurisdictional planning process. City and village officials were encouraged to review the results of the LESA analysis when preparing the land use element of their comprehensive plans, and consider directing future expansion of the city or village away from areas that received high LESA scores.

LESA SYSTEM

A complete description of the LESA system is provided in the Land Evaluation and Site Assessment Guidebook[1] (available at http://www.nrcs.usda.gov/programs/lesa/LESA%20Guidebook.pdf). The LESA system includes the following steps:

- Appointing a LESA committee
- Specifying one or more factors measuring soil quality for the Land Evaluation component
- Specifying another set of factors relating to non-soil site conditions for the Site Assessment component
- Developing a rating scale for each factor
- Assigning a weight to each factor
- Tallying the weighted factor ratings to obtain a LESA score for each parcel
- Preparing score thresholds for decision making

OZAUKEE COUNTY LESA ANALYSIS

The Ozaukee County LESA analysis was conducted using the SEWRPC Geographic Information System (GIS). Data was developed for the LE component and for each of the site assessment (SA) factors, which were entered into the GIS. A computer program was then developed to score and weight each parcel, based on the LE and SA factors and weights developed by the LESA committee (and reviewed and approved by comprehensive planning work groups and advisory committees) to determine a final LESA score for each parcel.

The first step in the analysis was to identify the parcels to be analyzed. Parcels within a planned sewer service area were excluded from the analysis. The planned sewer service area refers to areas that are planned to be included in a sewer service area, and served with public sanitary sewers, by the year 2020, based on sewer service area plans approved as of January 15, 2007. Parcels with less than 2 percent of the parcel in agricultural use in 2006 were also excluded from the analysis. A total of 3,620 parcels were analyzed. The analysis was based on County parcel maps current as of January 15, 2007. Parcels included in the LESA analysis are shown on Map 1.

LESA Committee

A LESA Technical Advisory Work Group was formed to develop the LESA system for Ozaukee County. Members of the work group are listed in Figure 1. The Work Group met on September 28 and November 1, 2006, and on February 7 and March 7, 2007.

The work group conducted all of the tasks listed in the preceding section, except for developing score thresholds for decision making. Recommended score thresholds were determined by the Comprehensive Planning Citizen Advisory Committee for the County comprehensive plan, and by each local government as part of the local comprehensive plans.

Land Evaluation Component

For the land evaluation (LE) component, soils in Wisconsin were rated by the NRCS and placed into groups ranging from the best to the least suited for cropland. Soils were rated based on soil type, slope, agricultural capability class (see Appendix A), and soil productivity for producing corn and soybeans. A relative value was then determined for each soil type. The NRCS provided LE values for soils in Ozaukee County based on LE values for all soil types in Wisconsin. The LE values were "normalized" for Ozaukee County as part of the

[1] *James R. Pease and Robert E. Coughlin*, Land Evaluation and Site Assessment: A Guidebook for Rating Agricultural Lands, *2nd* edition, *published by the Soil and Water Conservation Society, Ankeny, Iowa.*

Map 1

PARCELS INCLUDED IN THE LESA ANALYSIS FOR OZAUKEE COUNTY

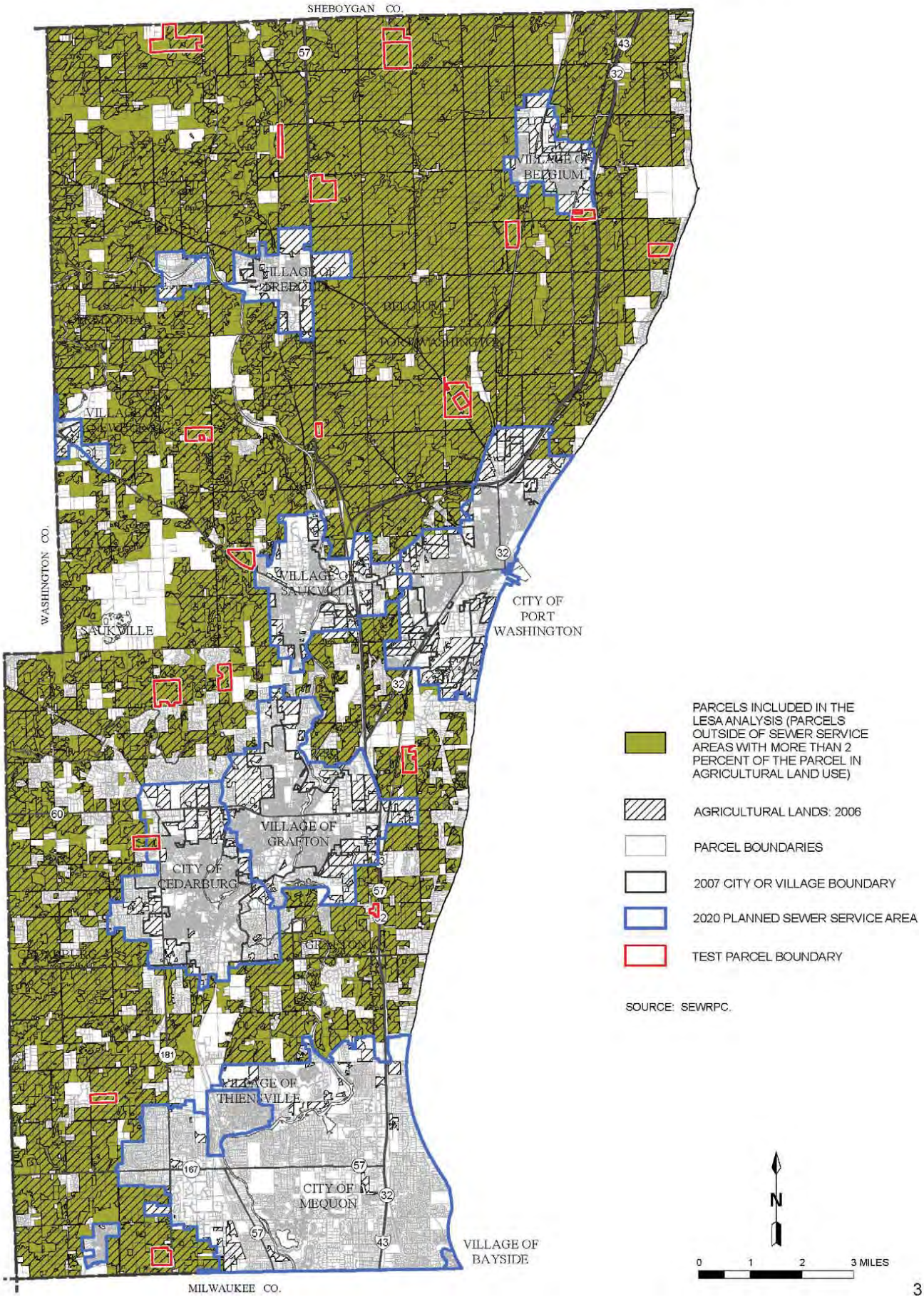


Figure 1

MEMBERS OF THE OZAUKEE COUNTY LESA TECHNICAL ADVISORY WORK GROUP

Work Group Members:

Kenneth Albinger	Farmer (Saukville) and Ozaukee County Farm Bureau
Dale Buser	Northern Environmental
Angie Curtes	Ozaukee Washington Land Trust
Coreen Fallat	Department of Agriculture, Trade, and Consumer Protection
Betsy Gillen	USDA – Natural Resources Conservation Service
Shawn Graff	Ozaukee Washington Land Trust
Don Hamm	Dairy Farmer (Fredonia) and President of National Farmers Organization (NFO)
Jim Kadow	Saukville Town Chairman
Otto Kohlwey	Ozaukee County Citizen/Retired Farmer (Grafton/Cedarburg)
Michelle Lehner	Department of Natural Resources – Milwaukee River Basin
Dan Lynch	Wings over Wisconsin
Sue Millen	Land Conservation Partnership
Larry Natzke	USDA – Natural Resources Conservation Service
Bill Niehaus	County Board Supervisor and Saukville Town Supervisor
Gail Epping Overholt	UW-Extension, Milwaukee River Basin Educator
Victor Pappas	Department of Natural Resources – Sheboygan River Basin Leader
Mike Paulus	Dairy Farmer (Fredonia)
Kent Pena	USDA – Natural Resources Conservation Service
John D. Pipkorn	Farmer (Mequon)
Patricia Stone	Metropolitan Builders Association
Kevin Traastad	USDA – Natural Resources Conservation Service

Staff:

Nancy Anderson	Southeastern Wisconsin Regional Planning Commission (SEWRPC)
Jeff Bell	Ozaukee County Department of Planning, Resources, and Land Management (PRLM)
Paul Clavette	SEWRPC
Andy Holschbach	Ozaukee County PRLM
Ben McKay	SEWRPC
Dan O'Neil	UW-Extension, Ozaukee County – Agricultural Agent
Paul Roback	UW-Extension, Ozaukee County
Andrew Struck	Ozaukee County PRLM

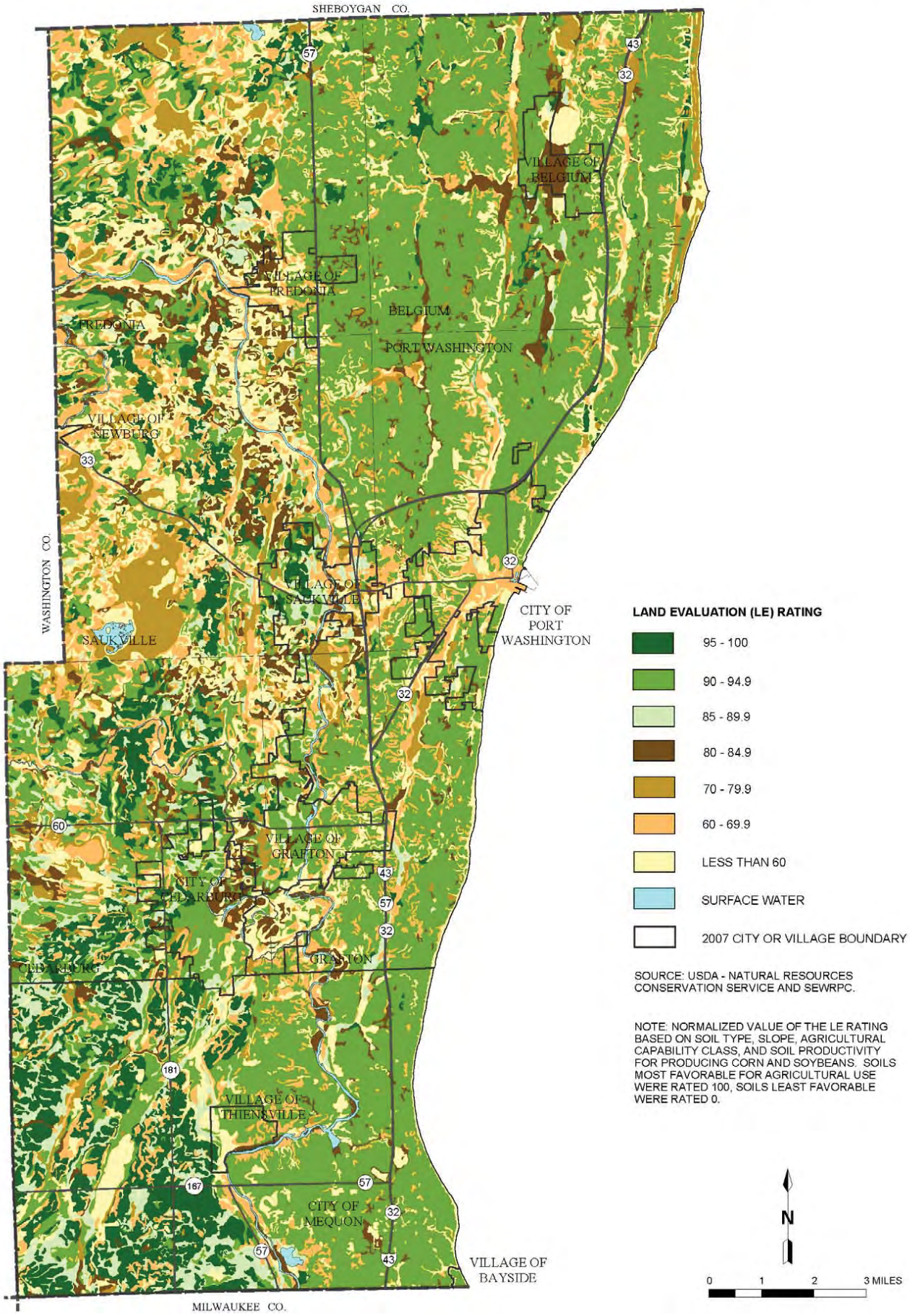
Invited Members (but did not participate at meetings):

Charles Bichler	Belgium Town Supervisor/Farmer
Rick Flood	Solutions in Sustainability, LLC
Sharon Gayan	Department of Natural Resources – Milwaukee River Basin Leader
Jill Hapner	Wisconsin Wetlands Association/Citizen Advisory Committee Member
Bill Hoppe	City of Mequon, City Engineer
Dale Katsma	DNR North Branch Milwaukee River Wildlife and Farming Heritage Area
Tim Kaul	Ulao Creek Partnership/Farmer (Grafton)
Andrew Large	Farmer (Port Washington)
Lance Leider	Fredonia Town Supervisor/Farmer (Belgium/Fredonia)
Steven Lenz	US Fish & Wildlife Service
Jim Melichar	Port Washington Town Supervisor/Farmer
Jeff Opitz	Farmer (Saukville)
Lee Schlenvogt	Port Washington Town Chairman/Farmer
Katherine Smith	Milwaukee River Basin Partnership/ Citizen Advisory Committee Member
Kim Tollefson	City of Mequon, Director of Community Development
Andy Walsh	Kettle-Lakes Cooperative
Marc White	Riveredge Nature Center

LESA analysis, meaning that the best soils in the County were assigned a value of 100, and all other soil types were assigned lower values. LE values for land in Ozaukee County based on soil type are shown on Map 2. To simplify the LESA analysis, an average LE score was determined for each parcel included in the analysis. Average LE scores for each parcel are shown on Map 3.

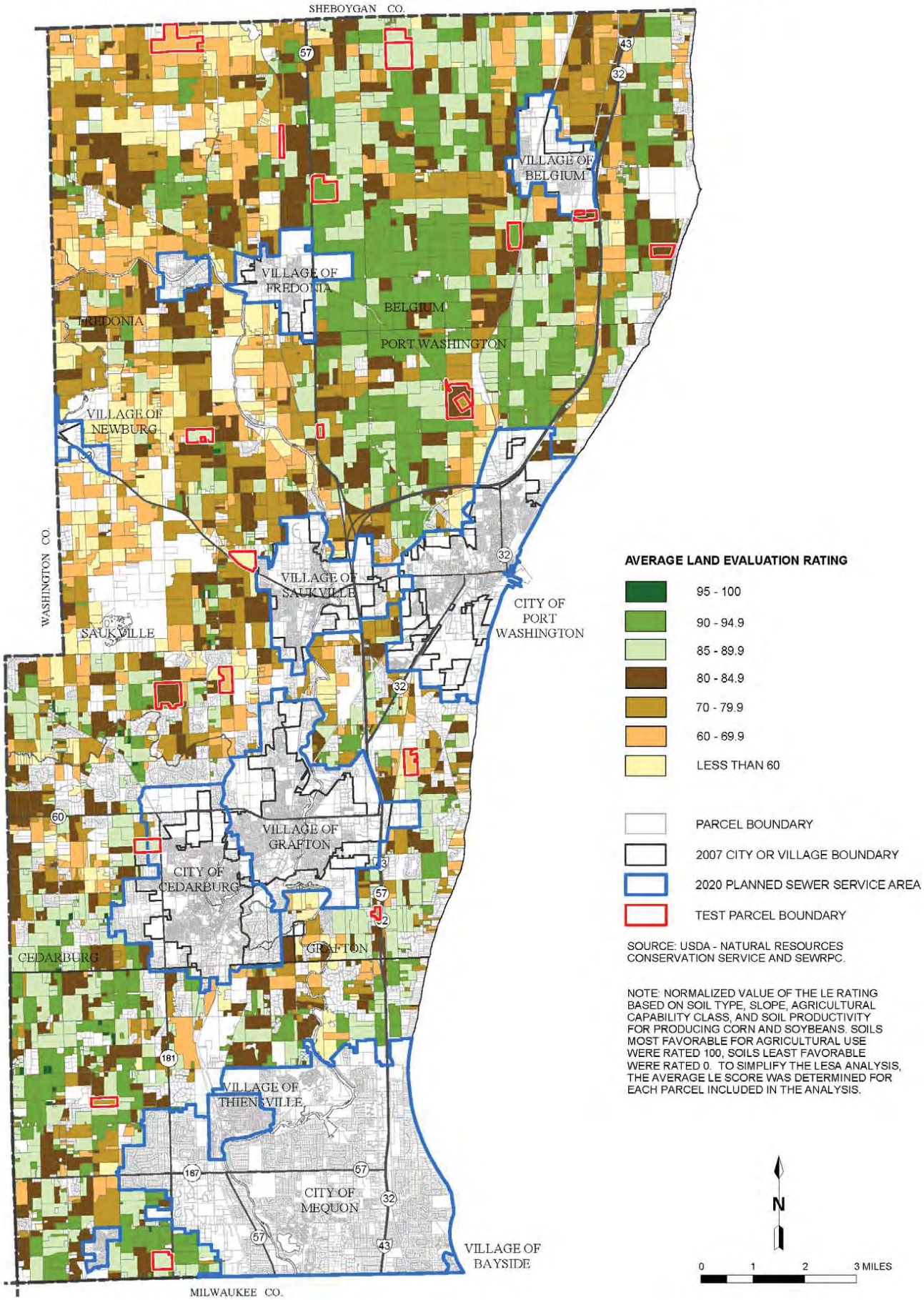
Map 2

LAND EVALUATION RATINGS FOR AGRICULTURAL USE BY SOIL TYPE IN OZAUKEE COUNTY



Map 3

AVERAGE LAND EVALUATION RATINGS FOR AGRICULTURAL USE FOR PARCELS INCLUDED IN THE LESA ANALYSIS FOR OZAUKEE COUNTY



Site Assessment Component

The Site Assessment (SA) component rates non-soil factors affecting a parcel's relative importance for agricultural use. SA factors are grouped into the following three categories:

- SA-1 factors measure non-soil characteristics related to potential agricultural productivity
- SA-2 factors measure development or conversion pressures on a parcel
- SA-3 factors measure other public values of a parcel, related to historic, cultural, scenic, or environmental values

The LESA Technical Advisory Work Group selected the following eleven SA factors from a larger list of potential data layers for site assessment factors to be used in the Ozaukee County LESA analysis:

- **SA-1 factors (agricultural productivity)**
  SA-1A. Size of parcel in agricultural use
  SA-1B. Size of contiguous agricultural land block
  SA-1C. Compatibility of adjacent land uses
  SA-1D. Compatibility of land uses within 0.5 mile
  SA-1E. Population density within 0.5 mile

- **SA-2 factors (development pressures impacting continued agricultural use of a parcel)**
  SA-2A. Distance from planned sewer service areas (2020 design year)
  SA-2B. Distance from IH 43 interchanges

- **SA-3 factors (other public values of a parcel)**
  SA-3A. Primary or secondary environmental corridor, isolated natural resource area, natural area, or critical species habitat present on parcel[2]
  SA-3B. Wetlands less than five acres or floodplains present on parcel[3]
  SA-3C. Proximity to permanently protected land greater than 20 acres in size
  SA-3D. Parcel has been placed on the National Register of Historic Places, designated as a local historic landmark, or is adjacent to a rustic road

Data Limitations

There were some data limitations that affected the SA factors that could be used in the analysis. The most problematic limitation was a lack of final data indicating which agricultural fields were owned and/or cultivated by one farm operator. In many cases, a farmer may own and operate a relatively small farm, but rent nearby land on which he cultivates crops or uses as pasture. Although the Farm Services Administration (FSA) is in the process of assembling this data, it was not in final form at the time of the LESA analysis. There were additional concerns regarding the correlation of the FSA data to County cadastral mapping, and whether the County and SEWRPC would be able to use the data because of Federal restrictions on data use due to privacy concerns. The LESA Technical Advisory Work Group addressed this issue by choosing to include the size of contiguous areas in agricultural use (SA-1B) in the analysis.

---

[2] *Primary and secondary environmental corridors, isolated natural resource areas, natural areas, and critical species habitat sites are identified by SEWRPC as part of its regional planning program. Primary and secondary environmental corridors and isolated natural resource areas were inventoried in 2000. Natural areas and critical species habitat sites were inventoried in 1994.*

[3] *Wetlands were identified by SEWRPC as part of the regional land use inventory conducted in 2000, and updated in 2006. Floodplains used for the analysis were the preliminary floodplains identified by the Wisconsin Department of Natural Resources (DNR) in 2006 as part of the FEMA/DNR Map Modernization Program.*

A second major concern arose over the means of measuring the size of contiguous agricultural blocks. Because the analysis used the County cadastral maps, which show all parcel and street right-of-way lines, it was not possible to merge contiguous blocks of agricultural lands when they were separated by a street right-of-way. Although rights-of-way could not be removed from the analysis, the impact was moderated to some degree because of the lack of a dense street network in areas of the County that are predominately agricultural, and the uniformity with which the right-of-way separations were applied.

Other desirable SA criteria that could not be used because the data was not readily available included conservation practices used and agriculturally-related investments on a parcel.

Rating Scale for SA Factors

Once the LESA Technical Advisory Work Group determined the SA factors to be used, they developed a rating scale for each factor. A rating scale from 0 to 10 points was developed for each SA factor, with less desirable attributes or conditions receiving a lower score and more desirable attributes receiving a higher score. For example, for the SA-1C factor (compatibility of adjacent land uses), an agricultural parcel completely surrounded by residential or other urban uses received 0 points, and an agricultural parcel completely surrounded by farmland received 10 points.

Appendix B sets forth the factors and rating scales used in the LESA analysis. The source of the data used is also listed. Maps 4 through 14 present the results of each factor analysis.

Factor Weights

The LESA system recognizes that some of the factors used to rank agricultural parcels are more important than others. To account for this, the LE value and each SA factor were assigned a relative weight. The weights add up to one, in order to ensure that each factor is weighted in relation to other factors (in other words, if one factor is weighted high, another factor has to be given a lower weighting to compensate).

The LESA Technical Advisory Work Group originally assigned the LE (soil productivity) component a weight of 0.34, or about one-third of the total weight. The remaining 0.66 weighting "points" were divided among the 11 SA factors. Each SA factor was considered and assigned a high, medium, or low priority. Factors rated high received a weight of 0.09 points, factors rated medium received a weight of 0.06 points, and factors rated low received a weight of 0.03 points. These weights were adjusted based on a statistical analysis of the original LESA results.

Testing of Preliminary Results and Revised LESA Analysis

Ozaukee County staff conducted a statistical analysis of the first LESA analysis to help determine the validity of the results. The SA-3 factors, in particular, were a source of discussion and debate. SA-3 criteria are intended to measure public values other than the value of a parcel for agricultural use. Such values are typically related to natural resources such as wetlands, floodplains, and woodlands, or cultural values such as parks or historic sites. SA-3 factors contribute to the value of retaining a parcel in agricultural use or in open space to help protect the natural or cultural resources on the parcel. However, natural and cultural resources are not agricultural uses, and may skew the results of a LESA analysis if too many non-agricultural factors are used or if such factors are weighted too heavily.

A summary of the statistical analysis is presented in Appendix C.[4] The analysis of the initial LESA results indicated that the SA-3 factors are not good indicators of the potential for agricultural productivity, based primarily on the negative relationship between SA-3 factors and the Land Evaluation (soil quality) value. A particularly strong negative relationship was established between the Land Evaluation value and the SA-3A factor (percentage of an agricultural parcel located in an environmental corridor, isolated natural resource area, natural area, or critical species habitat site).

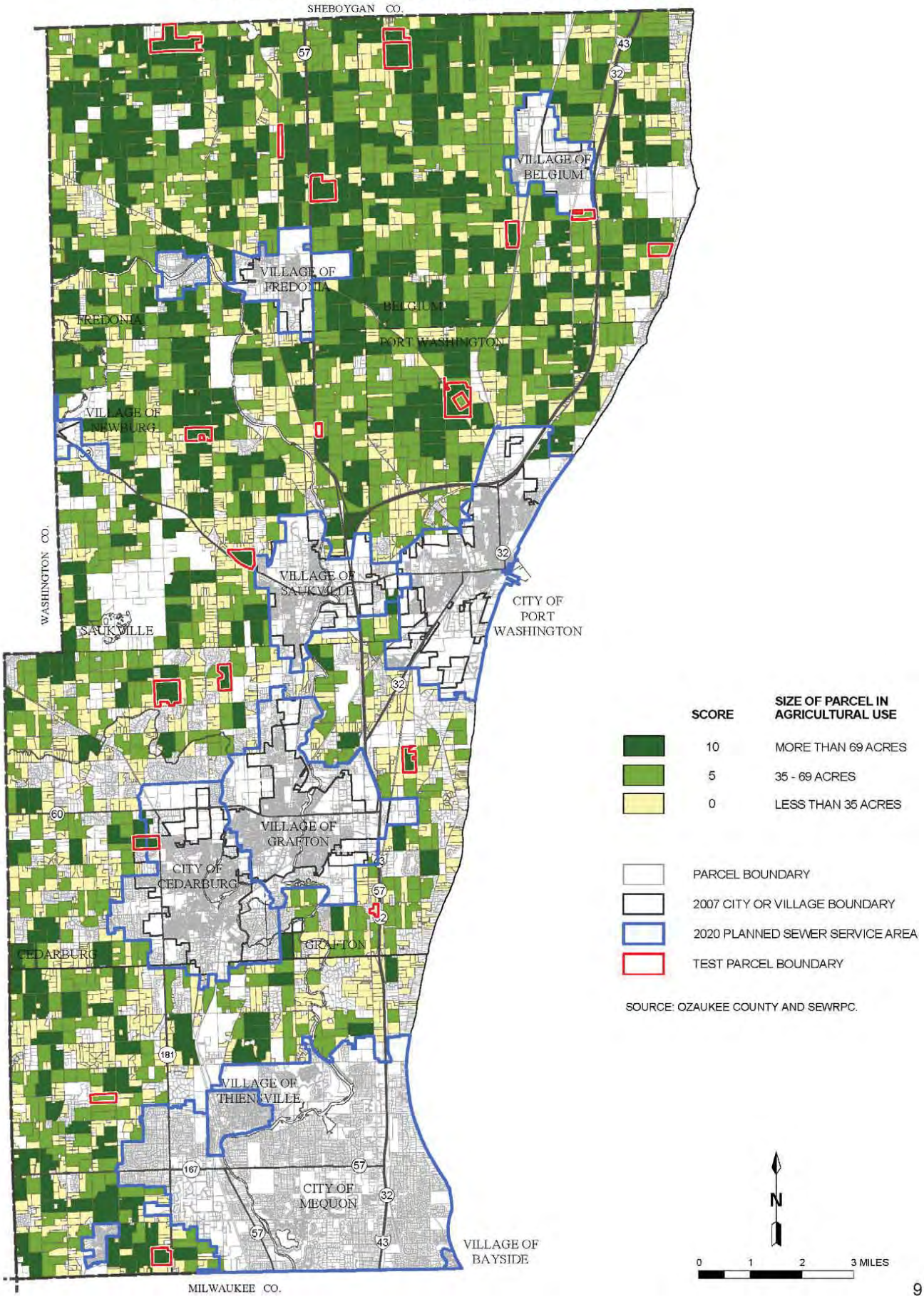
---

[4] *The statistical analysis was conducted in May and June of 2007 by Nicole Sidoff, a planning intern with the Ozaukee County Department of Planning, Resources, and Land Management.*

Map 4

SIZE OF PARCEL IN AGRICULTURAL USE

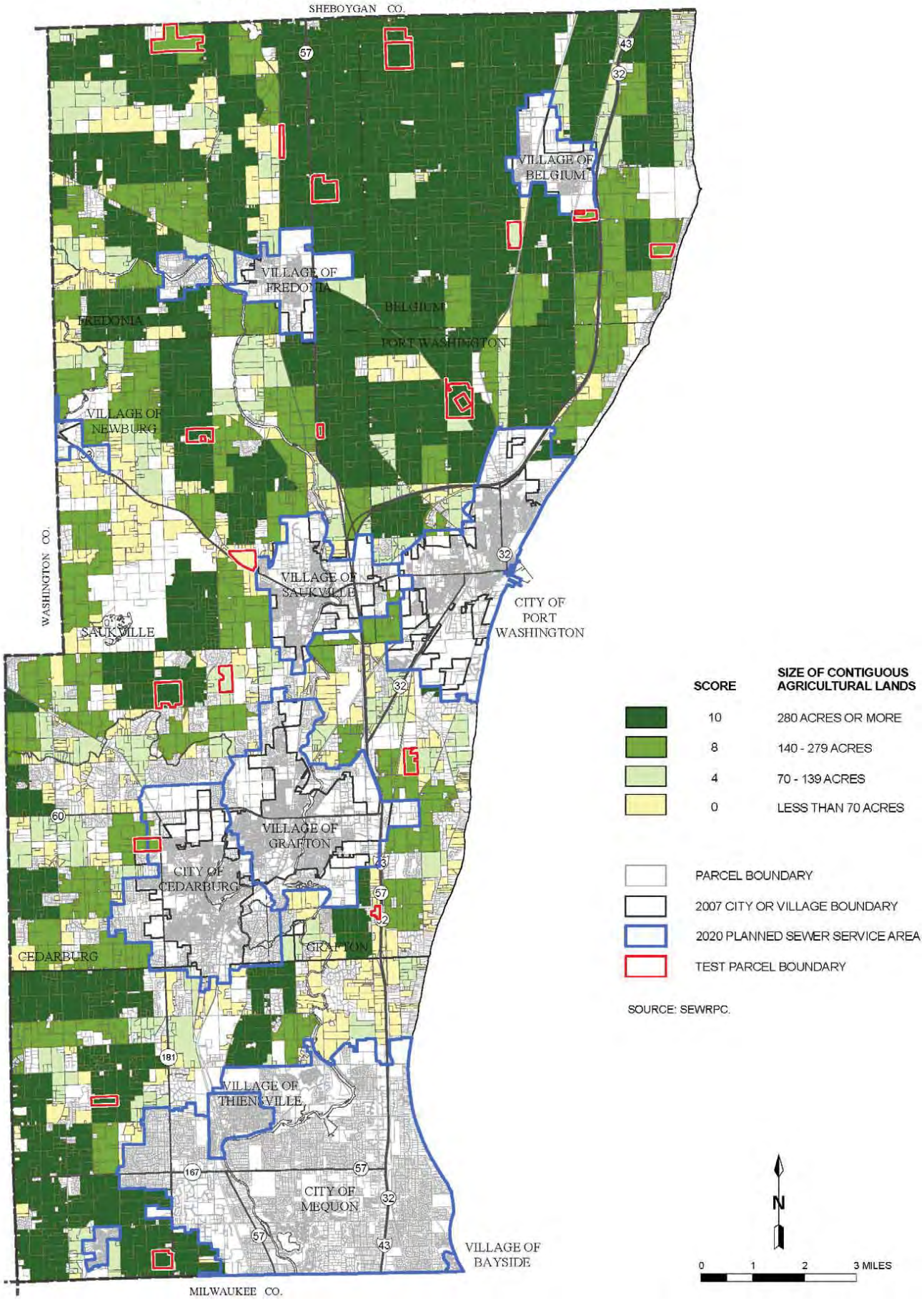
Ozaukee County LESA Analysis: SA - 1A Factor



Map 5

SIZE OF CONTIGUOUS AGRICULTURAL LANDS

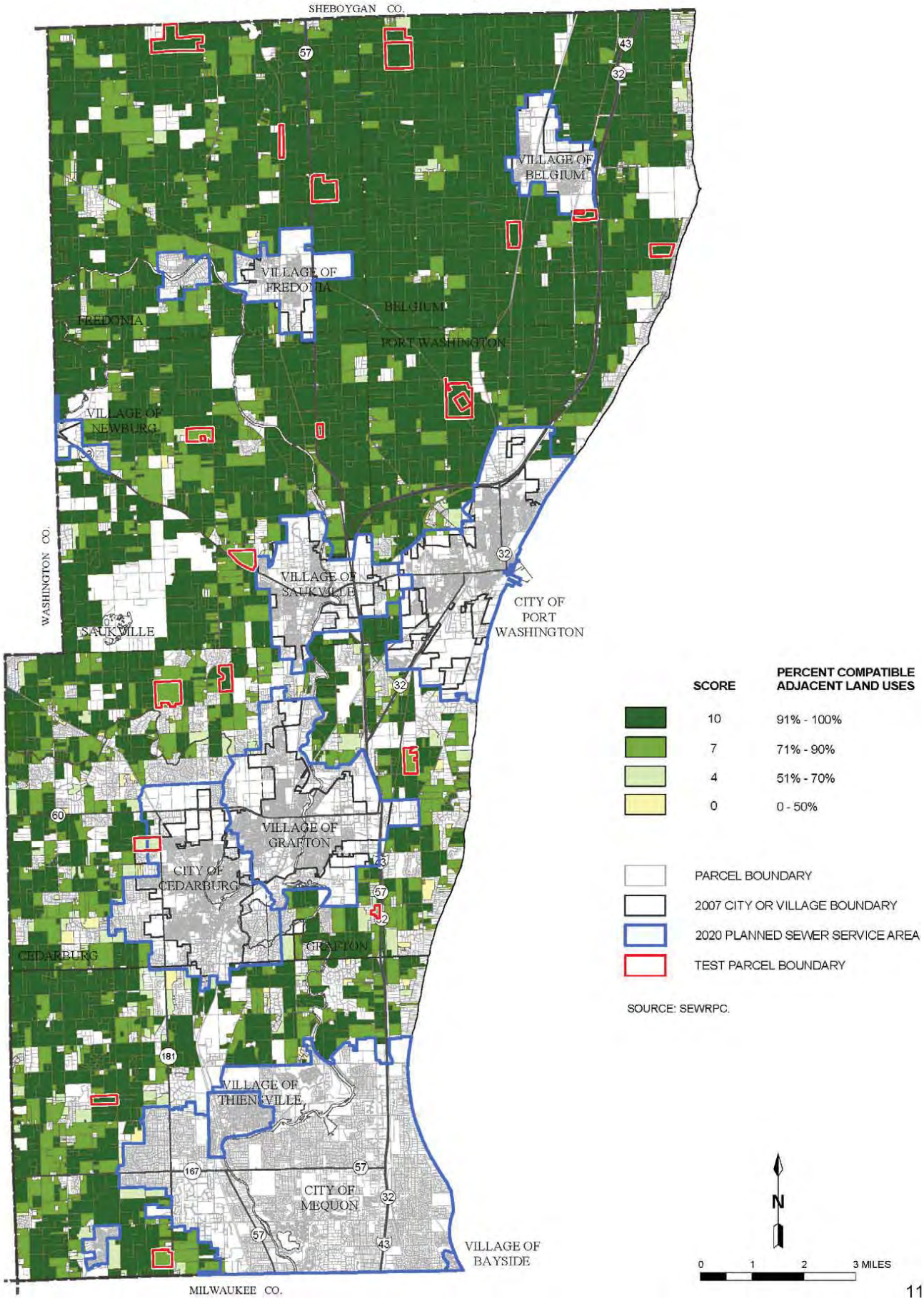
Ozaukee County LESA Analysis: SA - 1B Factor



Map 6

COMPATIBILITY OF ADJACENT LAND USES

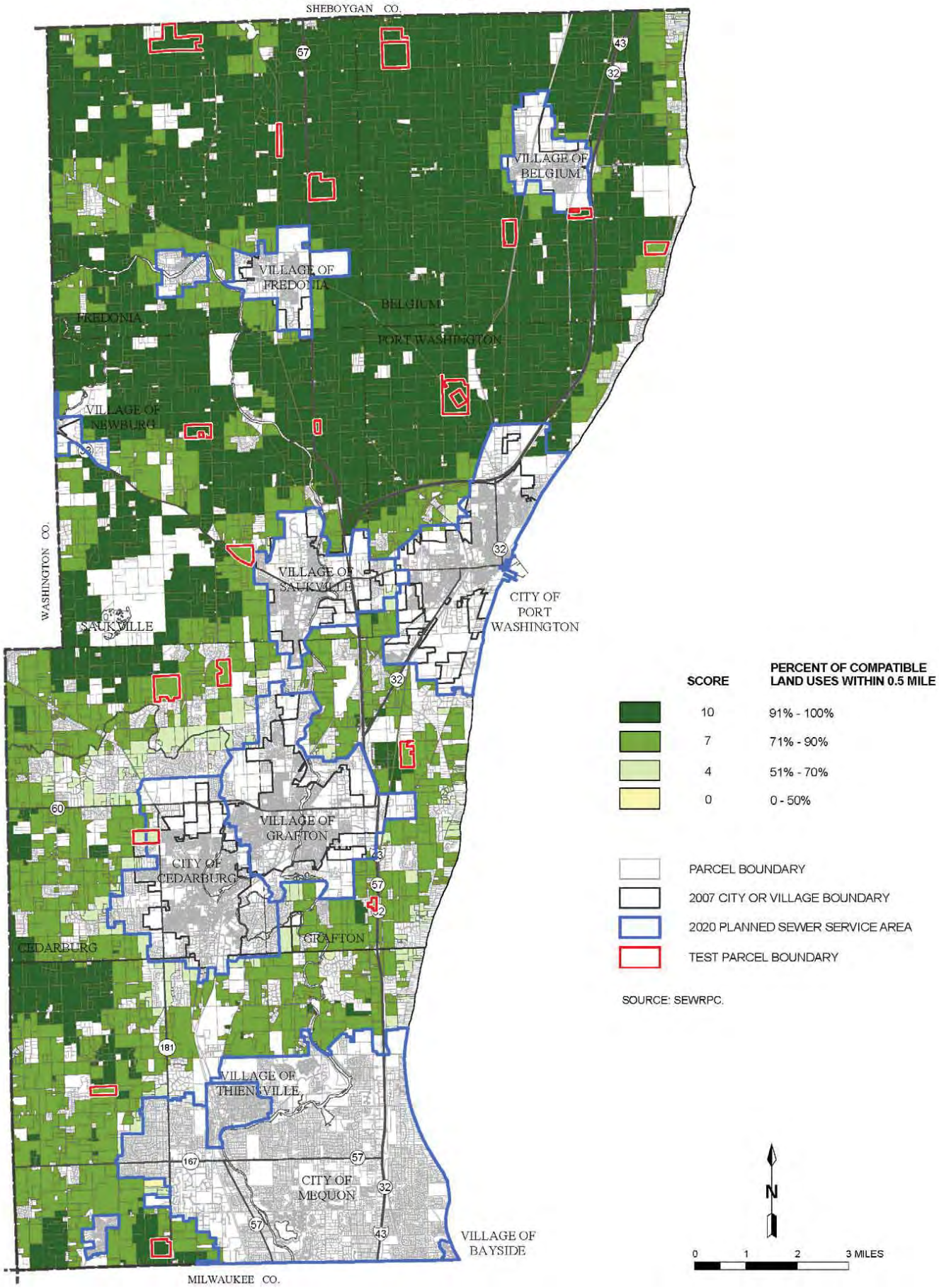
Ozaukee County LESA Analysis: SA - 1C Factor



Map 7

COMPATIBILITY OF LAND USES WITHIN 0.5 MILE

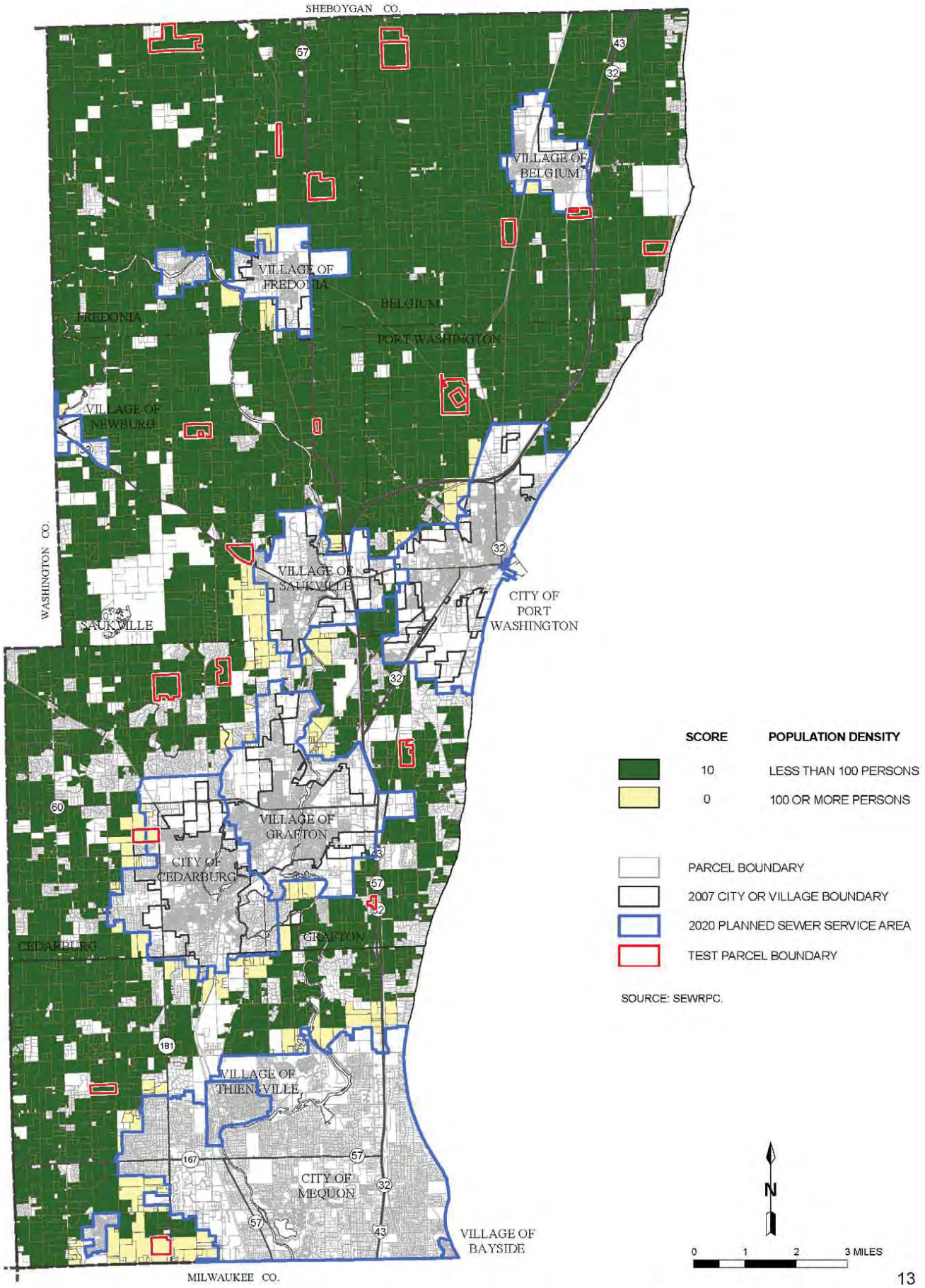
Ozaukee County LESA Analysis: SA - 1D Factor



Map 8

POPULATION DENSITY WITHIN 0.5 MILE

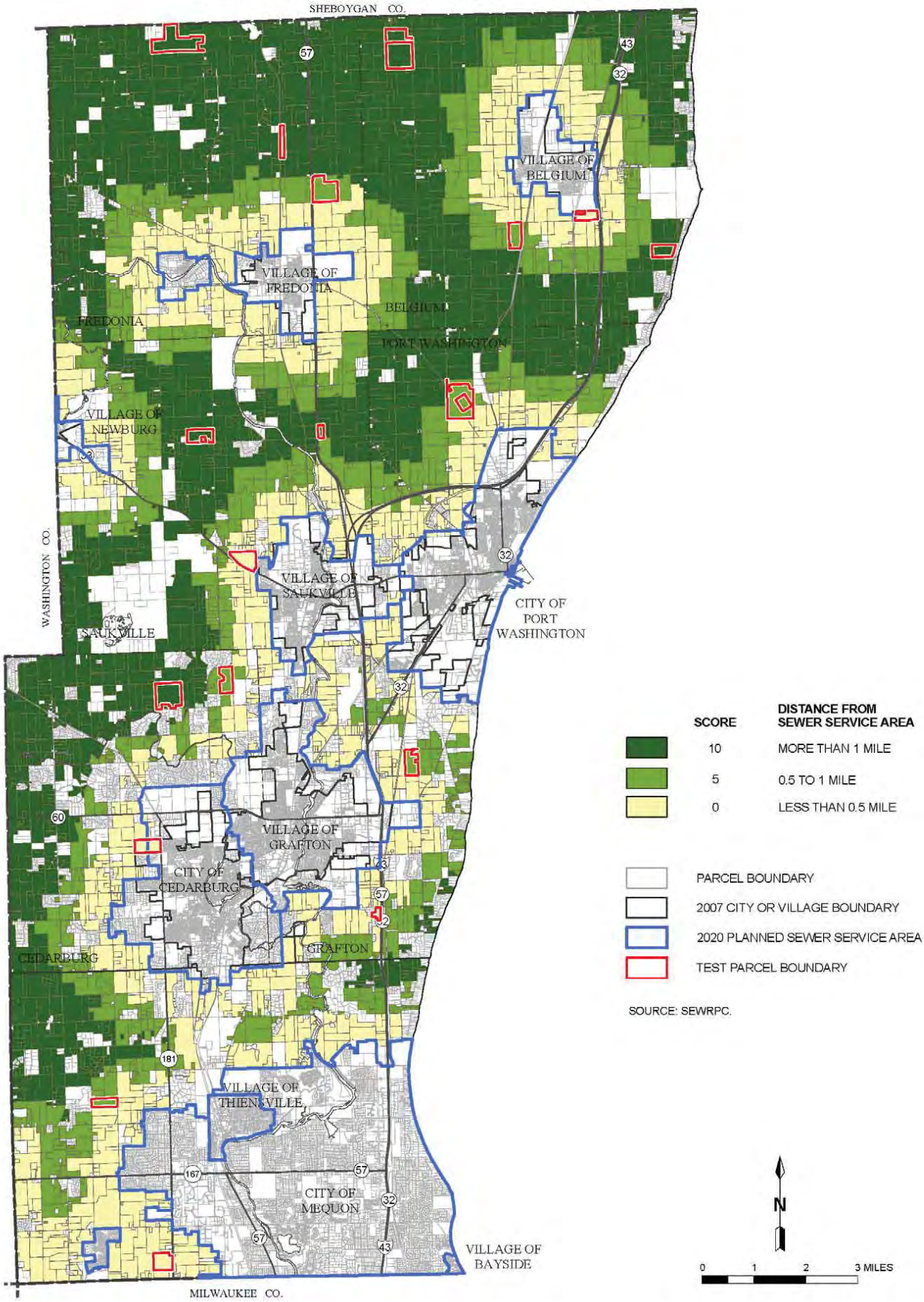
Ozaukee County LESA Analysis: SA - 1E Factor



Map 9

DISTANCE FROM PLANNED SEWER SERVICE AREA

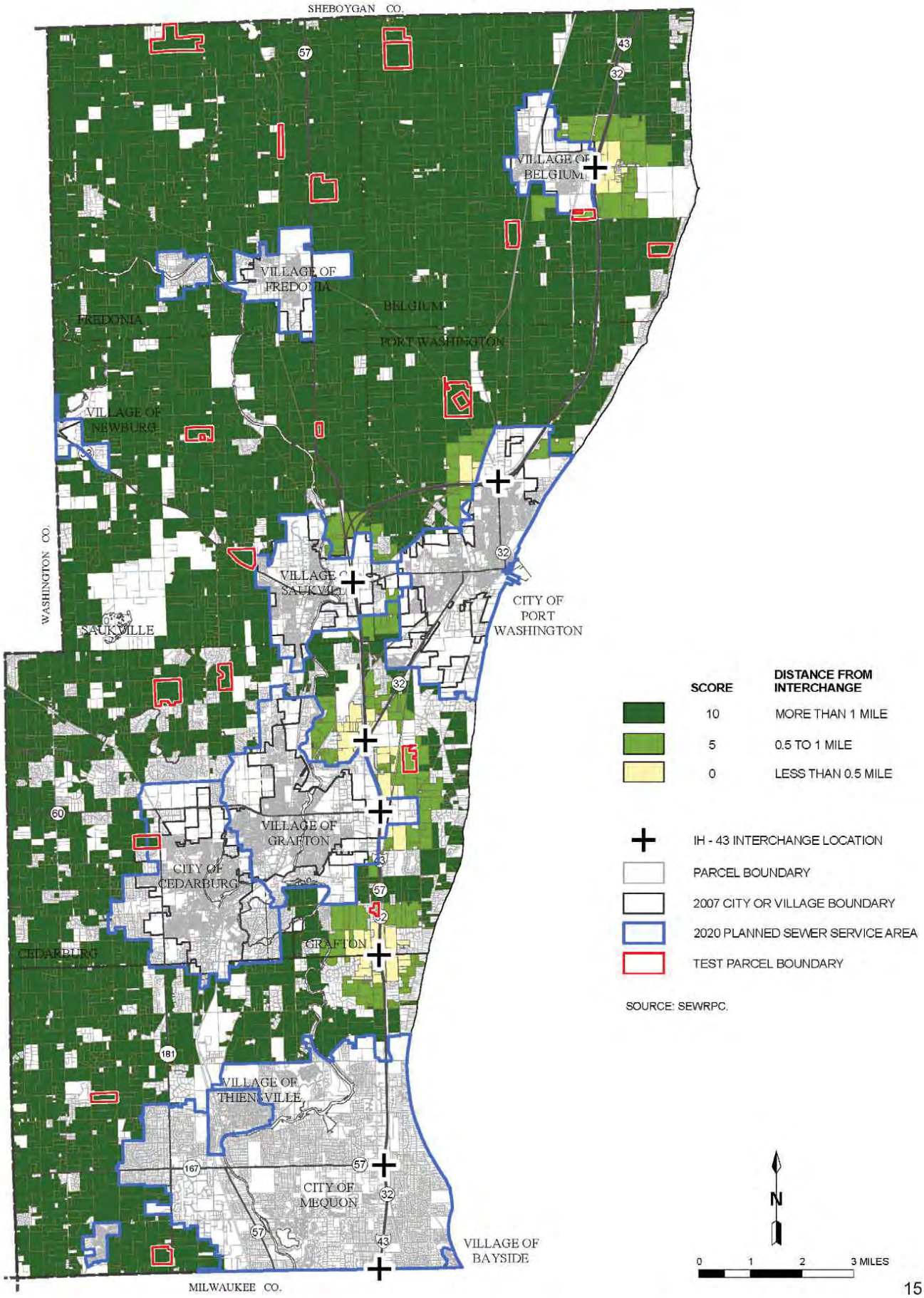
Ozaukee County LESA Analysis: SA - 2A Factor



Map 10

DISTANCE FROM INTERSTATE HIGHWAY 43 INTERCHANGES

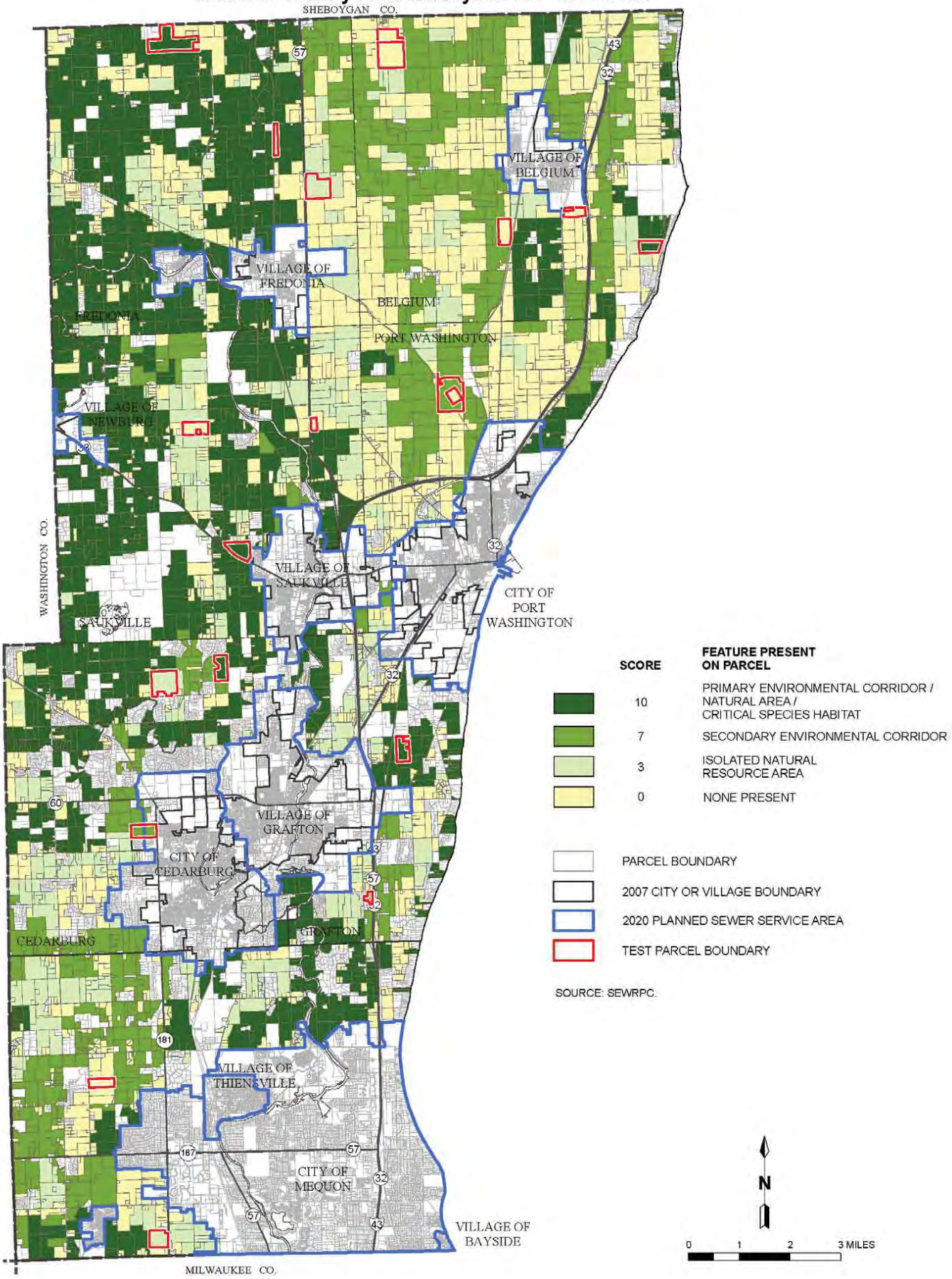
Ozaukee County LESA Analysis: SA - 2B Factor



Map 11

PRESENCE OF PRIMARY OR SECONDARY ENVIRONMENTAL CORRIDORS, ISOLATED NATURAL RESOURCE AREAS, NATURAL AREAS, OR CRITICAL SPECIES HABITAT

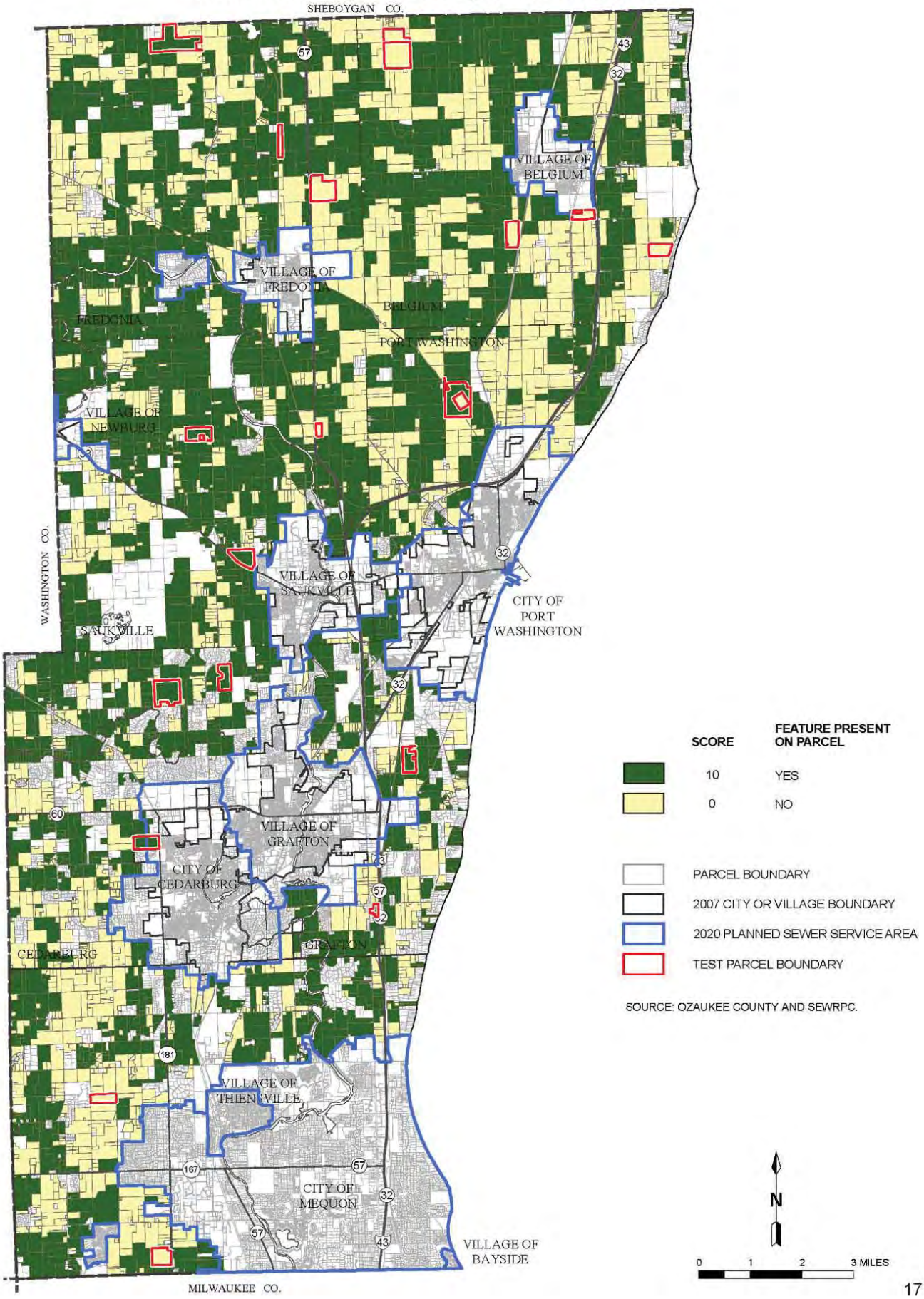
Ozaukee County LESA Analysis: SA - 3A Factor



Map 12

PRESENCE OF FLOODPLAINS AND SMALL WETLANDS

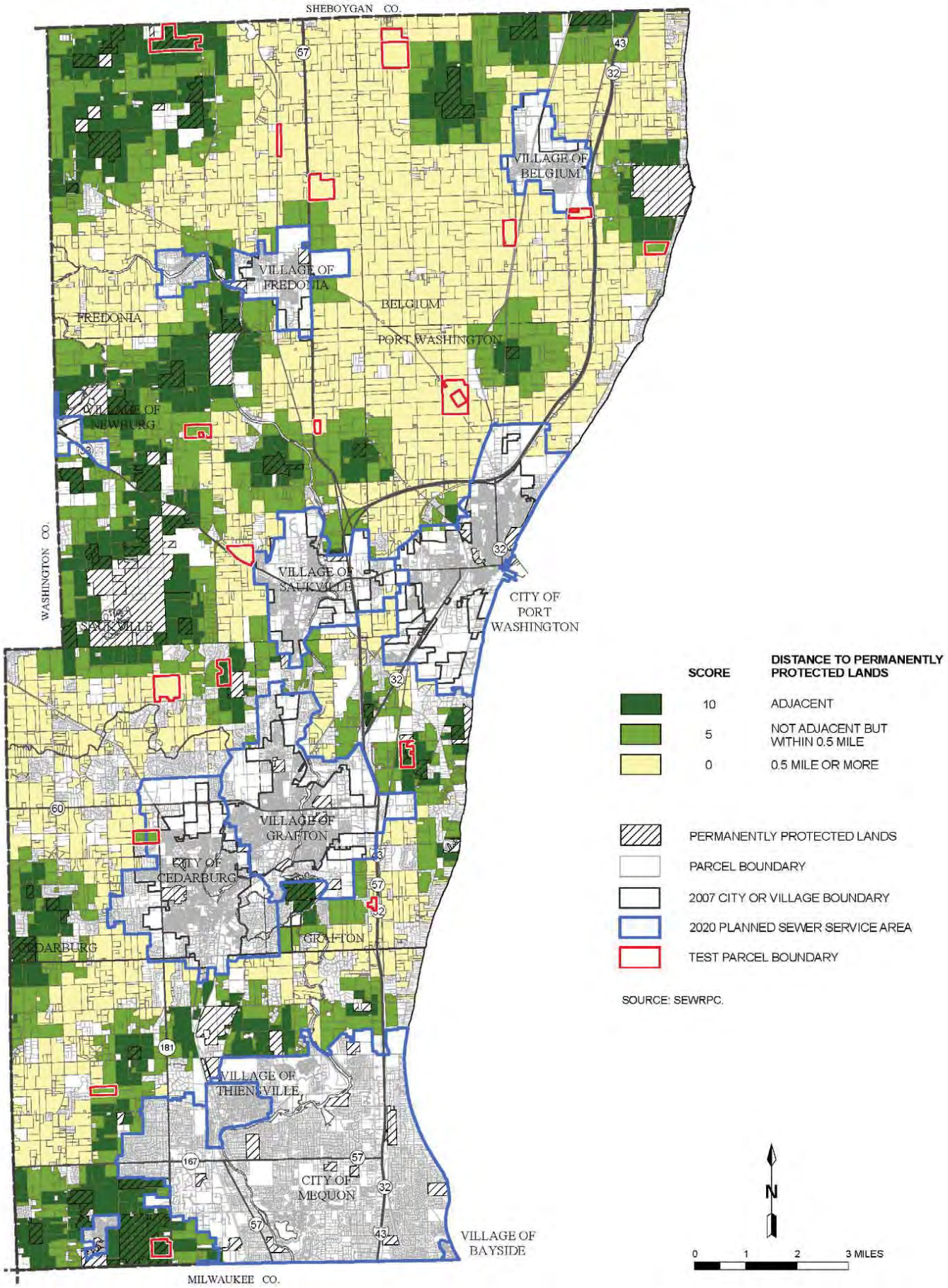
Ozaukee County LESA Analysis: SA - 3B Factor



Map 13

PROXIMITY TO PERMANENTLY PROTECTED LAND OF 20 ACRES OR MORE IN SIZE

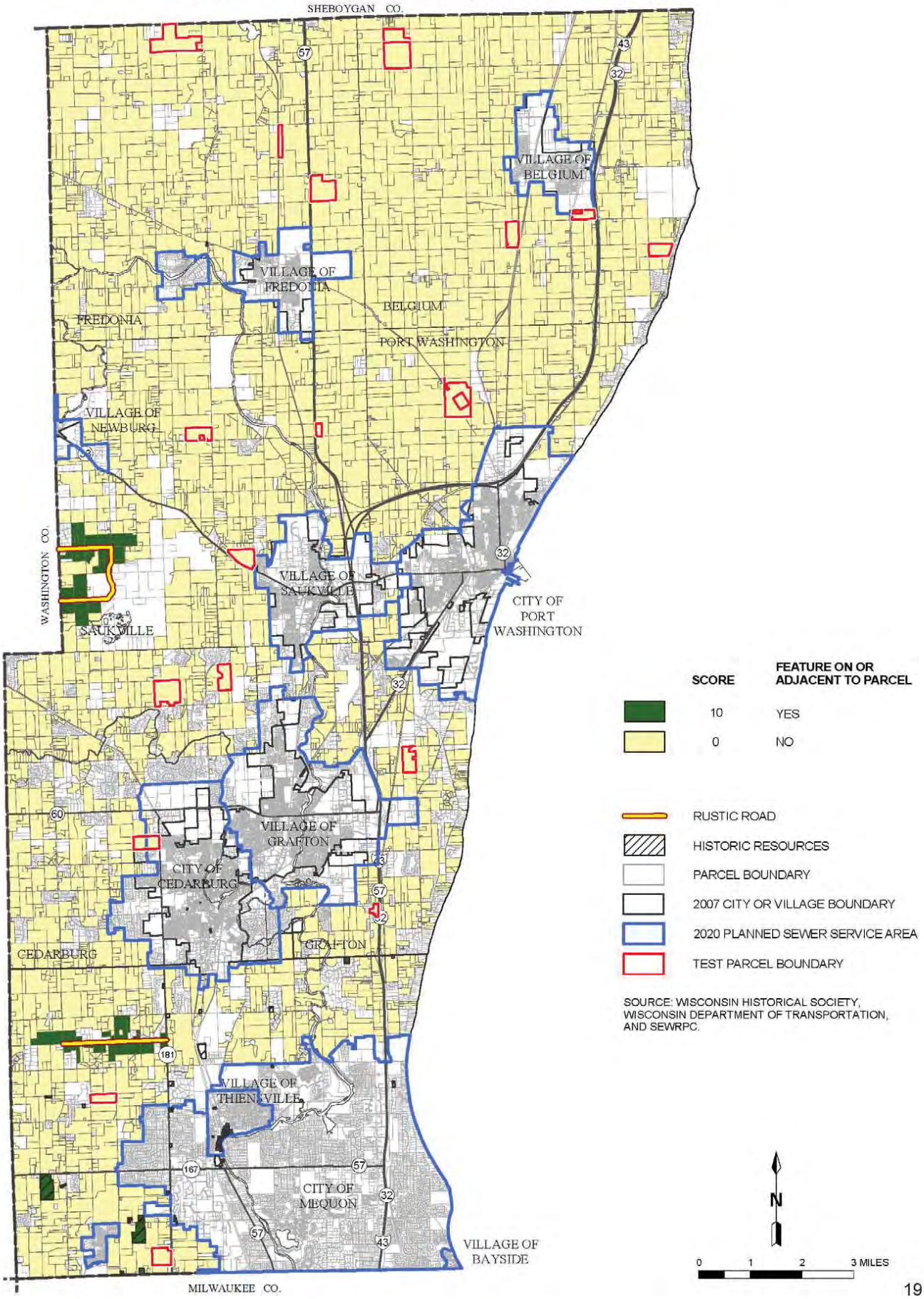
Ozaukee County LESA Analysis: SA - 3C Factor



Map 14

HISTORIC RESOURCES OR RUSTIC ROAD ON OR ADJACENT TO PARCEL

Ozaukee County LESA Analysis: SA - 3D Factor



Based on the results of the statistical analysis, the weights assigned to the Land Evaluation (LE) value and site assessment (SA) factors were adjusted. The weight given to the LE value was increased from 0.34 to 0.40 points, and the weights given to the SA-1C factor (compatibility of adjacent land uses), and the SA-3C factor (proximity to permanently protected lands) were both increased from 0.06 to 0.09 points. The weights given to the SA-3A factor (presence of environmental corridors, isolated natural resource areas, natural areas, or critical species habitat) and the SA-3B factor (presence of floodplains or small wetlands) were both reduced from 0.09 to 0.03 points. The LESA analysis was conducted once more using the adjusted weights, and a statistical analysis was conducted to test the results. The second statistical analysis indicated that no individual factor had a strong negative influence on the revised LESA scores. Appendix D presents the correlations and impact of the factors used in both the initial and final LESA analysis on the LESA scores. Table D-1 shows that, under the initial analysis, the LE value had the highest influence on LESA scores, followed by the SA-3B and SA-3A factors (both SA-3 factors relate to natural resources present on the parcel being analyzed). Table D-2 shows that in the revised, or final, LESA analysis, the SA-1B, LE, SA-1A, and SA-2A factors had the biggest influence on LESA scores, and the SA-3 factors had no measurable influence. These results were reported to the Agricultural, Natural, and Cultural Resources Work Group, the Comprehensive Planning Citizen Advisory Committee, and the Comprehensive Planning Board. All three committees approved the LESA results based on the adjusted weights.

Final LESA Criteria and Weights

The criteria and weights used to produce the final LESA results are summarized below (see Appendix B for additional information):

- **Land Evaluation (LE) value:** 0.40 points
- **Site Assessment (SA) factors:**
  - **SA-1 factors (factors relating to agricultural productivity):**
    - SA-1A. Size of parcel in agricultural use**:** 0.09 points
    - SA-1B. Size of contiguous agricultural land block: 0.09 points
    - SA-1C. Compatibility of adjacent land uses: 0.09 points
    - SA-1D. Compatibility of land uses within 0.5 mile: 0.03 points
    - SA-1E. Population density within 0.5 mile: 0.03 points
  - **SA-2 factors (factors relating to development pressure):**
    - SA-2A. Distance from planned sewer service areas:[5] 0.06 points
    - SA-2B. Distance from IH 43 interchanges: 0.03 points
  - **SA-3 factors (factors relating to other public values):**
    - SA-3A. Primary or secondary environmental corridor, isolated natural resource area, natural area, or critical species habitat[6] present on parcel: 0.03 points
    - SA-3B. Wetlands less than five acres or floodplains[7] present on parcel: 0.03 points
    - SA-3C. Proximity to permanently protected land greater than 20 acres in size: 0.09 points
    - SA-3D. Parcel has been placed on the National Register of Historic Sites, designated as a local historic landmark, or is adjacent to a rustic road: 0.03 points

Ozaukee County LESA Results

Final LESA scores for agricultural parcels are shown on Map 15, with the scores grouped into general categories. The mean (average) score for the parcels analyzed was 6.3, and the median score was 6.4 (half of all parcels

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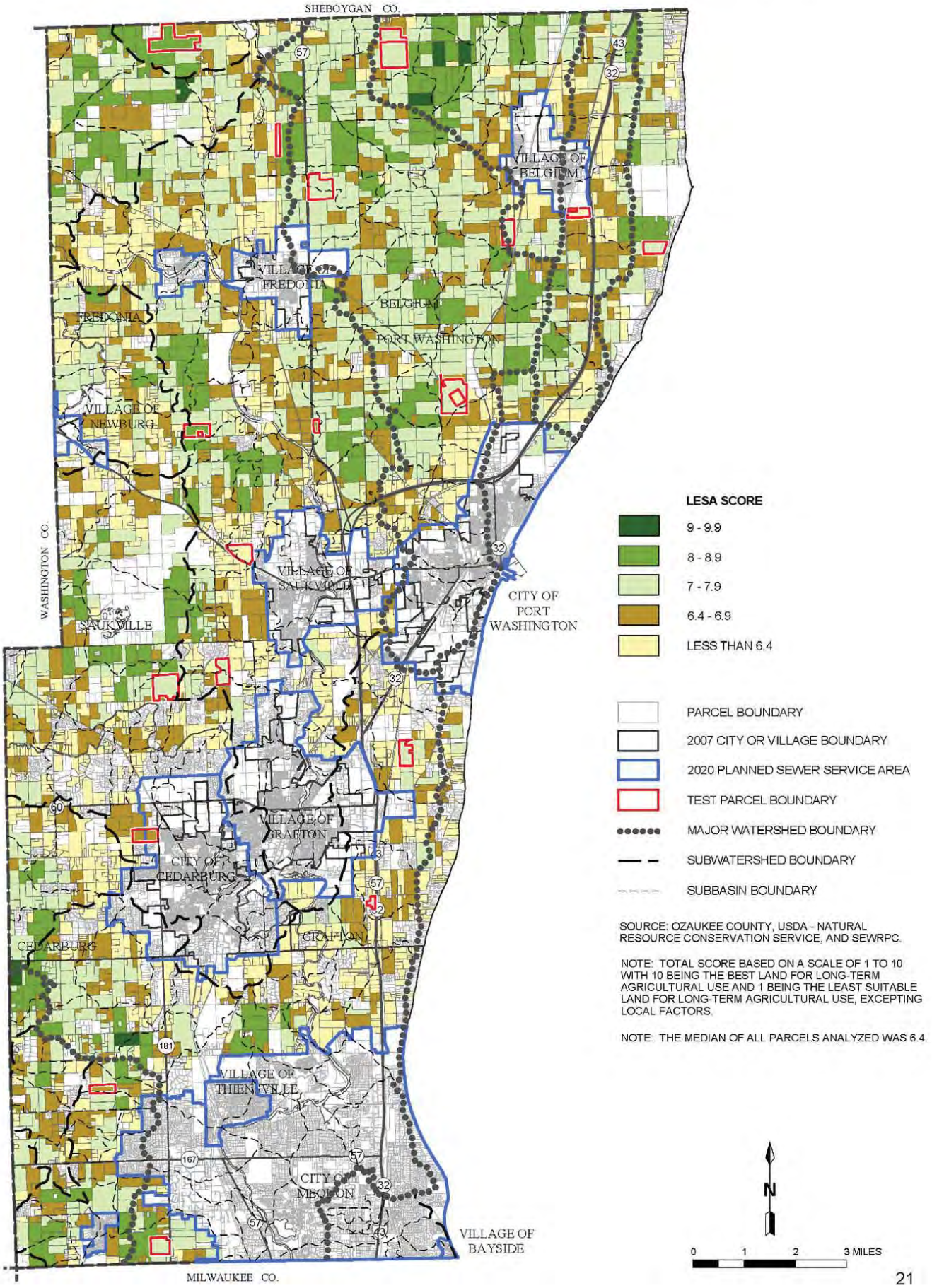
[5] *Refers to sewer service area plans for the year 2020, adopted as of January 15, 2007.*

[6] *See Footnote No. 2.*

[7] *See Footnote No. 3.*

Map 15

LESA SCORES FOR AGRICULTURAL PARCELS IN OZAUKEE COUNTY: 2007



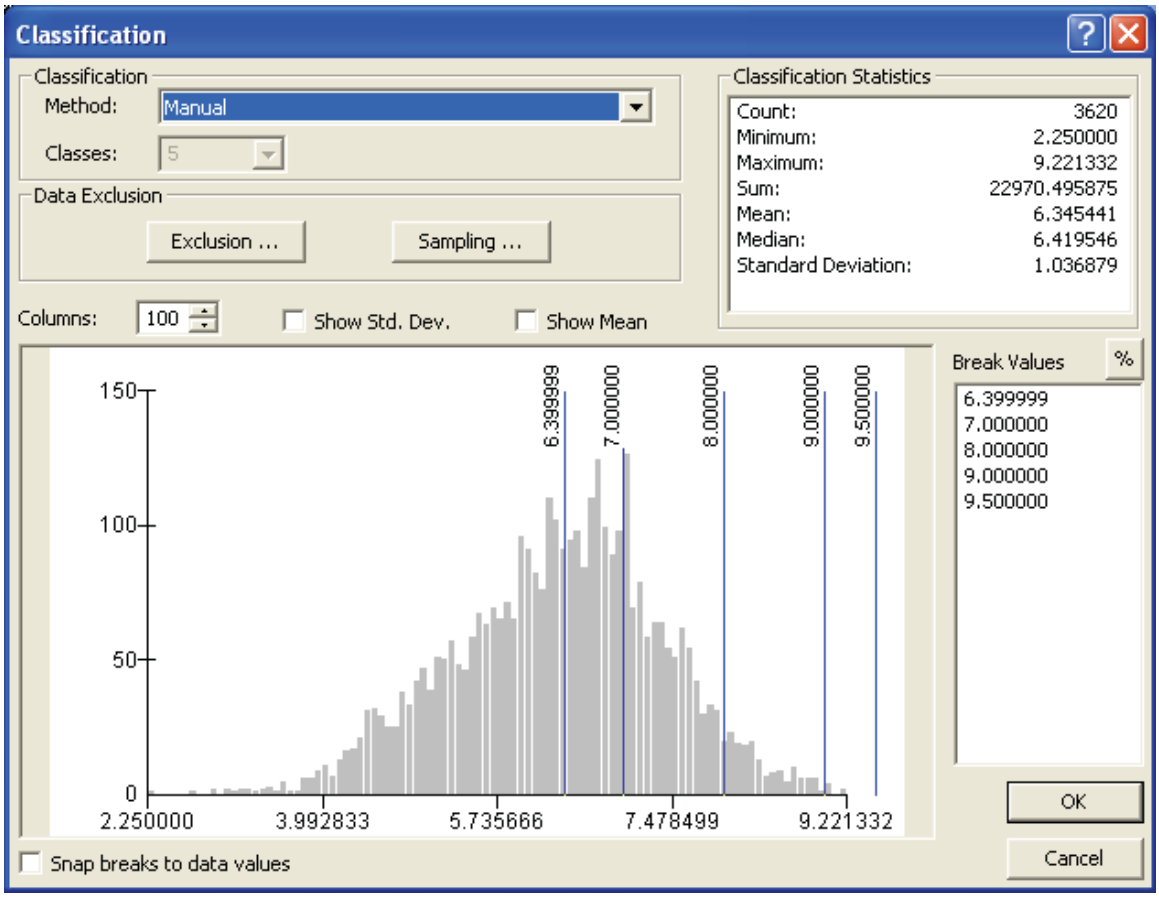
SOURCE: OZAUKEE COUNTY, USDA - NATURAL RESOURCE CONSERVATION SERVICE, AND SEWRPC.

NOTE: TOTAL SCORE BASED ON A SCALE OF 1 TO 10 WITH 10 BEING THE BEST LAND FOR LONG-TERM AGRICULTURAL USE AND 1 BEING THE LEAST SUITABLE LAND FOR LONG-TERM AGRICULTURAL USE, EXCEPTING LOCAL FACTORS.

NOTE: THE MEDIAN OF ALL PARCELS ANALYZED WAS 6.4.

Figure 2

DISTRIBUTION OF FINAL LESA SCORES



Source: SEWRPC.

received a higher score and half received a lower score than 6.4). Figure 2 graphically displays the distribution of LESA scores, which fall into a conventional bell curve.

Table 1 sets forth the number of parcels and number of acres in each LESA category. The LESA analysis included all parcels outside a planned sewer service area with at least 2 percent of the parcel in agricultural use. The analysis therefore included some parcels that have other uses on them, which may include natural resource features such as woodlands, wetlands, or surface water, or fallow lands. In some cases, parcels developed partially for residential use, with a portion of the parcel used for agriculture, were included in the analysis (provided at least 2 percent of the parcel was in agricultural use). A hatch pattern is included on Map 1 to show areas that were in agricultural use in 2006.

Parcels where a portion was developed for residential use and the remaining portion was used for farming typically would receive a low LESA score, based on the factors for size of parcel and compatibility of adjacent and surrounding land uses. As part of the analysis, farmhouses and other homes on agricultural parcels of 20 acres or more were considered part of the agricultural use, in order to avoid lowering the score of agricultural parcels with farmhouses due to what would otherwise have been considered an incompatible adjacent land use.

Table 1

OZAUKEE COUNTY LESA SCORES: 2007

LESA Score	Parcels in Category		Total Acres in Category[a]		Agricultural Acres in Category[b]	
	Number	Percent	Number	Percent	Acres	Percent
9-9.9	6	0.2	472	0.5	401	0.6
8-8.9	164	4.5	12,813	13.9	10,450	14.7
7-7.9	807	22.3	33,763	36.6	28,217	39.6
6.4-6.9	867	24.0	20,144	21.8	15,606	21.9
Less than 6.4	1,776	49.0	25,085	27.2	16,536	23.2
Total	3,620	100.0	92,277	100.0	71,210	100.0

Mean score: 6.3
Median score: 6.4

[a]*Includes entire area of parcels analyzed, including areas not being used for farming, such as woodlands, wetlands, and surface water.*

[b]*Includes only those portions of parcels in agricultural use in 2006.*

Source: SEWRPC.

Test Parcels

The LESA guidebook recommends that the results of the LESA analysis be tested to ensure the results are reasonable. To accomplish this, staff from the Ozaukee County Planning, Resources, and Land Management (PRLM) Department identified a number of farm parcels that they are familiar with and /or have conducted conservation projects on. PRLM staff developed expected score ranges (high, medium, and low) for each of the test parcels based on their personal knowledge, expertise, and experience with the parcels. The LESA result for each parcel was then compared to the result anticipated by the PRLM staff.

Test parcels are shown on Map 16. Table 2 sets forth the test parcels used for the LESA analysis, the LESA score range expected by PRLM staff, and the actual score received by each parcel for each LE and SA factor and the total LESA score. With limited exceptions, the LESA results were consistent with the results expected by PRLM staff. Parcels expected to rate high by PRLM staff received LESA scores of 7.5 or higher, with the exception of test parcel number 12 (which received a score of 7.02) and test parcel number 24 (which received a score of 7.36); parcels expected to rate medium by PRLM staff received LESA scores between 6.0 and 7.4, with the exception of test parcel number 15 (which received a relatively low score of 5.27) and test parcel number 19 (which received a score of 7.62). Two of the parcels expected to rate low by PRLM staff received LESA scores below 6.0, while two of them received scores in the medium range (test parcel number 10 received a score of 6.63 and test parcel number 11 received a score of 6.79). Although these two parcels had mixed results based on SA factors, both have high LE values (9.01 and 8.58, respectively), which helped to boost their overall score because of the relatively heavy weight placed on LE value.

Map 16

TEST PARCELS USED FOR THE OZAUKEE COUNTY LESA ANALYSIS: 2007

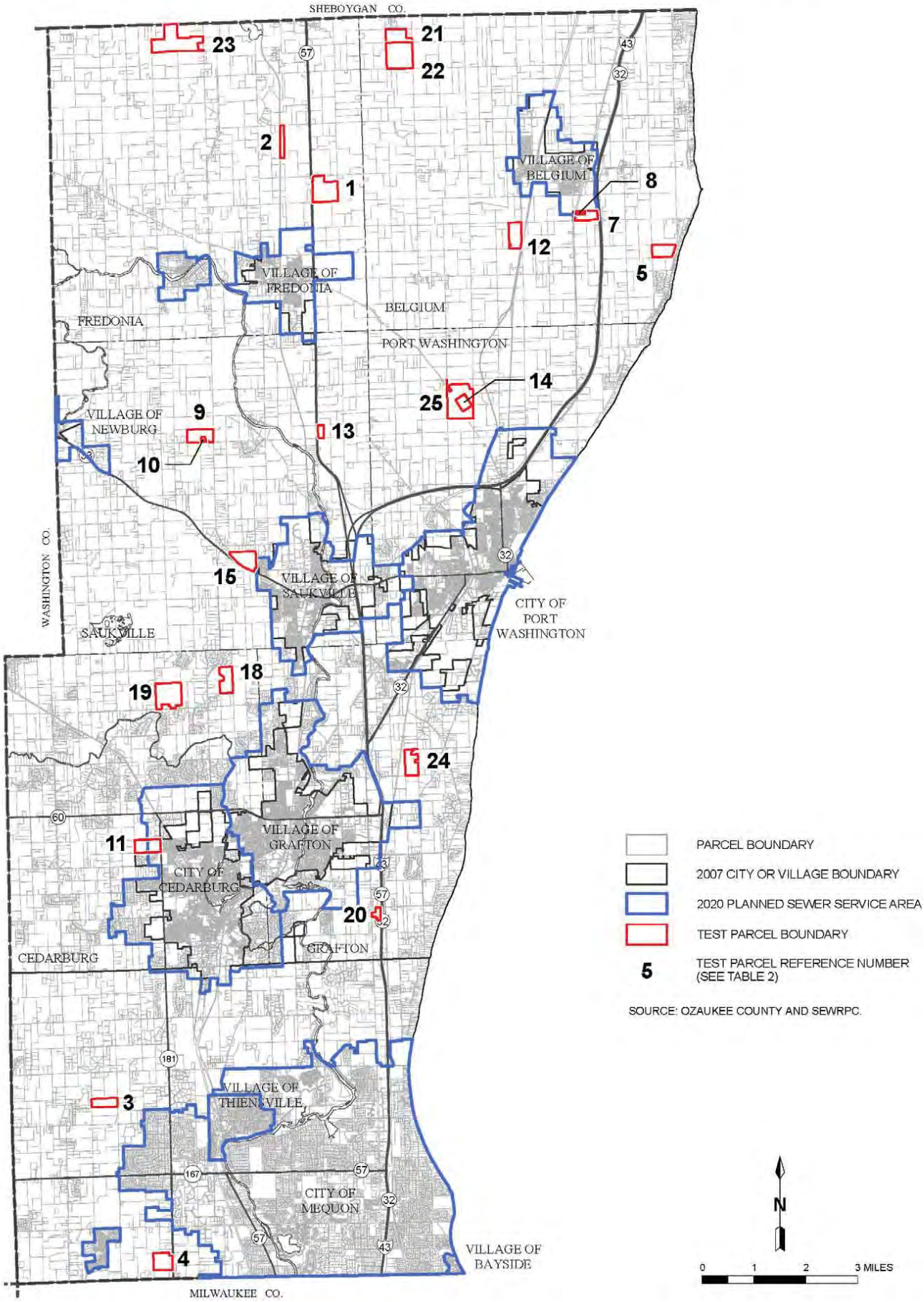


Table 2

SCORES FOR TEST PARCELS USED IN THE OZAUKEE COUNTY LESA ANALYSIS: 2007

Test Parcel Number[a]	Owner	Location[b]	Estimated Score	Parcel Size (Acres)	LE Value	SA Score											LESA Final Score
						SA1A	SA1B	SA1C	SA1D	SA1E	SA2A	SA2B	SA3A	SA3B	SA3C	SA3D	
1	Lanser, Rick	Fredonia	High	134.7	9.08	10	10	10	10	10	5	10	3	0	0	0	7.62
2	Leider Farms Inc.	Fredonia	Medium	30.2	8.20	0	10	10	10	10	10	10	10	10	0	0	7.18
3	Barthel, Robert	Mequon	Medium	53.7	7.25	5	10	10	7	10	5	10	0	0	5	0	6.71
4	Wayside Nursery	Mequon	Medium	76.1	8.74	10	10	7	10	0	0	10	3	0	10	0	7.52
5	Weyker, Al	Belgium	High	63.4	8.08	5	8	10	7	10	10	10	10	0	5	0	7.46
7	Gantner, Gerald	Belgium	Medium	42.4	8.07	5	8	10	10	10	0	5	0	0	0	0	6.05
8	Gantner, Gerald	Belgium	Low	7.0	8.94	0	8	10	10	10	0	5	0	0	0	0	5.95
9	Opitz, Jeff	Saukville	High	74.4	8.74	10	10	7	10	10	10	10	0	10	5	0	8.18
10	Opitz, Jeff	Saukville	Low	5.0	9.01	0	10	7	10	10	10	10	0	0	0	0	6.63
11	Bentz, Roger	Cedarburg	Low	80.1	8.58	10	8	4	4	0	0	10	7	10	5	0	6.79
12	Kleckner, Francis	Belgium	High	76.8	9.15	10	4	10	10	10	5	10	0	0	0	0	7.02
13	Eibs, Randy	Saukville	Medium	18.1	9.14	0	10	10	10	10	10	10	0	0	0	0	6.96
14	Schlenvogt, Lee	Port Washington	Medium	35.0	7.18	5	10	10	10	10	5	10	0	0	0	0	6.32
15	Ansay, Mike	Saukville	Medium	83.9	5.82	10	0	7	7	10	0	10	10	10	0	0	5.27
18	Winter, Clyde	Cedarburg	High	74.7	6.79	10	4	10	7	10	5	10	10	10	10	0	7.49
19	Strobel, Duane	Cedarburg	Medium	144.0	8.47	10	10	7	7	10	10	10	3	10	0	0	7.62
20	Maciejewski, Neal	Grafton	Low	18.4	9.13	0	0	7	7	10	0	5	7	10	0	0	5.45
21	Meyer, Bonnie	Belgium	High	71.1	8.84	10	10	10	10	10	10	10	0	0	0	0	7.73
22	Meyer, Bonnie	Belgium	High	161.3	8.98	10	10	10	10	10	10	10	0	0	0	0	7.79
23	Mueller, Paul	Fredonia	High	198.7	6.92	10	8	10	10	10	10	10	10	10	10	0	8.29
24	Kaul Living Trust	Grafton	High	72.6	6.62	10	8	7	7	10	5	5	10	10	10	0	7.36
25	Schlenvogt, Lee	Port Washington	High	170.4	8.00	10	10	10	10	10	5	10	7	10	0	0	7.61

[a]*Test parcel 6 was not included in the analysis because it has no agricultural use. Test parcels 16 and 17 were not included because they are located in a sewer service area.*

[b]*Lists the Town, or City of Mequon, in which the parcel is located.*

Source: Ozaukee County and SEWRPC.

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APPENDICES

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Appendix A

Table A-1

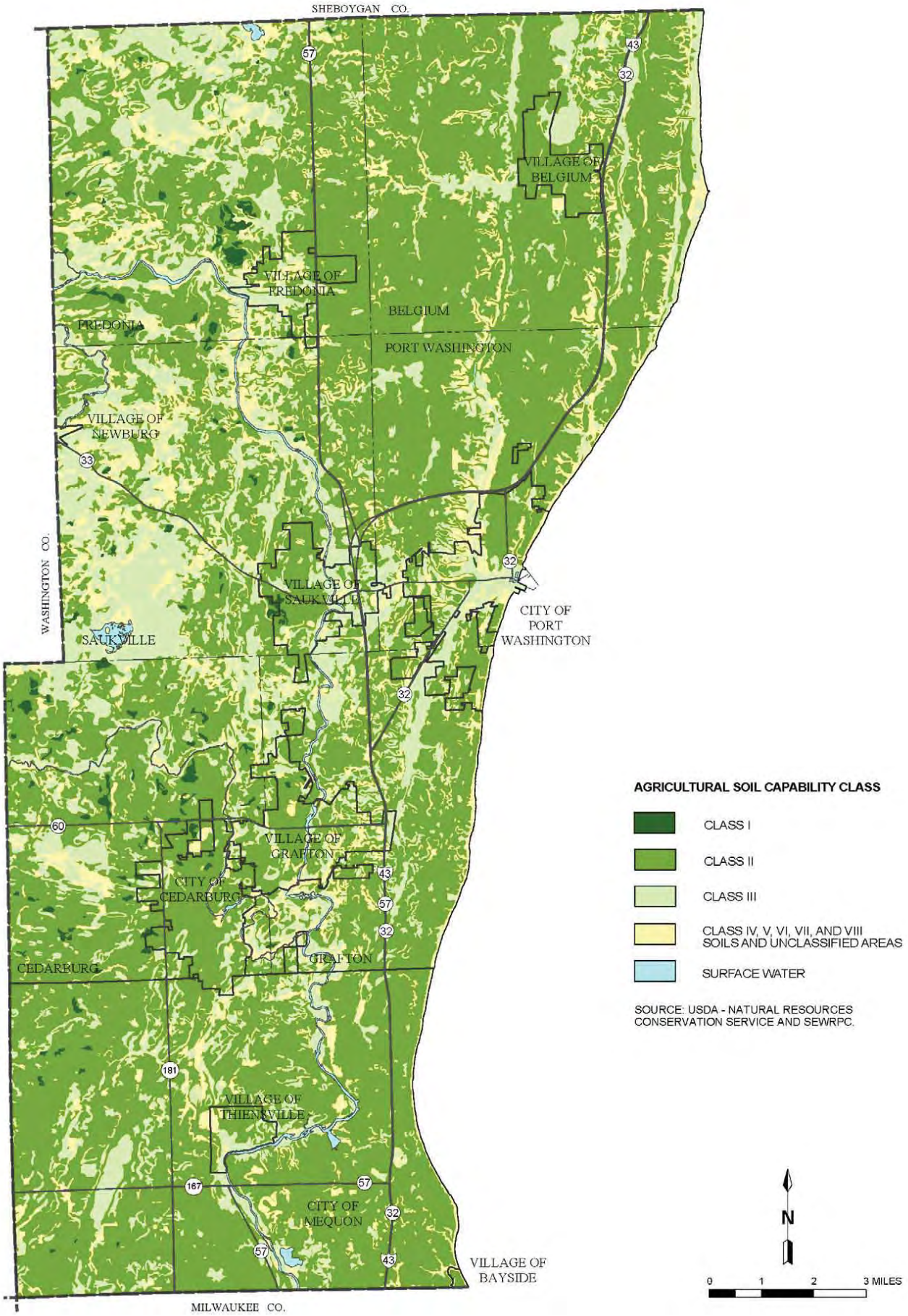
AGRICULTURAL SOIL CAPABILITY CLASSES

Soil Class	Description
I	Soils have few limitations that restrict their use. Class I soils are prime farmland soils.
II	Soils have some limitations that reduce the choice of plants or require moderate conservation practices. Class II soils are prime farmland soils.
III	Soils have moderate or severe limitations that reduce the choice of plants, require special conservation practices, or both.
IV	Soils have very severe limitations that restrict the choice of plants, require careful management, or both.
V	Soils are subject to little or no erosion but have other limitations, impractical to remove, that limit their use largely to pasture, range, woodland, or wildlife food and cover.
VI	Soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture, range, woodland, or wildlife food and cover.
VII	Soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to grazing, woodland, or wildlife.
VIII	Soils and landforms have limitations that preclude their use for commercial plant production and restrict their use to recreation, wildlife, water supply, or to aesthetic purposes.

Source: U.S. Natural Resources Conservation Service and SEWRPC.

Map A-1

AGRICULTURAL SOIL CAPABILITY IN OZAUKEE COUNTY



Appendix B

FACTORS, SCORES, AND WEIGHTS USED IN THE OZAUKEE COUNTY LAND EVALUATION AND SITE ASSESSMENT (LESA) ANALYSIS: 2007

Land Evaluation (LE) factor

Score developed by NRCS, divided by 10 (maximum score of 10, similar to all SA factors) **(Weight = 0.40)**

SA-1 factors (agricultural productivity)

A. Size of parcel in agricultural use (Weight = 0.09)

- ***Source of Data –*** County parcel data.

  Scale: Size of parcel with at least 2 percent in agricultural use.

Acres	Factor Scale
> 69 ac	10
35 – 69 ac	5
<35 ac	0

B. Size of contiguous agricultural land block (Weight = 0.09)

- **Source of Data** – SEWRPC 2000 Land Use Inventory, generalized and updated to 2006.
- **Note**: A copy of the 2006 land use map is attached (Map B-1).

  Scale: Size of contiguous area in agricultural use.

Acres	Factor Scale
> 279 ac	10
140 - 279 ac	8
70 - 139 ac	4
<70 ac	0

C. Compatibility of adjacent land uses (Weight = 0.09)

- **Source of Data** – SEWRPC 2000 Land Use Inventory, generalized and updated to 2006.

  "Adjacent" is defined as touching an agricultural parcel at any point. Land Use Inventory categories are defined as conflicting or compatible land uses as follows:

  Conflicting Adjacent Land Uses:
  - Single-family Residential
  - Two-family Residential
  - Multi-family Residential
  - Governmental and Institutional (except cemeteries)
  - Open Lands – Urban
  - Commercial
  - Industrial

Compatible Adjacent Land Uses:

- Communications, Utilities, and Transportation (including streets and railroads)
- Recreational
- Open Lands – Rural
- Agriculture
- Wetlands
- Woodlands
- Surface Waters
- Quarries
- Cemeteries

Scale: Percent of adjacent land in a use compatible with agriculture.

Percent of Compatible Adjacent Land Uses	Factor Scale
91 – 100%	10
71 - 90%	7
51 - 70%	4
0 - 50%	0

D. Compatibility of surrounding land uses within 0.5 mile (Weight = 0.03)

- **Source of Data** – SEWRPC 2000 Land Use Inventory, generalized and updated to 2006.

  Scale: Percentage of compatible land uses within 0.5 mile of an agricultural parcel, using the compatible land use categories listed above.

Percent of Compatible Surrounding Land Uses	Factor Scale
91 – 100%	10
71 - 90%	7
51 - 70%	4
0 - 50%	0

E. Population Density within 0.5 mile (Weight = 0.03)

- **Source of Data** – SEWRPC 2000 population density per quarter section (derived from U. S. Census).

  Scale: Population density within 0.5 mile of an agricultural parcel. This total was calculated using population density per quarter section. The population density of an entire quarter section was used if any portion of that quarter section was within 0.5 mile of an agricultural parcel.

Population Density	Factor Scale
Less than 100 persons	10
100 or more persons	0

SA-2 factors (development pressures impacting continued agricultural use of a parcel)

A. Distance from planned sewer service areas (Weight = 0.06)

- **Source of Data –** SEWRPC planned sewer service area (sewer service area plans adopted as of January 15, 2007; plan design year of 2020 for all sewer service areas).

  Scale: Distance to planned sewer service area.

Distance (miles)	Factor Scale
> 1	10
0.5 – 1.0	5
<0.5	0

B. Distance from IH 43 interchanges (Weight = 0.03)

- **Source of Data –** SEWRPC base map.

  Scale: Distance to IH 43 interchange.

Distance (miles)	Factor Scale
> 1	10
0.5 – 1.0	5
<0.5	0

SA-3 factors (other public values of a parcel)

A. Primary or secondary environmental corridors, isolated natural resource areas, natural areas, or critical species habitat site present on parcel (Weight = 0.03)

- **Source of Data –** SEWRPC.

  Scale: Primary environmental corridor (PEC), secondary environmental corridor (SEC), isolated natural resource area (INRA), natural area, or critical species habitat (CSH) site located on an agricultural parcel.

Present	Factor Scale
PEC/natural area/CSH	10
SEC	7
INRA	3
None present	0

B. Lowland conservancy resources located on farm parcel (includes 100 year floodplains and wetlands less than five acres) (Weight = 0.03)

- **Source of Data –**DNR preliminary floodplain delineations (from Ozaukee County Floodplain Map Modernization project) and wetlands from 2006 SEWRPC land use inventory update.

  Scale: Lowland conservancy area present on parcel.

Present	Factor Scale
Yes	10
No	0

(Note: Wetlands five acres or larger will be part of a PEC, SEC, or INRA and incorporated into the previous factor).

C. Proximity to permanently protected land of 20 acres or more in size (in fee simple ownership or under a conservation easement; owned by a public agency or a nonprofit conservation organization) (Weight = 0.09)

- **Source of Data –** SEWRPC (from information gathered for the comprehensive plan from Ozaukee County, DNR, local governments, and nonprofit conservation organizations).

  Scale: Distance to permanently protected lands.

Distance (miles)	Factor Scale
Adjacent	10
Not adjacent but within 0.5 mile	5
0.5 mile or more	0

D. Historic resources on or rustic road adjacent to parcel (site on the National or State Register of Historic Places, local landmark, or rustic road) (Weight = 0.03)

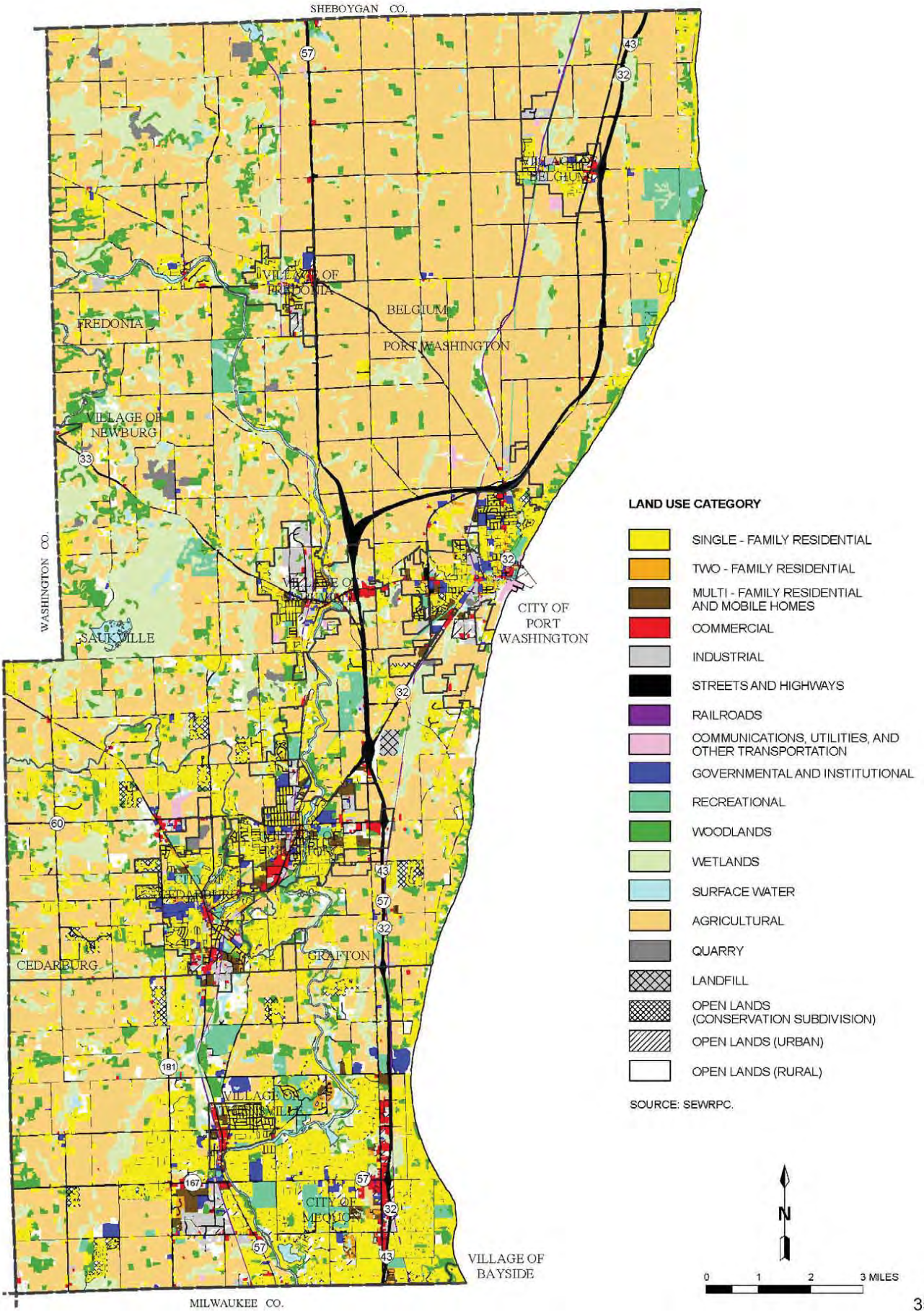
- **Source of Data –** SEWRPC (from information gathered for the comprehensive plan) and WisDOT (rustic roads).

  Scale: Presence of historic resources on or rustic road adjacent to parcel.

Present	Factor Scale
Yes	10
No	0

Map B-1

LAND USES IN OZAUKEE COUNTY: 2006



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Appendix C

STATISTICAL ANALYSIS OF ORIGINAL LESA RESULTS

Problem Description

In 1981, the Federal Farmland Protection Policy Act authorized the use of the Land Evaluation and Site Assessment (LESA) process as a valid method of prioritizing farmland parcels for preservation or for development.[1] The Ozaukee County Planning, Resources, and Land Management (PRLM) Department in conjunction with the Southeastern Wisconsin Regional Planning Commission (SEWRPC) has undertaken a LESA effort as part of its multi-jurisdictional comprehensive planning process. Ozaukee County and local government officials will use the results of the LESA process to determine which farmlands have the strongest need for preservation and to determine which areas of the County should be zoned strictly for agriculture. Zoning for agriculture is one of the most prominent and useful land-use tools for combating development of farmland, and Wisconsin is one of only two states to have a strong program for exclusive agricultural zoning.[2] Ozaukee County also has a strong relationship with the Ozaukee-Washington Land Trust, which oversees purchase and transfer of development rights programs intended to facilitate farmland and natural area preservation. It is important to have confidence in the validity and significance of LESA results in order to effectively determine which lands should be considered candidates for exclusive agricultural zoning and/or preservation.

One point of contention in many LESA processes, including the process conducted in Ozaukee County, is the inclusion of Site Assessment (SA) factors concerning public value characteristics, such as natural and cultural resources. The U.S. Department of Agriculture's Natural Resource Conservation Service has prepared a guidebook for the LESA process and addresses this issue in the document. It argues that although environmental and cultural factors may play an important role in land-use policies regarding farmland, they may be better addressed through other aspects of a planning process.[3]

This statistical analysis will determine the correlation, if any, between the historic, cultural, scenic, and environmental value LESA factors (henceforth referred to as other public value factors) and the seemingly more relevant soil productivity factor, non-soil factors related to potential agricultural productivity, and factors measuring development or conversion pressures on a parcel. The analysis will also determine the relative impact of the other public value factors in predicting LESA scores with the current LESA formula. This information will be used to determine whether the other public value factors are useful and relevant in prioritizing farmland parcels to be allocated for farmland preservation and/or for agricultural zoning.

Data Sources

The data used for this analysis was the database constructed by SEWRPC and the Ozaukee County PRLM to use for the LESA process. It included the 3,620 parcels in Ozaukee County that had at least 2 percent of land dedicated to agricultural use. The vast majority of these parcels were located in the 6 towns in the County and in the City of Mequon, not in the 6 villages or the other 2 cities. The database included the Land Evaluation and Site Assessment factor scores and the final LESA score. A LESA workgroup, consisting of numerous

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[1] *Daniels, Tom.* The Purchase of Development Rights, Agricultural Preservation and Other Land Use Policy Tools-The Pennsylvania Experience. *New York University: Albany, New York. Page 2.*

[2] *Diaz, Daniel and Gary Paul Green.* Growth Management and Agriculture: An Examination of Local Efforts to Manage Growth and Preserve Farmland. *Rural Sociology: University of Wisconsin, Madison. Pages 2-4.*

[3] *Pease, James R. and Robert E. Coughlin. Land Evaluation and Site Assessment: A Guidebook for Rating Agricultural Lands, 2nd Edition. Soil and Water Conservation Society: Ankeny, Iowa. Page 80.*

farmers, WDNR representatives, and other land-use experts, worked together to compile eleven Site Assessment (SA) factors that they believed were influential in determining the potential for long-term agricultural productivity of farmland parcels.

Each factor was assigned a relative weight based on the value workgroup members believed each factor held with regards to ranking agricultural parcels. The Land Evaluation (LE) value, which addressed soil productivity and quality, was given a weight of 0.34, and the remaining 0.66 weight was distributed over the Site Assessment (SA) factors. [4]

The SA-1 factors concerned agricultural productivity, which included and were weighted as follows:
SA-1a: Size of parcel in agricultural use (0.09)
SA-1b: Size of contiguous agricultural land block (0.09)
SA-1c: Compatibility of adjacent land uses (0.06)
SA-1d: Compatibility of land uses within 0.5 mile (0.03)
SA-1e: Population density within 0.5 mile (0.03)

The SA-2 factors considered development pressures impacting the continued agricultural use of the parcel, which included and were weighted as follows:
SA-2a: Distance from planned sewer service area (0.06)
SA-2b: Distance from Interstate Highway 43 interchanges (0.03)

The SA-3 factors addressed other public values of a parcel, which included and were weighted as follows:
SA-3a: Primary or secondary environmental corridor, natural resource area, natural area, or critical species habitat present on a parcel (0.09)
SA-3b: Wetlands less than five acres or floodplains present on parcel (0.09)
SA-3c: Proximity to permanently protected land greater than 20 acres in size (0.06)
SA-3d: Parcel has been placed on the National Register of Historic Places, designated as a local historic landmark, or is adjacent to a rustic road (0.03)

The results of the Ozaukee County LESA analysis showed both a mean and median score of 6.0 for the parcels analyzed. As shown in Table C-1, only three parcels attained a score of 9 or above. This is a surprisingly low number of parcels with extremely high potential for agricultural productivity in a county with a relatively high percentage of land, about 55% of the planning area, in agricultural use.[5] Because a discussion occurred over the relevance of the other public value (SA-3) factors in determining farmland quality, SEWRPC officials recalculated LESA scores with the SA-3 factors removed. As seen in Table C-2, the LESA scores were generally higher without the SA-3 factors. The number of parcels with scores of 9 or higher drastically increased to 130 parcels. This significant increase in LESA scores that did not incorporate the other public value (SA-3) factors lends support to the argument that the incorporation of other public value (SA-3) factors in a LESA analysis must be re-examined.

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[4] *Anderson, Nancy M.* Ozaukee County LESA Analysis. *Southeastern Wisconsin Regional Planning Commission: Waukesha, Wisconsin. Pages 2-4.*

[5] *Anderson, Nancy M. and Ben R. McKay*. Ozaukee County Comprehensive Plan: 2035, Agricultural, Natural, and Cultural Resources Inventory. *Southeastern Wisconsin Regional Planning Commission: Waukesha, Wisconsin. Page 5.*

Table C-1

Ozaukee County LESA Scores Without Other Public Value (SA-3) Factors				
	Parcels in Category		Acres in Category	
LESA	Number	Percent	Number	Percent
Less than 6	1,020	28.2	12,979	14.1
6-6.9	865	23.9	15,894	17.2
7-7.9	1,047	28.9	25,013	27.1
8-8.9	558	15.4	26,498	28.7
9-9.5	130	3.6	11,893	12.9
Total	3,620	100.0	92,277	100.0

Table C-2

Ozaukee County LESA Scores With Other Public Value (SA-3) Factors				
	Parcels in Category		Acres in Category	
LESA	Number	Percent	Number	Percent
Less than 6	1,795	49.6	21,397	23.2
6-6.9	1,126	31.1	31,963	34.6
7-7.9	544	15.0	26,728	29.0
8-8.9	152	4.2	11,959	13.0
9-9.5	3	0.1	230	0.2
Total	3,620	100.0	92,277	100.0

Statistical Methods

The methods used in the statistical analysis of the LESA data for Ozaukee County included a Pearson Correlation Matrix and four multivariate regression analyses. The Pearson Correlation Matrix analyzed the correlations between the LE, SA-1, SA-2, and SA-3 factor scores and the acreages of the parcels. (Refer to Exhibit C-1 for the full Pearson Correlation Matrix) This process was intended to examine if multicollinearity existed between any of the independent variables and to determine if negative relationships existed between the LE factor and any of the SA factors.

The multivariate regressions were carried out first to demonstrate the one hundred percent predictability of the original LESA factors in determining the LESA score. The other three regressions were intended to determine which variables had the largest relative impact in determining LESA scores when subsequent variables were removed that had either high collinearity with other variables or negative relationships with the LE factors. Standardized coefficients were used in determining the relative impact of LE and SA factor scores on final LESA scores.

Results

The Pearson Correlation Matrix showed the highest level of collinearity between acreage of parcel and the SA-1a factor *size of parcel in agricultural use*. The correlation between these two variables was 0.900, which was significant at 0.0005. The next highest level of collinearity between independent variables was between the SA-3a, *areas of environmental significance located on parcel,* and SA-3b, *wetlands less than 5 acres or floodplains located on parcel,* factors. The correlation between these two variables was 0.493 which was significant at 0.0005.

As demonstrated in Table C-3, the Pearson Correlation Matrix also provided evidence of a negative relationship between the LE and SA-3 factor variables. A fairly strong negative relationship between LE, *soil productivity,* and SA-3a, *areas of environmental significance located on parcel,* was demonstrated with a Pearson correlation of -0.411, which was significant at 0.0005. The matrix also showed moderate negative relationships between LE and the SA-3b, SA-3c, and SA-3d factors. The negative correlation between the SA-3 factors and the LE factor, which is generally viewed as a strong indicator of potential for agricultural productivity, indicates that the other public value (SA-3) factors are not good indicators of potential for agricultural productivity.

Table C-3
Pearson Correlations:
LE and SA-3 Factors

	LE
SA3a Pearson Correlation	-0.411
Sig. (2-tailed)	0.000
SA3b Pearson Correlation	-0.266
Sig. (2-tailed)	0.000
SA3c Pearson Correlation	-0.123
Sig. (2-tailed)	0.000
SA3d Pearson Correlation	-0.014
Sig. (2-tailed)	0.403
N	3,620

Table C-4 shows the results of the four regression analyses, with factors ranked in descending order according to their beta scores.

Table C-4
Multivariate Regressions

Original		No SA3a, SA1d		No SA3a,b, SA1d		No SA3 factors, SA1d	
Factor	Beta	Factor	Beta	Factor	Beta	Factor	Beta
LE1	0.439	SA3b	0.540	SA1a	0.456	SA1a	0.481
SA3b	0.407	LE1	0.339	SA2a	0.278	SA2a	0.281
SA3a	0.362	SA1a	0.321	SA1b	0.227	SA1b	0.228
SA1b	0.326	SA1b	0.279	LE1	0.202	SA1c	0.183
SA1a	0.265	SA2a	0.267	SA3c	0.200	LE1	0.176
SA2a	0.236	SA3c	0.216	SA1c	0.180	SA2b	0.054
SA3c	0.186	SA1c	0.156	SA1e	0.069	SA1e	0.050
SA1c	0.127	SA1e	0.079	SA2b	0.055		
SA1e	0.066	SA2b	0.076	SA3d	0.034		
SA2b	0.054	SA3d	0.041				
SA1d	0.051						
SA3d	0.033						
R	1.000	R	0.958	R	0.816	R	0.791
R^2	1.000	R^2	0.919	R^2	0.667	R^2	0.626

The first regression was performed to demonstrate that the current formula is one hundred percent predictive of LESA scores, and to determine which factors had the largest impact on final LESA scores. As demonstrated in Table C-4, the LE factor had the highest beta score, 0.439. The SA-3b and SA-3a factors had the next highest beta scores, 0.407 and 0.362 respectively. This demonstrates that the SA-3b and SA-3a factors have the highest relative impact on LESA scores, second only to the Land Evaluation factor.

The second regression analysis included the LE and all SA factors with the exception of the SA-1d and SA-3a scores. The SA-1d factor, *compatibility of land uses within 0.5 miles*, was removed because of its high level of correlation with both the SA-1b, *size of contiguous agricultural land block*, and SA-1c, *compatibility of adjacent land uses*, factors (Pearson Correlation of 0.334 and 0.360 respectively). The SA-3a factor, *areas of environmental significance located on parcel*, was removed because of its strong negative relationship with the LE variable coupled with its high beta score in the original regression. The results show that the R squared only

decreased to 0.919, which means that about 92% of the variability in the LESA scores is determined by the factors included in this model. An analysis of the beta scores produced by this model shows that the SA-3b factor now has the highest impact on determining final LESA scores.

The third regression removed the SA-3b factor in addition to the two factors removed in the prior model. The SA-3b factor, *wetlands less than 5 acres or floodplains located on parcel*, was removed because of its high impact in determining the final LESA score, defined by its high beta score in both the first and second regressions. As Table C-4 demonstrates, the R squared decreased to 0.667 in this case, which is much more drastic than the fall in predictability experienced in the prior model.

The final regression removed all of the other public value (SA-3) factors, in addition to the SA-1d factors, solely as an experiment in determining how effective the model would be in predicting LESA scores without any of the contentious other public value (SA-3) factors. The result was an R squared of 0.626, which means that about 63% of the variability in the model is explained by the 8 remaining independent variables.

Conclusions

Many people view farmland and preservation of rural character as an important dimension of any long-range plan, and many believe that farmland protection is often directly connected to open space and natural area preservation.[6] Ozaukee County's incorporation of other public value (SA-3) factors in its LESA analysis reflects the County's understanding of this attitude. A statistical analysis of the LESA process does conclude, however, that the other public value (SA-3) factors both play too large of a role in determining LESA scores and are negatively correlated with factors like soil productivity, which are more directly tied to potential for agricultural productivity. Ozaukee County should reduce the weights of the other public value factors and address the importance of the other public value (SA-3) factors such as natural and cultural resource protection more directly through other areas of its comprehensive plan. LESA scores are only one of the many resources that should be referenced when formulating a strong farmland and open space preservation plan. By combining agricultural, natural, and cultural resources into one cohesive section of its comprehensive plan, Ozaukee County is, in effect, addressing the interplay between these invaluable resources.

[6] *Furuseth, Owen J.* Public Attitudes Toward Local Farmland Protection Programs. *Growth and Change: Summer 1987. Page 50.*

Exhibit C-1
Pearson Correlation Matrix

Correlations

		LE1	SA1a	SA1b	SA1c	SA1d	SA1e	SA2a	SA2b	SA3a	SA3b	SA3c	SA3d	Acres
LE1	Pearson Correlation	1	.033*	.254**	-.007	.019	.014	.051**	-.009	-.411**	-.266**	-.123**	-.014	.016
	Sig. (2-tailed)		.049	.000	.679	.253	.405	.002	.579	.000	.000	.000	.403	.336
	N	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620
SA1a	Pearson Correlation	.033*	1	.220**	.181**	.193**	.020	.037*	.068**	.204**	.223**	.119**	.022	.900**
	Sig. (2-tailed)	.049		.000	.000	.000	.239	.027	.000	.000	.000	.000	.182	.000
	N	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620
SA1b	Pearson Correlation	.254**	.220**	1	.215**	.360**	.118**	.118**	.139**	-.214**	-.100**	-.005	-.018	.215**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000	.000	.000	.762	.289	.000
	N	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620
SA1c	Pearson Correlation	-.007	.181**	.215**	1	.334**	.099**	.087**	.085**	.079**	.068**	.030	-.002	.205**
	Sig. (2-tailed)	.679	.000	.000		.000	.000	.000	.000	.000	.000	.069	.887	.000
	N	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620
SA1d	Pearson Correlation	.019	.193**	.360**	.334**	1	.286**	.260**	.126**	-.033*	.003	.046**	.006	.196**
	Sig. (2-tailed)	.253	.000	.000	.000		.000	.000	.000	.047	.862	.005	.737	.000
	N	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620
SA1e	Pearson Correlation	.014	.020	.118**	.099**	.286**	1	.335**	.027	.004	-.015	-.084**	-.007	.026
	Sig. (2-tailed)	.405	.239	.000	.000	.000		.000	.104	.794	.365	.000	.664	.113
	N	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620
SA2a	Pearson Correlation	.051**	.037*	.118**	.087**	.260**	.335**	1	.207**	.054**	-.005	-.030	.085**	.038*
	Sig. (2-tailed)	.002	.027	.000	.000	.000	.000		.000	.001	.779	.076	.000	.021
	N	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620
SA2b	Pearson Correlation	-.009	.068**	.139**	.085**	.126**	.027	.207**	1	.054**	-.024	-.001	.030	.067**
	Sig. (2-tailed)	.579	.000	.000	.000	.000	.104	.000		.001	.144	.968	.069	.000
	N	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620
SA3a	Pearson Correlation	-.411**	.204**	-.214**	.079**	-.033*	.004	.054**	.054**	1	.493**	.142**	.047**	.257**
	Sig. (2-tailed)	.000	.000	.000	.000	.047	.794	.001	.001		.000	.000	.005	.000
	N	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620
SA3b	Pearson Correlation	-.266**	.223**	-.100**	.068**	.003	-.015	-.005	-.024	.493**	1	.033*	-.005	.260**
	Sig. (2-tailed)	.000	.000	.000	.000	.862	.365	.779	.144	.000		.046	.755	.000
	N	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620
SA3c	Pearson Correlation	-.123**	.119**	-.005	.030	.046**	-.084**	-.030	-.001	.142**	.033*	1	.103**	.124**
	Sig. (2-tailed)	.000	.000	.762	.069	.005	.000	.076	.968	.000	.046		.000	.000
	N	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620
SA3d	Pearson Correlation	-.014	.022	-.018	-.002	.006	-.007	.085**	.030	.047**	-.005	.103**	1	.010
	Sig. (2-tailed)	.403	.182	.289	.887	.737	.664	.000	.069	.005	.755	.000		.567
	N	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620
Acres	Pearson Correlation	.016	.900**	.215**	.205**	.196**	.026	.038*	.067**	.257**	.260**	.124**	.010	1
	Sig. (2-tailed)	.336	.000	.000	.000	.000	.113	.021	.000	.000	.000	.000	.567	
	N	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620	3620

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

APPENDIX D

Table D-1

BETA VALUES[a] OF LESA FACTORS UNDER THE INITIAL LESA ANALYSIS

Factor	Beta Value
LE	0.439
SA-3B	0.407
SA-3A	0.362
SA-1B	0.326
SA-1A	0.265
SA-2A	0.236
SA-3C	0.186
SA-1C	0.127
SA-1E	0.066
SA-2B	0.054
SA-1D	0.051
SA-3D	0.033

Table D-2

BETA VALUES[a] OF LESA FACTORS UNDER THE FINAL LESA ANALYSIS

Factor	Beta Value
SA-1B	0.442
LE	0.367
SA-1A	0.359
SA-2A	0.319
SA-1C	0.171
SA-1E	0.089
SA-2B	0.073
SA-1D	0.069
SA-3A	0
SA-3B	0
SA-3C	0
SA-3D	0

[a]*The Beta value measures the relationship, or correlation, between each factor and the final LESA score. Factors with higher Beta values had a greater influence on the LESA score than factors with low Beta values.*

Source: Ozaukee County Planning, Resources, and Land Management Department.