The Role of Corporate Timberland Ownership Change in Land Use, Conservation, and Local Prosperity in Michigan's Upper Peninsula

Chris A. Miller, Robert E. Froese and Michael Hyslop

Prepared for People And Land

School of Forest Resources and Environmental Science
Michigan Technological University

August 13, 2007

Executive Summary

The new century has ushered in the transfer of Michigan's Upper Peninsula (UP) corporate forestlands from traditional ownerships to institutional or financial interests. Three new companies; The Forestland Group, Plum Creek Timber, and GMO Renewable Resources now represent nearly 80% of UP corporate forestland ownership. The Nature Conservancy, a conservation-oriented organization and also a relatively new presence in the UP, now holds over 30,000 acres while vertically integrated timber products companies (VITPCs) such as Mead and International Paper, have undergone essentially total divestiture of UP holdings.

The goal of this project was to quantitatively and spatially assess these ownership changes across the 15 counties of the UP and to project and characterize which lands may have potentially higher value alternate use, thus indicating the likelihood of parcelization. Parcel ownership information for the UP is not in a readily available format that would allow a consistent assessment at a given point in time. Representation of actual parcel ownership was therefore limited with some ownership not indicated by data but assigned from news release or other sources.

Base data utilized for the study was obtained from published county plat books, available GIS datasets, and Michigan's Commercial Forest (CF) Hunter's List to create spatial ownership data layers for each county at two points in time. Parcels transferring between large-tract forestland ownership (defined as greater than 10,000 CF enrolled acres) were measured along with the transfer of lands with entities outside of the large-tract category. The landscape features Great Lake shoreline, lakes, rivers, roads, and urban areas were identified as amenities that increase alternate use value and the proximity to these features of large-tract forestland holdings were measured at the two points in time and compared along with a comparison of the contiguous nature of the large-tract forest holdings. To further project lands of potential higher alternate use value, landscape features were buffered to create areas of close proximity (including adjacency) and then intersected with large-tract holdings to identify how many of these types of lands are inclusive to large-tract holdings with any associated change between sample dates.

Large-tract holdings declined in all UP counties at an average annual rate of 1,682 acres/year; weighted by the county-level contribution of these types of lands to the UP total and based on county sampling periods that averaged 11 years and ranged from 7 to 16 years. Marquette County showed the greatest annual rate of decline losing nearly 4,500 acres/year over an 11-year period ending in 2006. The county also leads the UP in total large-tract holdings. The smallest decline in large-tract holdings was found in Menominee County at 127 acres/year based on a seven year period. This county ranks near the middle of UP counties in total large-tract holdings. Substantial portions of large-tract holdings in the UP fall within the merged buffered areas of potential higher value alternate use, ranging from 38% in Mackinac County to 64% found in three counties; Alger, Baraga, and Houghton. These portions generally decreased across the UP at an annual rate of 1,469 acres/year based on the various county sample periods and weighted by the county proportion of total buffered areas in the UP.

Anticipated results of further analysis refine spatial ownership information of those lands leaving the large-tract ownership category in conjunction with refined buffer area construction to facilitate development of robust modeling tools to aid efforts in needed land use planning of UP regional scope.

Table of Contents

EXECUTIVE SUMMARY ..... **I**
TABLE OF CONTENTS ..... **II**
LIST OF FIGURES ..... **III**
LIST OF TABLES ..... **III**
LIST OF ACRONYMS ..... **IV**
INTRODUCTION **1**
BACKGROUND 1
MOTIVATION 1
GOALS 1
TERMS OF REFERENCE 2
METHODS AND APPROACH **3**
CORPORATE FOREST LAND OWNERSHIP AND CHANGE 3
LANDS AT RISK 4
FOREST LANDS AND FOREST OWNERS IN THE UPPER PENINSULA **6**
FORESTS, FOREST MANAGEMENT AND FOREST CONDITION 6
CORPORATE FOREST LAND OWNERSHIP 9
CONSEQUENCES OF OWNERSHIP CHANGE **13**
PARCELIZATION AND FRAGMENTATION 13
FOREST MANAGEMENT, HABITAT, AND PUBLIC ACCESS 15
LANDS AT RISK 17
CONCLUSIONS AND RECOMMENDATIONS **19**
LITERATURE CITED **20**
APPENDIX A **A-1**

List of Figures

FIGURE 1. LAND USE LAND COVER FOR THE UPPER PENINSULA, MICHIGAN. 6
FIGURE 2. FORESTLANDS IN THE UPPER PENINSULA, MICHIGAN. 7
FIGURE 3. DISTRIBUTION OF MAJOR CFA LAND OWNERS. 8
FIGURE 4. LARGE TRACT CORPORATE OWNERSHIP IN THE UPPER PENINSULA, MICHIGAN. 11
FIGURE 5. PARCELED LARGE TRACT CORPORATE OWNERSHIP. 13
FIGURE 6. POTENTIAL CORPORATE TIMBERLAND OF HIGHER ALTERNATIVE USE VALUE. 17

List of Tables

TABLE 1. COUNTY ATLAS AND PLAT DATA YEAR. 3
TABLE 2. UP LAND USE/LAND COVER 6
TABLE 3. OWNERSHIP DISTRIBUTION OF UP REGISTERED CFA LANDS. 7
TABLE 4. LEADING UP TIMBERLAND OWNERS. 9
TABLE 5. CONTIGUOUS CORPORATE LAND HOLDINGS. 15
TABLE 6. AT RISK CORPORATE LANDS. ..... **ERROR! BOOKMARK NOT DEFINED.**

List of Acronyms

AF&PA…….American Forest and Paper Association

ALW……..All Wood, Inc.

BF…….Benson Forest, Ltd.

BTr…..……..Bernice Pauahi Bishop Trust

CCI……...Cleveland Cliffs Iron Co.

CFA……...Commercial Forest Act

CIC……...Champion International Corp.

CFI……...Connor Forest Industries, Inc.

CONS……..Conservation Owner-Type

EPC……...Escanaba Paper Co.

FFO……...Funds From Operations

FLG……...Forestland Group, LLC

FSC……...Forest Stewardship Council

GMO……GMO Renewable Resources Inc.

IP……..International Paper Co.

KLA……...Keweenaw Land Asociation, Ltd.

LAND……..…Land Owner-Type

LYR……...Longyear Realty Corp., etal

MD……...Mead Corp.

MNRL…..…….Mineral Owner-Type

NLT……..…….Ned Lake Timber & Land Co.

NP……..…..Neenah Paper, Inc.

OTH..……..…..”Other” Owner-Type

PC……....Plum Creek Timber Co.

REIT……Real Estate Investment Trust

SFI……Sustainable Forestry Initiative

SJF……St John Forest Products, Inc. & Real Estate Co.

SLC……Steiger Lumber Co.

TNC……...The Nature Conservancy

TIMO……Timber Investment Management Organization

UP……..Upper Peninsula

VITPC……...Vertically Integrated Timber Products Company

VUL……...Vulcan Corp.

Introduction

Background

In the Upper Peninsula of Michigan (UP), the types of private forest land owners and their primary motivations for ownership of large tracts of timberland have varied over time. Over the past century motivations have shifted away from an "expendable" paradigm and have come to generally share long-term land management characteristics, along with a history of allowable public use for recreational purposes and relatively stable provision of wildlife habitat. Changes in land use patterns and demographics, while always present, have been at a relatively slow and gradual pace in the UP. Effects of such changes have gone relatively unnoticed, lagging behind other regions of the nation in new developments.

Today, the UP is at the beginning of a new era of land ownership and use. The convergence of many factors is driving these changes. Trends and developments in technology and infrastructure have made the UP less "remote". Coupled with upward trends in urban sprawl and other population dynamics, such as age and expendable income, the demand for alternate land use plays an increasing role in assessing values placed on the UP landscape. Parallel to these dynamics of change is the trends in national and global divestitures of large tracts of timberland by vertically integrated timber product companies (VITPCs) who held these lands as strategic raw material supply for further product development. New types of owners such as timber investment management organizations (TIMOs) and real estate investment trusts (REITs), do not generally view timberland as strategic supply, but primarily as financial investments (Browne 2001).

Motivation

The announcement in April of 2006 by International Paper Company (IP 2006) of its pending transfer of 440,000 acres of forestland to GMO Renewable Resources, a TIMO, essentially marks the end of large tract VITPC majority ownerships in the UP. Parcelization of large tracts often follows land transactions between owners with dissimilar ownership motivations (Wear 2005). Examples of parcelization occurring along fringe areas of large contiguous forested lands as a result of ownership change have been shown from studies of other forested regions of the nation (Hagan et al. 2005). While higher land values for alternate land uses typically triggers divestitures regardless of owner type, it is believed that owner types without conservation or long term timber supply motivations may be more willing to parcel higher value lands (Block and Sample 2001). Parcelization of large tracts of timberland generally decreases public access and may lead to forest fragmentation, which has been shown to negatively impact wildlife habitat and may bring parcel areas below a scale of commercial operability (Wear 2005).

Goals

Given the recent trends in alternate land use and ownership, involvement of all interested stakeholders in a land use planning process with a regional perspective of the entire UP would help decrease any undesirable effects that these changes may precipitate and preserve the unique nature of the UP. The central goal of this study is to provide information to be used in the planning process. Geographic distribution of large timberland tract ownerships will be used

in conjunction with other thematic layers such as public lands and various surface features to help identify those areas where alternate land use and parcelization are likely to occur.

Terms of Reference

Funding for this project was provided by People and Land, a project funded by the W.K. Kellogg Foundation and administered by Public Sector Consultants and the Land Policy Program at Michigan State University. A number of partners are involved in this project, including Michigan Technological University, the Great Lakes Natural Resource Center of the National Wildlife Federation, Michigan State University, the Upper Peninsula RC&D / Natural Resource Conservation Service, and the Michigan Environmental Council.

This report, as well as other project information, is available online at http://forestlands.mtu.edu.

Methods and Approach

The overall goal of this project was broken into three core objectives. The first was to *compile and aggregate existing data sets to quantify ownership of corporate timberland* at two points in time necessary to demonstrate pattern and rate of change. To achieve this, we would utilize and and all relevant, availabile data sets on land ownership including records available from the Michigan DNR, county planning agencies, and published documents. The second objective was to *summarize baseline site conditions and management practices* for corporate forest lands. This summary would be used to develop a context for current resource condition and to permit assessment of likely changes in condition that are consequential to management changes after land divestiture. The final objective was to *identify lands at risk of development* through geospatial analysis based on timberland ownership, condition and change data.

Corporate Forest Land Ownership and Change

Ultimately, any study is limited in scope and depth by the availability of high-quality and consistent base data. The challenge in this study was that no pubic agency is tasked with maintaining current or historic spatial ownership data in a format that is readily accessible, consistent, and available free of charge. County and township property tax records are a potential source, but using them to develop a comprehensive UP-wide spatial data set was clearly impossible given time and budget constraints. Even if private owners were willing to release proprietary data, aggregating hundreds of sets in a standard spatial format was also infeasible.

Some reasonably standard data were available from planning agencies in the western Upper Peninsula. The Michigan DNR does maintain records of parcels enrolled in the Commercial Forest Act (CFA) program, but the data are not available spatially. Furthermore, many corporate forest land ownerships include important parcels outside of the CFA program, precisely because they are at most risk to development. Missing those parcels would be a serious oversight. We deemed comprehensive UP coverage as most crucial for the larger project. Thus, rather than focusing effort on obtaining detailed data for parts of the UP, we decided to develop a single data layer by reconstructing ownership from published, commercially-available plat maps (Table 1).

Table 1. County atlas and plat data year. All data were from published plat books except Ontonagon, Gogebic, Iron, and Baraga counties, which were obtained from WUPPDR.

County	Past	Present
Alger	1992	2004
Baraga	1995	2006
Chippewa	1994	2003
Delta	1990	2004
Dickinson	1990	2006
Gogebic	1991	2005
Houghton	1997	2006
Iron	1995	2006
Keweenaw	1994	2006
Luce	1994	2005
Mackinac	1996	2006
Marquette	1995	2006
Menominee	1996	2003
Ontonagon	1993	2004
Schoolcraft	1993	2005

To build a spatial layer, we first developed a list of primary entities that define the corporate category of ownership for our study. Assuming most large tract corporate holdings are enrolled in Michigan's CFA Program, a non-spatial dataset of enrollment information was aggregated (Table 2 and Table 3) to identify the large tract owners. We then compared the list to published county plat books from two points in time to help identify companies that no

longer hold lands in the CFA program. Then, using a base 40's layer, we manually coded ownership in the GIS layer, by county, by scanning each plat book page to identify ownerships of interest.

Transfer of information regarding parcel ownership and CFA enrollment from published plats in creation of spatial ownership datasets was limited due to the volume and diversity of owner entities and the labeling of information. This resulted in inconsistency when identifying separate prior ownerships and attributes. For example, some prior ownership entities of larger tracts of land became generalized in the "Other" owner category.

The two points in time of parcel ownership measurement and the represented time interval between collection points varied across UP counties due in part to data availability and the staggered dates of plat publications. The mean time interval between data collection points across the UP was 11.3 years, ranging from 7 to 16 years. The most current collection point varied from 2006 found for seven counties to 2003 for two counties. Given that data collection for atlas and plat books precedes publication dates, many transactions of timberland ownership were not represented. Discrepancies between the current MiDNR CFA enrollments and ownerships reported for the current sampling point of a given county resulted in assignment of ownerships by owner-type to better reflect today's land holdings but do not represent actual land holdings.

Information regarding the contiguous nature of corporate land holdings was obtained by eliminating common parcel boundaries to yield identifiable contiguous areas of corporate ownership. The resulting polygons were measured and compared using polygon perimeters in miles, the minimum, maximum, and mean polygon areas in acres, the number of polygons and the number of polygons less than or equal to 40 acres in total areas.

Primary limiting factors in the data analysis were the lack of uniform sampling dates for county ownership comparisons, time constraints, the reduction in the number of corporate entities identified, and the lack of uniform zoning regulations and market data to properly identify likely alternative use lands.

Higher and Better Use Lands

Using the produced spatial datasets of corporate ownership, land area with adjacencies to the landscaped features of lakes, rivers, Great Lake's shoreline, roads, and urban areas was calculated. In a survey of 404 registered voters in the UP (EPIC-MRA 2002) regarding economic and natural resource conditions in the UP, respondents ranking conservation and recreational issues labeled forest habitat destruction and over development of lands adjacent to rivers, lakes, and Great Lake shoreline as the most significant problems. Natural amenities such as the features chosen for this study and infrastructure proximities such as roads and urban areas have been shown as an influence on population and development distributions (Gustafson, et al. 2005). Other reports and publications have shown higher parcelization of forestland at high demand and value when in proximity to these features (Benson 2006, NFLC 1994). Those lands selected in these feature adjacencies represent the corporate land with a higher probability of alternate land use conversion. Using a default distance from the given feature of 10 meters to indicate adjacency, parcels up to 40 acres in size that were within the default distance from a given feature at any point were totaled. Lakes were defined as being greater than or equal to 10 acres in size and roads were limited to State and Federal highways,

major and minor arterials, general non-certified roads and US Forest Service roads. The calculated areas of feature adjacency are not exclusive and the interrelationships of parcel adjacencies were not identified. For example, a parcel falling adjacent to Great Lake shoreline may also be included in the reported area of parcels adjacent to roads, but not differentiated. Corporate adjacencies were tabulated for both the past and current sampling points and compared.

To further project which corporate lands may have higher alternate use value based on the chosen features, buffers of a given size were constructed around each feature and those corporate lands falling within a merged buffered region were measured and compared between sampling dates and shown spatially based on estimated current corporate ownership. These lands include those reported as adjacent to features in addition to non-adjacent but "nearby" lands. Buffers were created as a coarse filter in identifying alternate use lands. The area measured was within the merged buffer zone comprised of a five-mile radius around urban areas and a quarter-mile area adjacent to rivers, roads, lakes, and Great Lake's shoreline. Also included in the buffer zone were those isolated parcels 40 acres or less in area. These buffer sizes were arbitrarily imposed from considerations of a variety of factors such as operability issues and accessibility, and would require refinement for any given locality's planning purposes.

Forest Lands and Forest Owners in the Upper Peninsula

Forests, Forest Management and Forest Condition

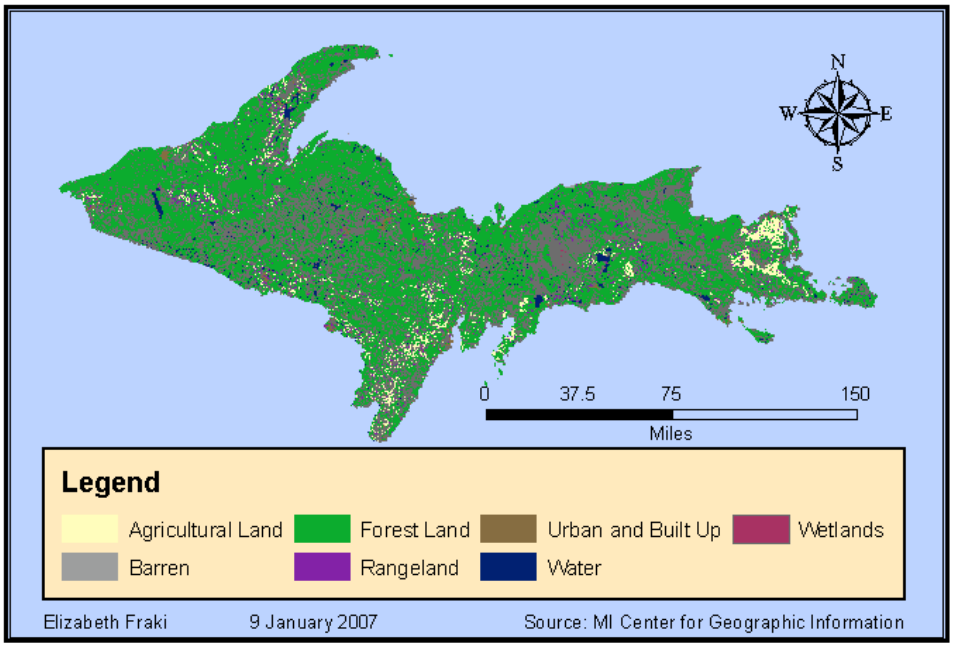


Figure 1. Land Use Land Cover for the Upper Peninsula, Michigan.

The UP land base is approximately 10.6 million acres. The relative distribution of these lands in terms of use and coverage shown in Figure 1 are further detailed below in Table 2. Forested areas make up the majority of land cover in the UP, representing approximately 8.5 million acres or 79% of the total land base.

Public lands are represented in this study by federal and state ownerships or rights, excluding mineral rights, and constitute the approximately 4.2 million acres shown in Figure 2. The remaining approximate 4.2 million acres of UP forestland are owned by a mixture of entities such as private individuals, corporations, various organizations including conservation groups, and local government public bodies.

Table 2. UP Land Use/Land Cover

Use/Cover	Area (million acres)
Forest Land	8.423
Wetlands	0.861
Agricultural Land	0.486
Rangeland	0.409
Water	0.242
Urban/Developed	0.171
Barren	0.017
Total	**10.609**

Most large tract private holdings are enrolled in Michigan's Commercial Forest Act (CFA) program. This program provides owners of timberland parcels of at least 40 acres in size an opportunity to realize tax benefits through reduced property tax assessment in exchange for adherence to an approved long-term timber management plan and free public access for hunting, fishing, and trapping. Once enrolled, penalties for program withdrawal are formulized from local assessments and help stabilize the

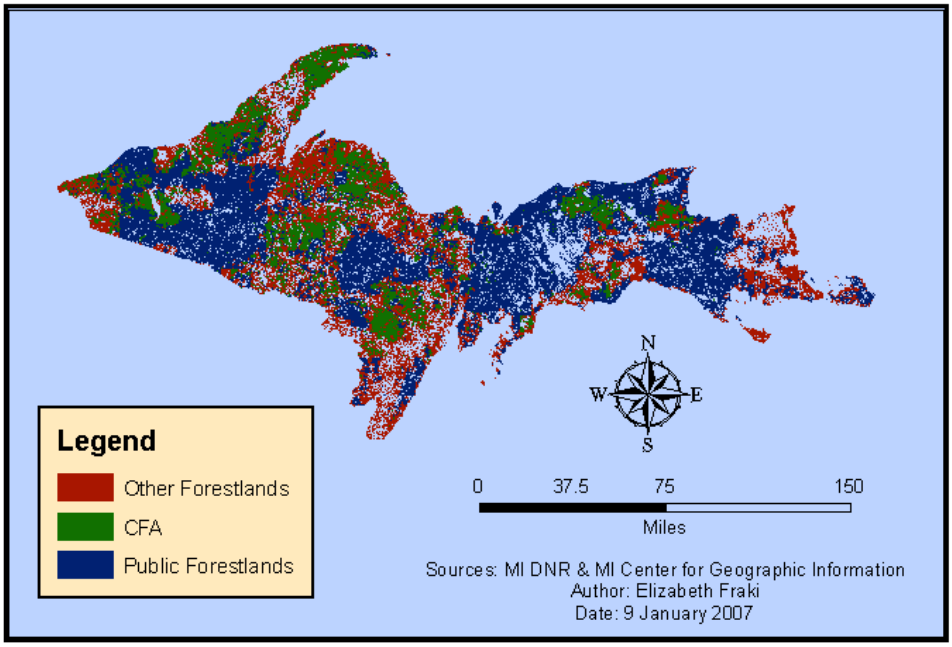


Figure 2. Forestlands in the Upper Peninsula, Michigan.

long-term management objectives. CFA enrolled lands itemized under broad ownership categories are shown in Table 3.

Table 3. Ownership Distribution of UP Registered CFA Lands.

Area (acres)	Number of Owners	Represented Area (acres)	Percent of Total
	Corporate and Organizational Ownership		
500,000 or more	2	1,151,950	53.4
100,000 -499,999	2	564,829	26.2
50,000 - 99,999	1	65,351	3.0
10,000 - 49,999	3	52,486	2.4
1000 - 9,999	33	107,443	5.0
less than 1,000	133	37,351	1.7
Total	**175**	**1,979,410**	**91.8**
	Private Individual Ownership		
1000 -9,999	22	42,214	2.0
less than 1000	951	135,713	6.3
Total	**973**	**177,927**	**8.2**
Total Upper Peninsula CFA lands		2,157,337	100
Total Upper Peninsula CFA land owners		1,148	-

Source: MiDNR Hunter List 2006

As seen in Table 3, 85% of the over 2 million acres of CFA enrolled timberlands are owned by eight entities, with over 50% of the total enrolled land owned by just two corporate entities. This

study focuses on the holdings of those eight major corporate entities. A depiction of the leading CFA timberland owners in relation to total CFA enrolled lands in the UP is shown in Figure 3.

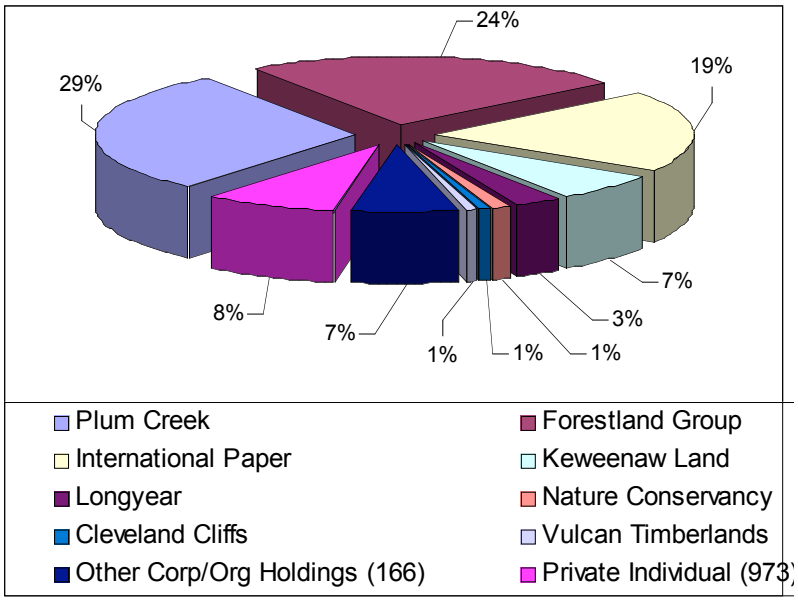


Figure 3. Distribution of major CFA Land Owners.

Applicants to the Commercial Forest program must attest to their compliance with the statute and the administrative rules of the program and have filed a long-term Commercial Forest management plan certified by a Registered Forester or Natural Resources Professional.

Other non-governmental forest certification programs of note are the Sustainable Forestry Initiative (SFI) of the American Forest & Paper Association (AF&PA), a US forest product trade organization and the Forest Stewardship Council (FSC), a consortium of international interests such as non-governmental social and environmental organizations and forest product interests. These programs, developed in the early 1990s, are similar in their overall goals of sustainable forestry practices (Meridian, 2001). The FSC program was developed using chain of custody principles to assure that forest products meeting the standards of certification were produced in a sustainable fashion at all levels of development. The SFI program originated to improve sustainable forestry practices in the US. Both programs have witnessed increased acceptance of certification criteria. The FSC program addresses environmental, economic, and social criteria while SFI focuses more on environmental and economic issues (Meridian, 2001). Once these programs certify a forest management practice, monitoring continues through timely audits or complaint resolution. Failure to comply with program standards may culminate in de-certification. While Michigan's CFA program imposes financial penalty for program withdrawal, FSC and SFI do not, relying mainly on market pressures to maintain certification. In the case of SFI, loss of membership to the AF&PA trade association may also occur.

Conservation Easements are restrictions placed on a property's deed regarding such issues as property development, forest management, and public access. Easements are acquired through both donation and purchase. Data regarding Conservation Easements in place on certain lands in the UP were not gathered for this study; however their existence greatly influences land use planning efforts and identification of those lands bound by deed restriction

and the nature of such restrictions would greatly enhance interpretation of ownership data. A good example of Conservation Easements for the UP is The Nature Conservancy's "Northern Great Lakes Forest Project" which reached agreement with The Forestland Group on 248,000 acres of UP timberland (TNC 2006) for the protection of public access, sustainable forestry practices and resource conservation of sensitive areas.

Corporate Forest Land Ownership

Ownerships tracked in this study were categorized by owner type. Different owner types vary in how well they reflect the primary motivation for land ownership. However, enrollment in CFA or forest certification programs implies and to various degrees ensures a long-term forest management objective regardless of primary motivation of ownership.

To a large degree companies representing a given owner-type have inter-connections to other owner-types, excluding perhaps the conservation organization (CONS) owner-type. For example, the "LAND" owner-type includes companies involved in forest management, real estate, and mineral business activities. Most entities, including LAND, have branches involved in real estate activities in addition to their primary ownership motivation.

The category "Other" includes smaller ownerships of un-identified entities; however, past ownerships included in this group may have been large tract holders. This group represents a diverse set of owner-types and particular holdings both public and private. The primary companies of this study, the associated owner-type, and the total CFA enrolled acreages are shown in Table 4. For detailed county level ownership information, see Appendix A.

Table 4. Leading UP Timberland Owners.

Entity	Owner Type	CFA (acres)
Plum Creek Timber Company, Inc.	REIT	633,900
Forestland Group, LLC	TIMO	518,050
International Paper, Inc.	VITPC	419,930
Keweenaw Land Association, Ltd.	LAND	144,900
Longyear, etal	LAND	65,351
Nature Conservancy	CONS	23,076
Cleveland Cliffs Iron Company, Inc.	MNRL	15,540
Vulcan Timberlands, Inc.	VITPC	13,871
Group Total		**1,834,618**

Industrial ownership of timberland (VITPCs) has historically been seen as a means of assuring raw material supply for the various production facilities operated by these types of companies. These entities are typically publicly traded corporations whose primary financial concerns are after tax earnings per share, cash flow, and return on investment (Browne 2000). Timber management practices have generally been conducted with a long-term perspective. However, the announcement of International Paper's transfer of timberland holdings to GMO Renewable Resources, a TIMO owner-type, leaves Vulcan Timberlands remaining as the last large-tract (greater than 10,000 CF acres) VITPC of our study. Vulcan has been a long-term holder of UP timberland active in timber sells with production facilities through partnership of Vulcan Bowling

Pin Co. and Brunswick, Inc. (Vulcan 2005). The company was not listed in current SFI or FSC certification membership rosters. Vulcan has holdings in Houghton and Ontonagon Counties with the majority in Ontonagon County. Sample periods for both counties showed slightly increasing, relatively stable, ownership.

Ownership by TIMOs is increasing at a higher rate than other types of owners. TIMOs represent institutional investors such as public and private pension plans, foundations, and endowments that acquiring, manage, and divest forestland. These types of companies typically have no processing facilities and therefore have no strategic timber supply to maintain. They either sell timber to the highest bidder or enter into supply agreements as part of the purchase agreement with the divesting VITPC. TIMOs are mainly concerned with building total assets, keeping management costs low, and generating comparatively better returns on investment than other companies providing the same service. The institutions they represent are interested in cash flows, portfolio diversification, and high portfolio returns (Browne 2000). Many of these ownerships are closed-end funds with a 10 – 15 year time span for holding the asset. Some funds may be re-evaluated at the end of their cycle for hold/sell decisions. Most TIMOs can be considered long-term investors realizing timberland has long-term characteristics however any given parcel may be subject to a shorter investment cycle (Wear, 2005). The type of land usually sought has high productivity with minimum non-productive land, good stocking rates with age classes that meet future cash flows and good access (Binkley, et al., 2000). With the transfer of International Paper land to GMO, the TIMO owner-type category will represent the largest holder of UP private timberland. The Forestland Group is certified by FSC, and continued SFI certification by GMO of International Paper lands was announced as part of the purchase agreement (IP 2006).

The Forestland Group has holdings in all counties except Delta, Dickinson, Mackinac, and Menominee with the largest ownership in Alger County. The majority of these holdings derived from entities that were categorized as “Other”. Of primary importance were acquisitions of Kamehameha School Trust and Ned Lake Timber & Land beginning in the year 2001. International Paper lands now assigned to GMO are found in all counties except Alger, Chippewa, Delta, Mackinac, and Schoolcraft. The largest ownership was found in Keweenaw County.

Another type of investor in timberland similar to the institutional investor is the real estate investment trust (REIT). The main concerns for REITs are found in growth and maintenance of the funds from operations (FFO). They look for properties that will not diminish this and harvest timber based on not introducing volatility to the FFO. This type of entity typically follows the same overall timber management perspectives as TIMOs (Block and Sample 2001). The REIT owner-type is represented in large tract holdings in the UP by Plum Creek Timber Co., the largest single timberland owner. By owner-type, REIT is the second largest holder of UP timberland. Plum Creek was the first REIT and is the largest private owner of timberland in the US with the majority of its UP holdings obtained from Escanaba Paper Co. in 2005 (Plum Creek 2006). The company is a somewhat unusual REIT in that it has involvement in processing at facilities in the Pacific Northwest. Plum Creek is SFI certified. The MiDNR reports Plum Creek CFA enrolled lands in all counties except Gogebic, with the largest holding in Marquette County.

The owner-types of “LAND” and “MNRL” describe companies involved in land, mineral, and timber management. Two companies, including associated holdings, Keweenaw Land Assoc. and J.M. Longyear Corporation, were assigned the owner-type “LAND” as these companies represent long time UP land and mineral right ownerships. Keweenaw Land Assoc. traces its roots to land grants obtained from the development of the Keweenaw ship canal (KLA 2006).

Its timberland holdings are FSC certified. Keweenaw Land has CFA holdings in six counties with the largest ownership in Gogebic County. With vast mineral discovery, J.M. Longyear became a large landholder in the UP during the late nineteenth century (Longyear 2001). Longyear holdings are not listed in current SFI or FSC certification membership rosters. This company was found in many different ownership associations. Longyear and associations have reported CFA enrolled lands in seven counties with the largest ownership in Marquette County. The Cleveland Cliffs Iron Co. (CCI) was assigned the owner-type "Mineral" (MNRL) due its iron extraction and processing operations. CCI had ancillary VITPC operations in the past (CCI 2007) but is no longer involved in forest products and has divested large areas of timberland. Currently owned lands are not listed on certification membership rosters and CFA enrolled acres are mainly found in Marquette County.

The Nature Conservancy (TNC), whose primary motivation of timberland ownership is centered on conservation and preservation of lands and water (TNC 2006), was assigned the owner-type "CONS". This type of owner is a relatively new addition to large tract timberland owners in the UP. Timberland holdings of TNC are FSC certified. The Nature Conservancy has CFA enrolled lands in Luce County with other holdings indicated in five other counties.

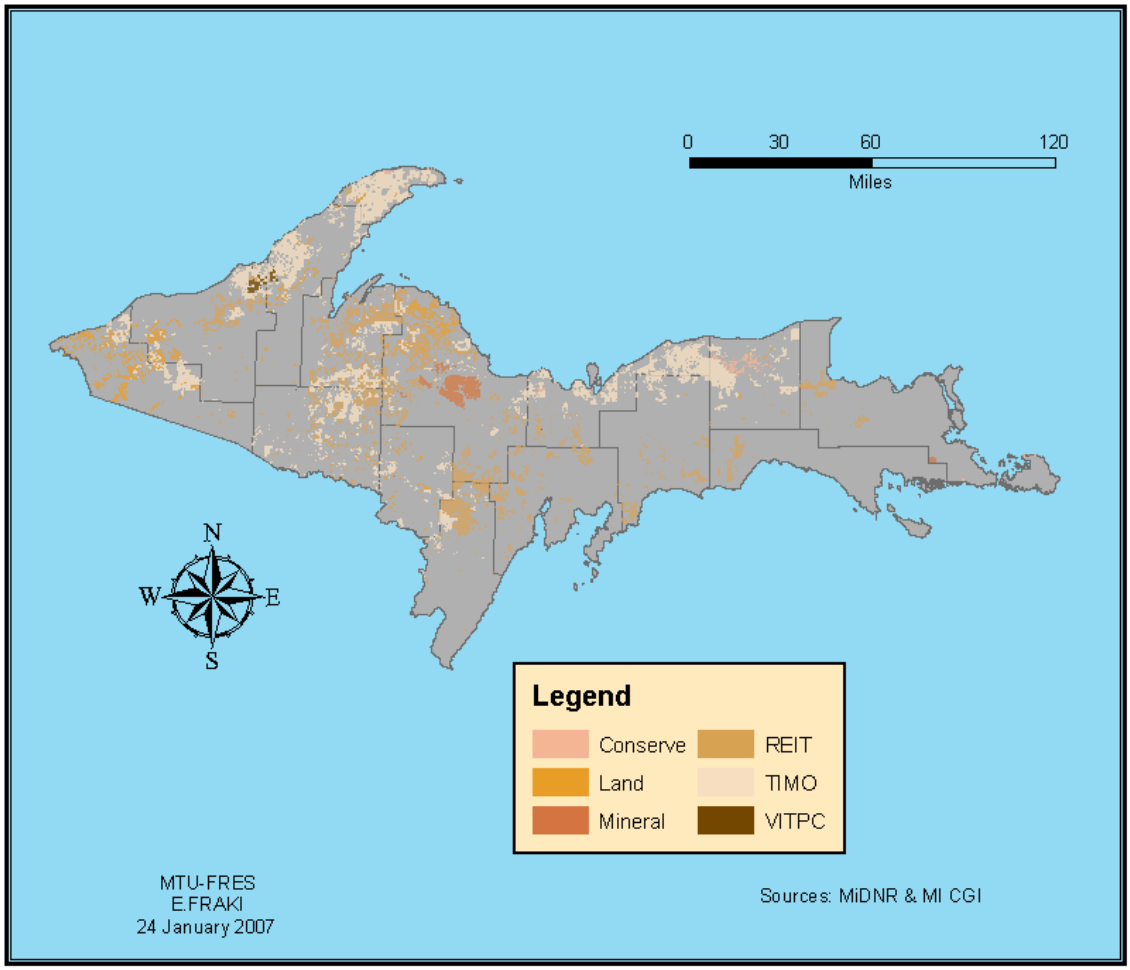


Figure 4. Large Tract Corporate Ownership in the Upper Peninsula, Michigan.

A spatial representation of the leading private timberland owners by owner-type is shown in Figure 4. This figure is a generalized representation of current large tract UP timberland holdings and does not reflect actual ownerships. Viewed in this fashion, the TIMO owner-type is the leading private timberland ownership group representing approximately 48% of the large tract corporate holdings of this study. Combined with the REIT owner-type, these financial timberland ownerships account for nearly 82% of large tract corporate timberland holdings in the UP.

Consequences of Ownership Change

Parcelization and Fragmentation

Parcelization has been defined as “the subdivision of land under a single ownership into smaller parcels under a diverse ownership” (Drzyzga and Brown 2002), while fragmentation refers more to physical landscape changes in the size and shape of forestlands. Parcelization has been shown as a precursor to fragmentation (Radeloff, et al 2005; Rinkus and Markham 2006).

The data available for this study permit a limited assessment of the degree of parcelization occurring in the UP. Because divestitures are often into the broad category of owner-type “Other” (OTH), they do not distinguish the new owner size or category. Thus, the analysis does not provide a measure of the number of new owners involved in the transfer of corporate holdings. Future work should emphasize development of a more detailed base data layer, or

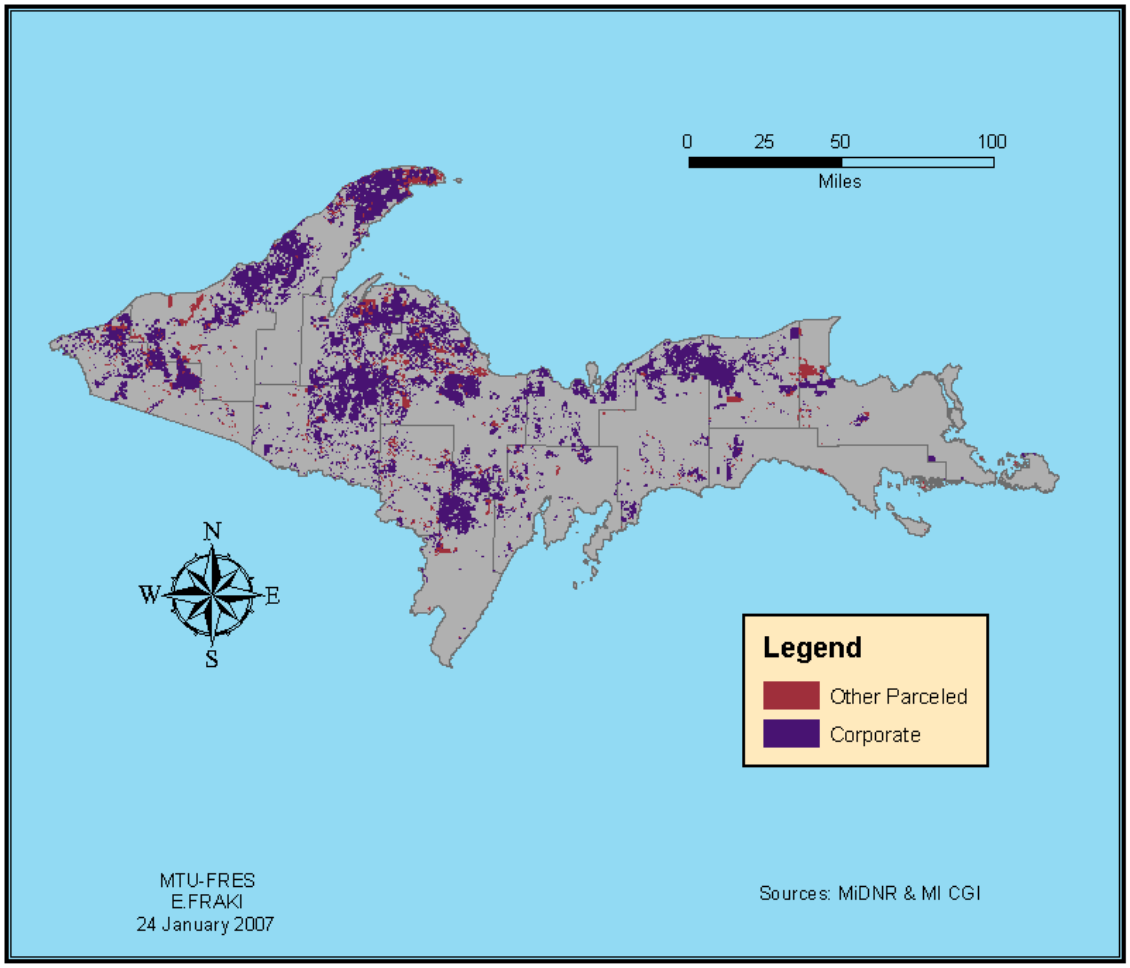


Figure 5. Parceled Large Tract Corporate Ownership in the Upper Peninsula, Michigan. The date varies by county, ranging from 2003-2006.

focus on regional assessments within the UP. Further study is also required to track ownership and subsequent land use after initial transfer of corporate holdings and to identify and monitor smaller corporation and individual ownerships.

While ownership of lands transferred out of large corporate holdings is unknown, these lands are used as an indicator of parcelization of large tract timberlands. Decreases in corporate holdings were noted in all of the 15 UP counties over the various time periods studied. All corporate entities identified divest lands outside of corporate-to-corporate exchanges in all counties in the UP (see Appendix A). However, data are not available to show any divestures of recently introduced large tract holders only reflecting some of the acquisitions by these companies. A depiction of lands parceled from corporate holdings is shown in Figure 5. This representation is a simple aggregation of ownership data from counties sampled at different dates, and should be interpreted with caution.

Information regarding the contiguous nature of large tract corporate holdings was estimated and compared between past and current sampling points for each county and is presented below in Table 5. In general, decreases to the maximum area of contiguous corporate holdings were seen with the exception of the five counties Iron, Chippewa, Luce, Mackinac, and Schoolcraft.

Corporate lands with adjacencies to Great Lakes shoreline in the UP generally decreased over all sampling periods. Of the 13 counties with shoreline, two began and ended their respective sampling intervals with zero frontages; Delta and Menominee. Luce, Ontonagon, and Baraga Counties showed 100% divestiture of these types of corporate lands. Chippewa, Houghton, and Marquette Counties saw slight increases in shoreline area over their respective sampling periods (9 to 11 years) with Houghton County leading at 994 acres of shoreline adjacent land while Chippewa and Marquette Counties each had less than 200 acres. Keweenaw had the largest holdings of shoreline area, approximately 1500 acres based on the current sample date of 2006, representing a decline of approximately 51% over an 12-year period. The least amount of remaining corporate shoreline area was found in Schoolcraft County (145 acres) from 2005.

No increases were found across counties for corporate lands with urban adjacencies. Seven counties were constant at zero adjacent area for their respective sampling intervals. Marquette County has the largest area of adjacency with 6,623 acres from its current sampling date of 2006 resulting from an approximate 37% decline in area over an 11-year period. Keweenaw County ended its sampling period 100% divested of such lands. Delta County, sampled in 2004, showed the least remaining adjacent area (18 acres) resulting from an approximate 94% decline over a 14-year interval.

All counties contain corporate land with lake adjacencies with the exception of Mackinac, which was 100% divested at the time of the 2006 sampling date. Marquette County showed the largest area of adjacent corporate lands with 22,229 acres from its current sampling date of 2006 resulting from a 26% decline over an 11-year period. Delta County had the least area (402 acres) based on a 2004 sampling date following an approximate 33% decline over 14 years.

Large corporate holdings of river and road adjacencies exist for the current sampling dates of all counties. Declines in these areas were found over the various sampling periods in all counties.

Table 5. Contiguous Corporate Land Holdings.

County	Year	# of Parcels	# of Parcels <40 Acres	Parcel Area (acres)			Parcel Perimeter (miles)		
				Min	Max	Mean	Min	Max	Mean
Alger	1992	153	29	13	64,248	1,142	1	171	6
	2004	142	23	29	63,694	1,192	1	173	6
Baraga	1995	127	29	23	76,595	710	<1	269	7
	2006	110	25	4	102,581	2,129	<1	265	8
Chippewa	1994	36	7	7	21,824	1,505	1	83	7
	2003	30	5	28	31,943	1,562	1	93	7
Delta	1990	134	26	19	9,178	513	1	47	4
	2004	113	13	18	8,511	554	1	35	4
Dickinson	1990	182	28	<1	9,543	371	<1	53	3
	2006	135	18	19	8,476	360	1	45	3
Gogebic	1991	214	33	21	50,395	825	1	135	4
	2005	155	32	9	41,549	1,074	1	161	5
Houghton	1997	101	17	11	92,251	1,446	1	242	7
	2006	109	9	24	92,235	1,328	1	245	6
Iron	1995	253	44	23	76,595	710	1	210	4
	2006	251	53	6	76,966	665	1	200	4
Keweenaw	1994	16	8	<1	162,827	10,471	<1	307	22
	2006	27	14	8	124,808	5,367	1	241	13
Luce	1994	121	18	24	54,107	1,009	1	151	5
	2005	108	17	12	54,181	1,030	1	149	5
Mackinac	1996	40	14	<1	11,291	550	<1	49	4
	2006	24	5	20	19,690	820	1	42	5
Marquette	1995	246	44	2	147,492	1,658	<1	558	8
	2006	259	45	10	67,009	1,385	1	244	7
Menominee	1996	79	20	11	67,209	1,479	1	187	7
	2003	81	25	6	66,817	1,432	1	183	6
Ontonagon	1993	124	14	19	102,216	1,682	1	285	7
	2004	89	4	20	59,159	2,013	1	132	8
Schoolcraft	1993	157	21	20	12,293	491	1	50	4
	2005	132	19	28	8,408	486	1	46	4

Forest Management, Habitat, and Public Access

The Michigan Department of Natural Resources has reported (MiDNR 2003) that annual growth has exceeded harvest in Michigan's forestland for over thirty years. In their study of ownership change in the Northern Forest (Hagan, etal. 2005), the Manomet Center for Conservation Sciences found the harvest rates of financial owners roughly equalled or slightly exceed growth. Furthermore, the percent of these parcels under even-aged management to be relatively low at roughly 25-45% compared to the traditional long-term ownerships which practiced even-aged management on roughly 80% of parcels owned. Manomet survey results also showed financial

investors had an overall lower rating than traditional timber ownerships in biodiversity indicators such as forest structure, habitat management, and late-successional forest management.

Financial owners in general have been seen to be long-term in nature (Block and Sample 2001) and may correspond well with conservation efforts also of a long-term nature. These types of companies may be more willing than traditional industry ownerships to divest lands of lower productivity (often ecologically sensitive) and enter into conservation easement agreements (Browne 2000). In the UP, the companies representing the TIMO and REIT owner-types are either FSC or SFI certified to follow sustainable forest practices and the majority of these lands are CFA enrolled. This it seems likely that long-term timber management and public access is assured on these lands. Acquired conservation easements are in place on over 15% of these land holdings protecting access, habitat, and sustainable forestry practice without threat of future development.

The majority of the focus companies in this study identifiy and convert forest lands of high value to other uses. This parcelization of large tracts of timberland may lead to an increased number of management principles and objectives per unit of area adding uncertainty to the nature and status of forest management and condition (Drzyzga and Brown 2002). As parcelization increases, it has been shown that public access and wildlife habitat decline (Rinkus and Markham 2006, Nelson 2001, and Radeloff, et al 2005). The associated infrastructure (roads, buildings, etc.) that often follows parcelization leads to forest fragmentation that jeopardizes large mammal and bird habitats (Radeloff, et al 2005). These habitats are disrupted by factors such as human activity, destruction of connecting pathways between areas of forest cover, decreased area of interior forest, and forest edge environments (Bryan 2004).

Public access to large tract corporate lands for activities such as hunting, fishing, trapping and hiking are tradition in the UP, and are assured through the CFA program and the granted permissions from individual companies. Based on our data, over 90% of lands held by the primary companies, or over 1.8 million acres, are CFA enrolled. While de-listing of CFA land for alternate use has an immediate impact on public access, development on adjacent lands may restrict access on listed parcels. In the case of hunting (Nelson 2001), it has been shown that restrictions placed on the discharge of firearms in proximity to structures limited access. Typically a safety zone of 450 feet is required around buildings. Using a 30 x 30 foot structure as an example, Nelson calculated nearly 16 acres of land unavailable for hunting. Further loss of public access to public land may occur by parcelization of fringe areas isolating or “land locking” landscape features.

Higher and Better Use Lands

To highlight those corporate lands considered as having a potential higher value alternate use, buffers were created around landscape features including lakes, rivers, shoreline, roads and urban areas, as seen in Figure 6. Once constructed, these buffers were merged and intersected with corporate holdings to measure the amount of corporate land that fell within the buffered regions. While the most recent sampling dates vary across counties from 2003 to 2006, the percentage of corporate land falling within the buffered regions is quite pronounced ranging from 38% in Mackinac County to 76% in Marquette County. The County, sampling date, area within buffers and percent of total holdings describing those alternate use lands depicted in Figure 6 is shown in Table 6.

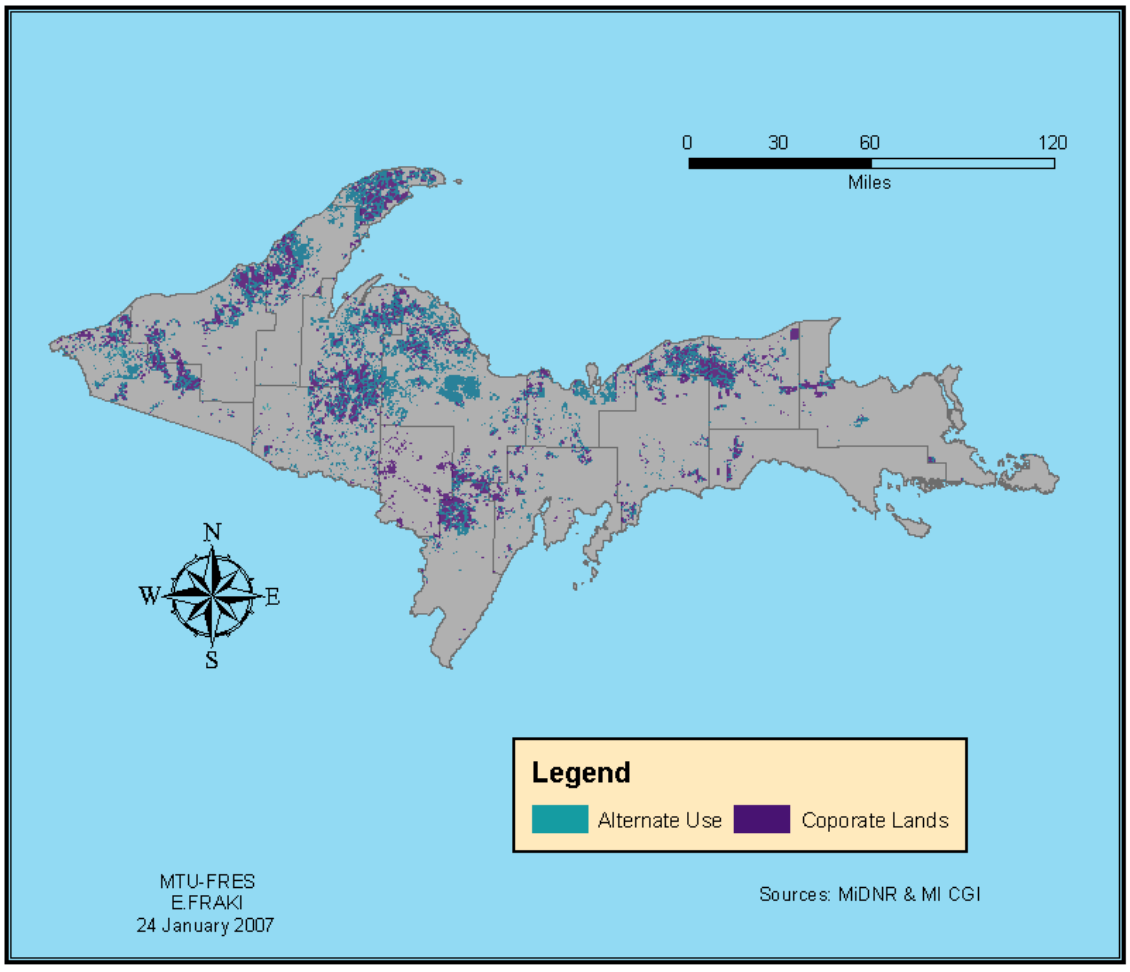


Figure 6. Potential Corporate Timberland of Higher Alternative Use Value.

Table 6: Potential Alternate Use Corporate Lands

County	Date	River & Lake Buffer (acres)	Shoreline Buffer (acres)	Total Buffer (acres)	Percent of Total Corporate
Alger	2004	60346	525	108080	64
Baraga	2006	116393	188	149,404	64
Chippewa	2003	12976	495	22,379	48
Delta	2004	19690	38	28,325	45
Dickinson	2006	9782	0	24,167	50
Gogebic	2005	62588	1693	94,947	57
Houghton	2006	47612	1656	92,915	64
Iron	2006	61455	0	95,971	58
Keweenaw	2006	55900	2735	87,218	60
Luce	2005	34533	83	48,615	44
Mackinac	2006	4608	413	7,455	38
Marquette	2006	162594	503	271,290	76
Menominee	2003	32711	0	54,074	47
Ontonagon	2004	76711	34	91,063	51
Schoolcraft	2005	21431	220	31,853	50

Conclusions and Recommendations

The transfer of large tract forestland ownership from traditional industrial to financial owner types is nearly complete in the UP although not consistently reflected by the most recently published plats utilized in this study. At this point of transition in ownership of large tracts of UP forestland, information on parcel ownership and management performance is incomplete or not readily available. Efforts are under way in the UP at the county level to develop more precise ownership spatial layers, however availability is limited. The Western Upper Peninsula Development Region [W.U.P.P.D.R. 2006] provided current spatial ownership information utilized in this study for four counties and is in development of a fifth.

The nearly two million acres of large tract corporate timberland holdings in the UP approximate a quarter of total timberland, with public holdings accounting for another 50%. The remaining 25% categorized as “Other” for this study constitute a land ownership, land use uncertainty. While much may be unknown of actual ownership motivation and future direction of large tract corporate timberland owners, the majority of these owners hold third-party certification for sustainable forestry practice and are enrolled in Michigan’s CFA Program allowing certain levels of oversight and disclosure of management actions. Given the recent nature of ownership transfers, audited information regarding certification standards is limited.

The UP is at cross-roads of increased demand for land possessing natural amenities and the large scale transfer of private timber holdings to non-traditional ownership. This study has provided a general, spatial assessment at the county level of change in large tract corporate timberland ownership with parcel proximities to landscape features and comparisons of the contiguous nature of corporate lands. Before accurate projection of those lands with the highest probability of conversion to alternate use can be achieved, more recent, uniform ownership data and information on existing conservation easements must be obtained. Identification of individual ownerships categorized, as “Other” in this study and any subsequent parcelization that may occur is also required to measure any overall impacts from initial transfer of corporate land. Further investigation of those factors driving alternate use demand and local zoning ordinance are also required before accurate projections may be achieved

Development of a comprehensive spatial land use database combining ownership and landscape characteristics for the entire UP would provide an invaluable tool for planning efforts at all levels utilizing easily assessable, consistent information. Further modification and enhanced of the spatial ownership datasets created by this study would provide such a tool.

Literature Cited

Benson, S. 2006. 3Q06: Get the Latest Rural Land Price Trends! Available at www.landandfarm.com, accessed in November, 2006.

Binckley, C.S., C.F. Raper, and C.L. Washburn. 1996. Institutional Ownership of US Timberland; History, Rationale, and Implications for Forest Management. Journal of Forestry, September 1996.

Block, N.E. and V.A. Sample. 2001. Industrial Timberland Divestures and Investments: Opportunities and Challenges in Forestland Conservation. Pinchot Institute For Conservation, Milford, PA.

Browne, M. 2000. Changing Ownership Patterns: An Overview Of Institutional Ownership And Resulting Opportunities. Pinchot Institute for Conservation and USDA Forest Service Symposium, May 22, 2000. Resources and Convention Center, Washington, D.C.

Bryan, G. 2004. How Much Habitat is Enough? Environment Canada, Canadian Wildlife Service, Downsview, Ontario. Available at www.on.ec.gc.ca/wildlife, accessed on July 15, 2006.

CCI (Cleveland Cliffs Iron Co.) 2007. Company History. Available at www.cleveland-cliffs.com/general/history, accessed on January 10, 2007.

Drzyzga, S.A. and D.G. Brown. 2002. Spatial and Temporal Dynamics of Ownership Parcels and Forest Cover in Three Counties of Northern Lower Michigan USA, ca. 1970 to 1990. In S.J. Walsh and K.A. Crews-Meyer, Eds., Remote Sensing and GIS Applications for Linking People, Place, and Policy, Dordrecht: Kluwer, p. 155-185. Available at www.personal.umich.edu/~danbrown/papers/drzyzga03, accessed in September 2006.

EPIC-MRA 2002. Survey on the Economy and Natural Resources in the Upper Peninsula. Executive Summary and Demographic Analysis. EPIC-MRA, Lansing, Michigan.

Gustafson, E.J., R.B. Hammer, V.C. Radeloff and R.S Potts. 2005. The relationship between environmental amenities and changing human settlement patterns between 1980 and 2000 in the Midwestern USA. Landscape Ecology 20:773-789.

Hagan, J.M., L.C. Irland, and A.A. Whitman. 2005. Changing timberland ownership in the Northern Forest and implications for biodiversity. Manomet Center for Conservation Sciences, Report # MCCS-FCP-2005-1, Brunswick, Maine, 25 pp.

IP (International Paper Co.), 2006. News Release available at http://investor.internationalpaper.com, accessed on September 25, 2006

KLA (Keweenaw Land Association, Ltd.). 2006. Company Profile and History. Available at www.keweenaw.com/profile, accessed on January 7, 2007

MiDNR (Michigan Department of Natural Resources) 2003. Michigan Forest Legacy Program, Assessment of Need. A Report From the Michigan Department of Resources.

Meridian Institute. 2001. Comparative Analysis of the Forest Stewardship Council and Sustainable Forestry Initiative Certification Programs. American Lands, Washington, D.C. Available at http://www2.merid.org/comparison/pressrelease, accessed in December, 2006.

Longyear (J.M.Longyear, LLC.). 2001. The Longyears. Available at www.longyear.org/mbl, accessed on January 7, 2007.

Nelson, C.M. 2001. Economic Implications of Land Use Patterns for Natural Resource Recreation and Tourism. Prepared for the Michigan Economic and Environmental Roundtable. Public Sector Consultants, Inc., Lansing, MI.

NFLC (Northern Forest Lands Council). 1994. Recommendations of the Northern forest Lands Council. Governor's Tasjk Force on Northern Forest Lands, Concord, NH.

Plum Creek (Plum Creek Timber Co.). 2006. News Release, Plum Creek Updates Assessment of High Value Timberlands. Available at www.phx.corporate-ir.net, accessed on August 25, 2006.

Radeloff, V.C., R.B. Hammer, and S.I.Stewart. 2005. Rural and suburban Sprawl in the U.S. Midwest from 1940 to 2000 and Its Relation to Forest Fragmentation. Conservation Biology 19:3, pp 793-805.

Rinkus, M.A. and V.D.Markham. 2006. U.S. State Reports on Population and the Environment, Michigan. Center for Environment and Population and The National Wildlife Federation, Ann Arbor, Mi.

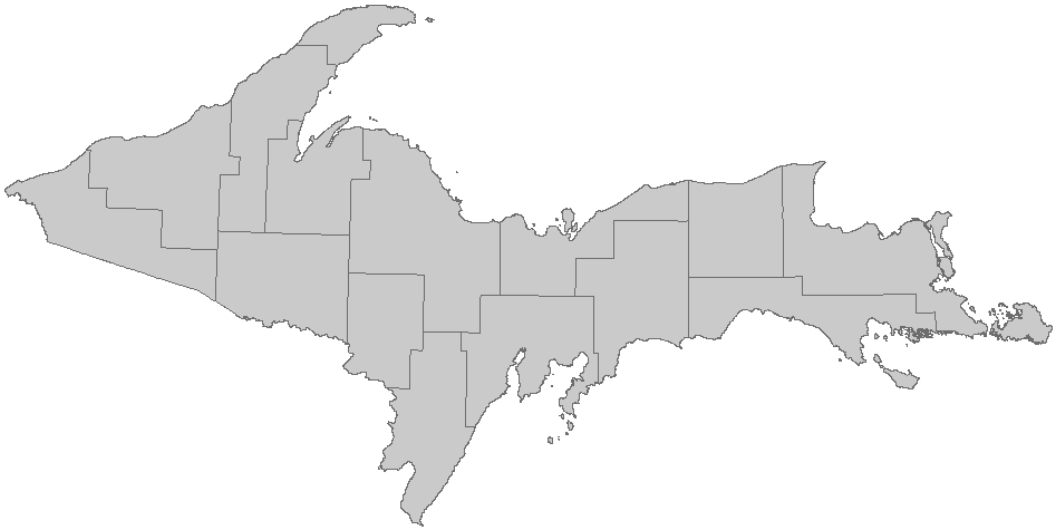
TNC (The Nature Conservancy). 2006. Northern Great Lakes Forest Project. Available at www.nature.org/wherewework/northamerica/states/michigan, accessed on January 7, 2007.

Vulcan (Vulcan Timberlands, Inc.). 2005. Company Profile and History. Available at www.vulcorp.com, accessed on January 7, 2007.

Wear, D. 2005. Rapid Changes in Forest Ownership Increase Fragmentation. Southern Research Station Headquarters, Asheville, NC. Available at www.srs.fs.usda.gov/staff/636, accessed in July, 2006.

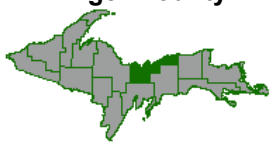
W.U.P.P.D.R. (Western Upper Peninsula Planning and Development Region). 2006. Spatial Ownership Datasets, Ontonagon, Gogebic, Iron, and Baraga Counties

APPENDIX A



COUNTY REPORTS

A-1: Alger County



The sampling dates for this county were 1992 and 2004 giving a comparison period of 12 years. The major ownership transfer of lands during this period was found between Benson (BFI) and The Forestland Group (FLG). FLG represented the largest single ownership in the 2004 sampling date representing nearly 86% of large tract holdings. The Nature Conservancy (TNC) became a new owner during this period while Escanaba Paper (EPC) remained relatively stable. Numerous companies ended the period completely divested of land holdings in Alger County. A breakdown of these ownerships is found in Table A-1.1 with the distribution of divestitures shown in Table A-1.2. For this time period, large tract holdings decreased 5,419 acres or approximately 3%.

Table A-1. 1: Large-Tract Holdings (acres) for Alger County.

Company	Type	Year		Gain (Loss)
		1992	2004	
BF	LAND	145620	0	(145,620)
CCI	VITPC	4,154	0	(4,154)
CIC	VITPC	2,203	0	(2,203)
CFI	VITPC	398	0	(398)
EPC	VITPC	21,207	21,775	568
KLA	LAND	162	0	(162)
MD	VITPC	359	160	(199)
SJF	VITPC	475	595	120
FLG	TIMO	0	144,910	144,910
TNC	CONS	0	1,719	1,719
Total Holdings		**174,578**	**169,159**	**(5,419)**

Parcels that transferred out of the large-tract category during this period to “Other” owners totaled 10,420 acres or approximately 6% of the 1992 total large-tract holdings. This area loss was partially offset by a 5,001 acre increase to the large-tract category resulting in final holdings of 169,159 acres for the 2004 sample date.

Table A-1. 2: Large-Tract Transfers (acres) from 1992 to 2004 for Alger County.

Buyers	Sellers								Total Acquired
	BF	CCI	CIC	CFI	EPC	KLA	MD	OTH	
EPC	356	0	642	0	0	0	199	692	**1,889**
FLG	139,579	2,861	0	0	0	0	0	2,470	**144,910**
MD	0	0	0	0	0	0	0	0	**0**
SJF	0	0	0	0	0	0	0	120	**120**
TNC	0	0	0	0	0	0	0	1,719	**1,719**
OTH	5,685	1,293	1,561	398	1,321	162	0		**10,420**
Total Divested	**145,620**	**4,154**	**2,203**	**398**	**1,321**	**162**	**199**	**5,001**	

Current (2006) MiDNR CFA listings for Alger County indicate The Forestland Group as the largest corporate entity with 141,413 enrolled acres. Plum Creek is the only other large tract holder with 20,698 acres of CFA enrolled lands. Total CFA enrolled lands for the county of non-individual (corporate, organizational, etc.) ownership is 165,178 acres.

Spatial representation of corporate lands found in Alger County in relationship to the features of lakes, rivers, roads, urban areas, and public lands can be seen in Figures A-1.1 and A-1.2. For the 2004 sampling date, those lands that transferred out of corporate large-tract ownership during the sampling period are shown as “Other Parceled”.

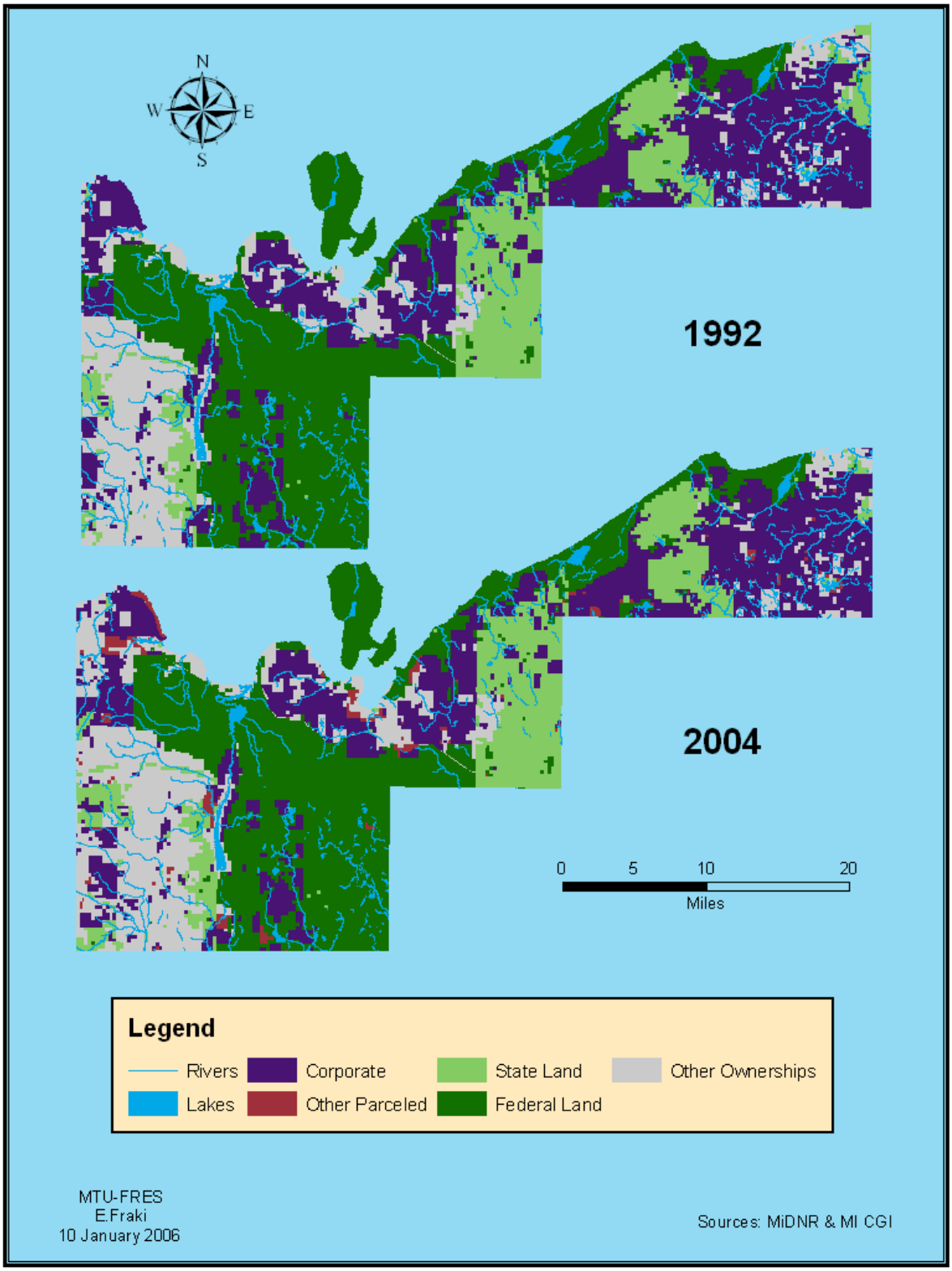


Figure A-1. 1: Comparison of Corporate Lands (1992-2004) with Proximities to Lakes, Rivers, State and Federal Lands for Alger County.

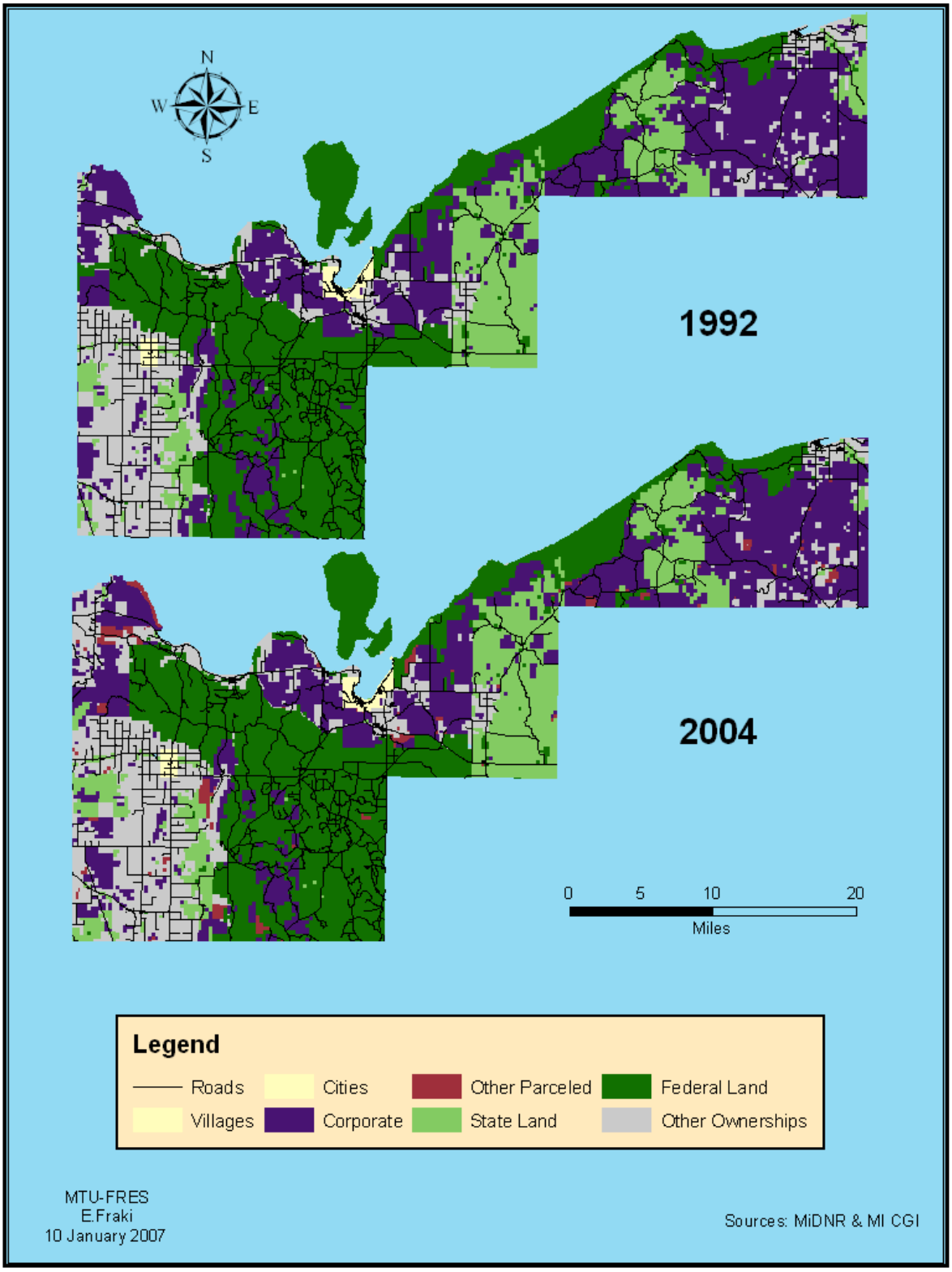


Figure A-1. 2: Comparison of Corporate Lands (1992-2004) with Proximities to Roads, Urban Areas, State and Federal Lands for Alger County.

The contiguous nature of large-tract holdings in Alger County comparing the sampling dates 1992 and 2004 is detailed below in Table A-1.3.

Table A-1. 3: Contiguous Large-Tract Holdings (acres) for Alger County.

Year	#Parcels	#Parcels <40 acres	Area (acres)			Perimeter (miles)		
			Min	Max	Mean	Min	Max	Mean
1992	153	29	13	64,248	1,142	1	171	6
2004	142	23	29	63,694	1,192	1	173	6

This data indicates a decrease in the number of isolated parcels less than 40 acres in area over the sampling period. Measures of contiguous parcel area and perimeter remained relatively stable.

Of the total corporate 2004 land holdings of 169,159 acres, approximately 64% or 108,080 acres fall within the buffered areas of potential alternate land use including parcels of less than 40 acres in area. This represents an increase of 3,044 acres (3%) in these types of lands during the time interval studied for this county. A spatial depiction of these lands is shown in Figure A-1.3.

Frontages to the identified features of lakes, rivers, Great Lake shoreline, roads and urban areas are shown for the two sample dates in Table A-1.4 with the associated gain (loss) of area during the time interval studied.

Table A-1. 4: Feature Adjacencies (acres) for Alger County.

Feature	1992	2004	Gain (Loss)
Lake	11,224	9,996	(1,228)
River	30,864	30,188	(676)
Shoreline	685	208	(477)
Roads	35,077	33,367	(1,710)
Urban	1,289	327	(962)

The most dramatic changes in percentage loss were found in the decline of Great Lake shoreline (70%) and urban adjacencies (75%). Lake adjacent area declined nearly 11% for the sampling period and represented the second highest feature adjacency loss in acres following roads.

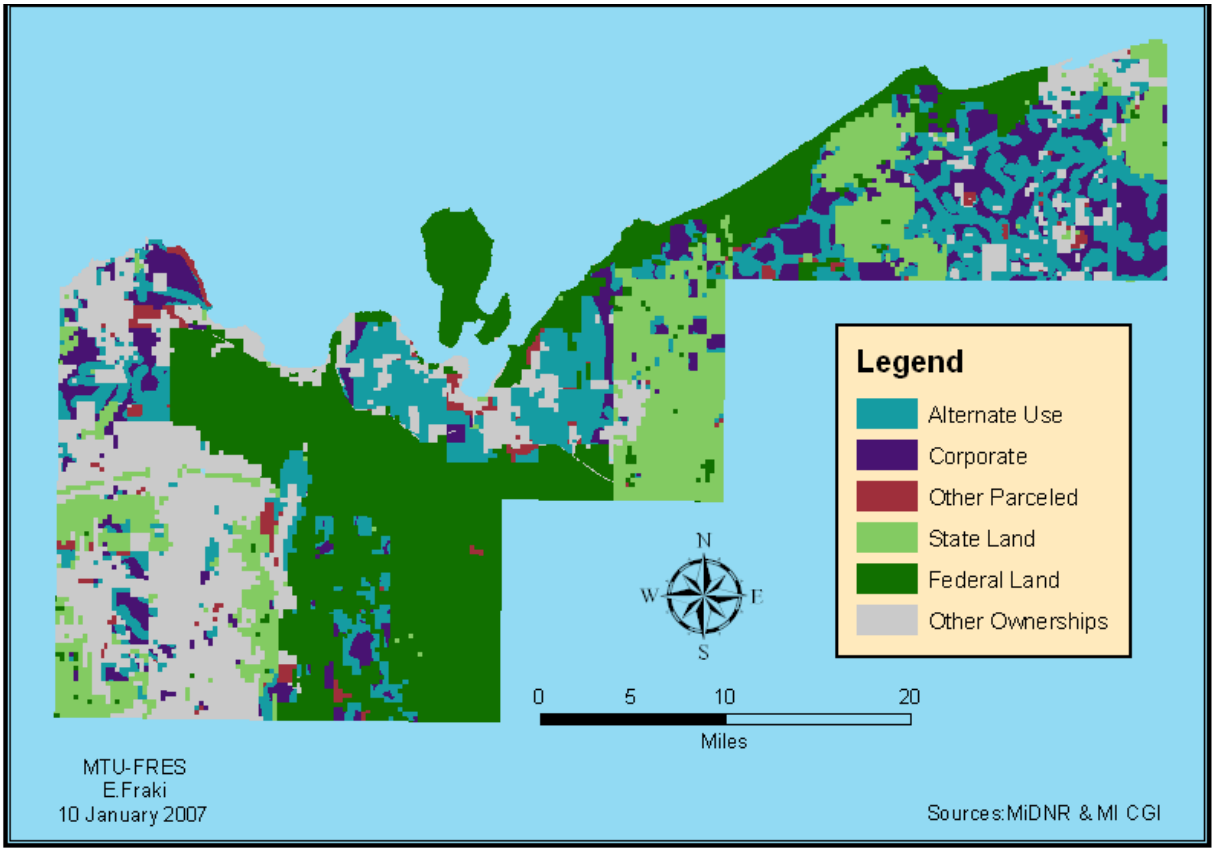
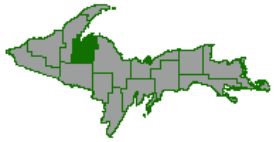


Figure A-1. 3: Corporate Lands Showing Areas of Possible Higher Value Alternate Use for Alger County.

A-2: Baraga County



The sampling dates for this county were 1995 and 2006 giving a comparison period of 11 years. Much activity in land transfers were noted during this period. Escanaba Paper increased holdings to end the period the largest single corporate owner while many complete divestitures occurred. The Forestland Group was introduced as a new owner ending the period the second largest land owner. International Paper increased holdings from nearly zero in 1995 to become the third largest land owner in Baraga County. Combined, these three companies account for approximately 85% of total 2006 large-tract holdings. A breakdown of these ownerships is found in Table A-2.1 with the distribution of divestitures shown in Table A-2.2. For this time period, large tract corporate holdings decreased 13,700 acres or nearly 6%.

Table A-2.1: Large-Tract Holdings (acres) for Baraga County

Company	Type	Year		Gain (Loss)
		1995	2006	
ALW	LAND	10,734	10,496	(238)
BTr	LAND	28,976	0	(28,976)
CCI	MNRL	595	0	(595)
CIC	VITPC	28,307	0	(28,307)
CFI	VITPC	27,154	42	(27,112)
EPC	VITPC	20,226	113,450	93,224
FLG	TIMO	0	57,623	57,623
IP	VITPC	120	48,876	48,756
LYR	LAND	3,556	3,590	34
MD	VITPC	100,475	0	(100,475)
NLT	LAND	27,401	40	(27,361)
SJF	VITPC	80	0	(80)
TNC	CONS	193	0	(193)
Total Holdings		**247,817**	**234,117**	**(13,700)**

Parcels that transferred out of the corporate category during this period to “Other” owners totaled 20,988 acres or approximately 9% of the 1995 total large-tract holdings. This area loss was partially offset by a 7,288-acre increase to the large-tract category resulting in final total holdings of 234,117 acres for the 2006 sample date.

Not shown in Table A-2.2 are divestitures of The Nature Conservancy, St John, and Longyear. These transfers were less than 300 acres combined, with all lands transferring out of the large-tract category of owners.

Table A-2. 2: Large Tract Transfers (acres) from 1995 to 2006 for Baraga County.

Buyers	Sellers									Total Acquired
	ALW	BTr	CCI	CIC	CFI	EPC	MD	NLT	OTH	
ALW		0	0	0	0	0	0	0	320	**320**
CFI	0	0	0	0		0	0	0	42	**42**
EPC	0	0	0	3,391	63		89,330	0	1,355	**94,139**
FLG	0	28,505	0	1,154	646	0	0	25,533	1,785	**57,623**
IP	0	0	0	16,674	21,225	0	7,111	0	3,746	**48,756**
LYR	0	0	0	0	0	0	0	0	40	**40**
NLT	0	0	0	0	0	0	0		0	**0**
OTH	558	471	595	7,088	5,220	915	4,034	1,828		**20,709**
Total Divested	**558**	**28,976**	**595**	**28,307**	**27,154**	**915**	**100,475**	**27,361**	**7,288**	

Current (2006) MiDNR CFA listings for Baraga County indicate Plum Creek with enrolled holdings of 116,545 acres. The Forestland Group listed at 56,420 acres follows with International Paper reported at approximately 43,777 acres. Total CFA enrolled lands of non-individual (corporate, organizational, etc.) ownership for the county is 237,593 acres.

Spatial representation of large-tract holdings found in Baraga County in relationship to the features of lakes, rivers, roads, urban areas, and public lands can be seen in Figures A-2.1 and A-2.2. For the 2006 sampling date, those lands that transferred out of corporate ownership during the sampling period are shown as “Other Parceled”.

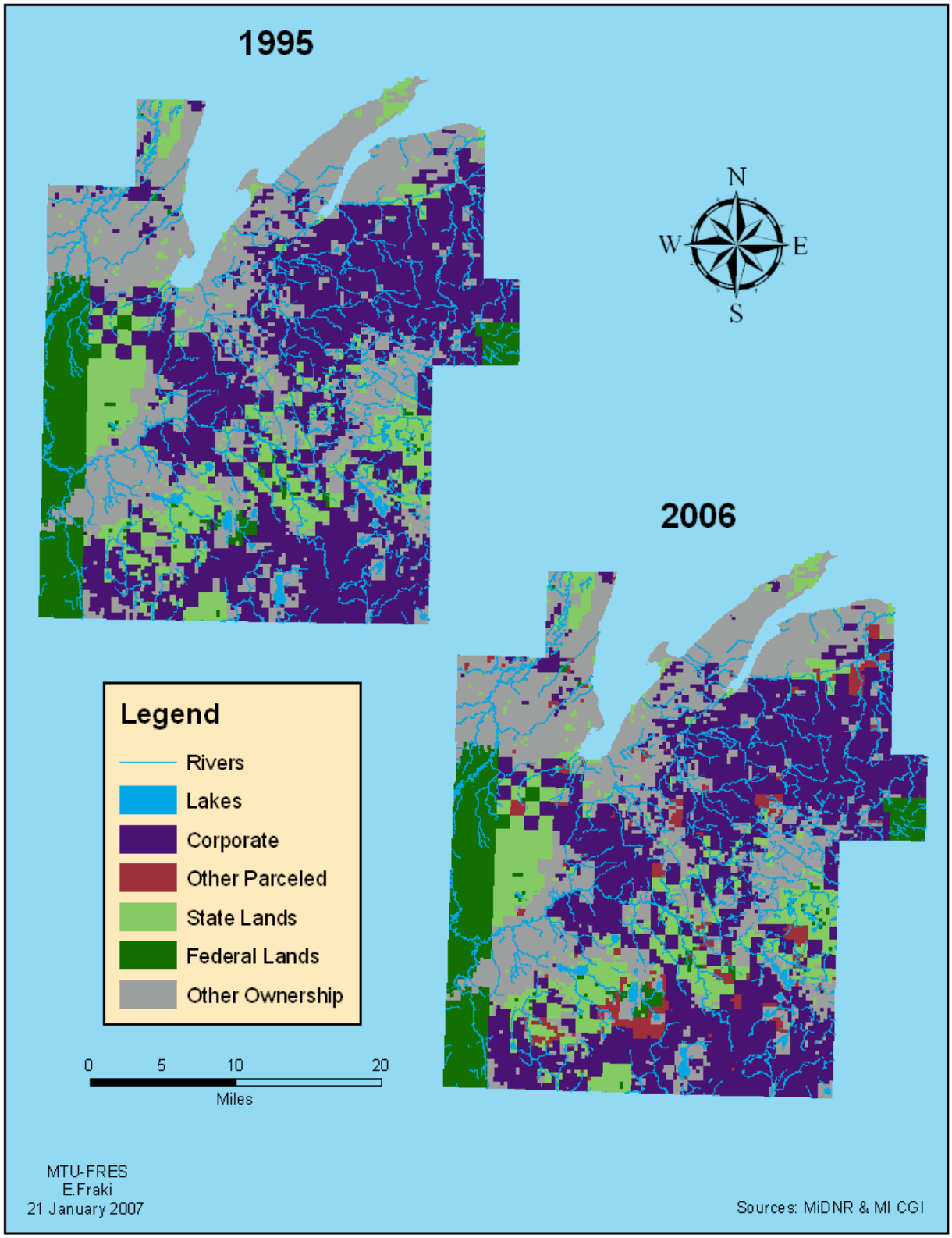


Figure A-2. 1: Comparison of Corporate Lands (1995-2006) with Proximities to Lakes, Rivers, State and Federal Lands for Baraga County.

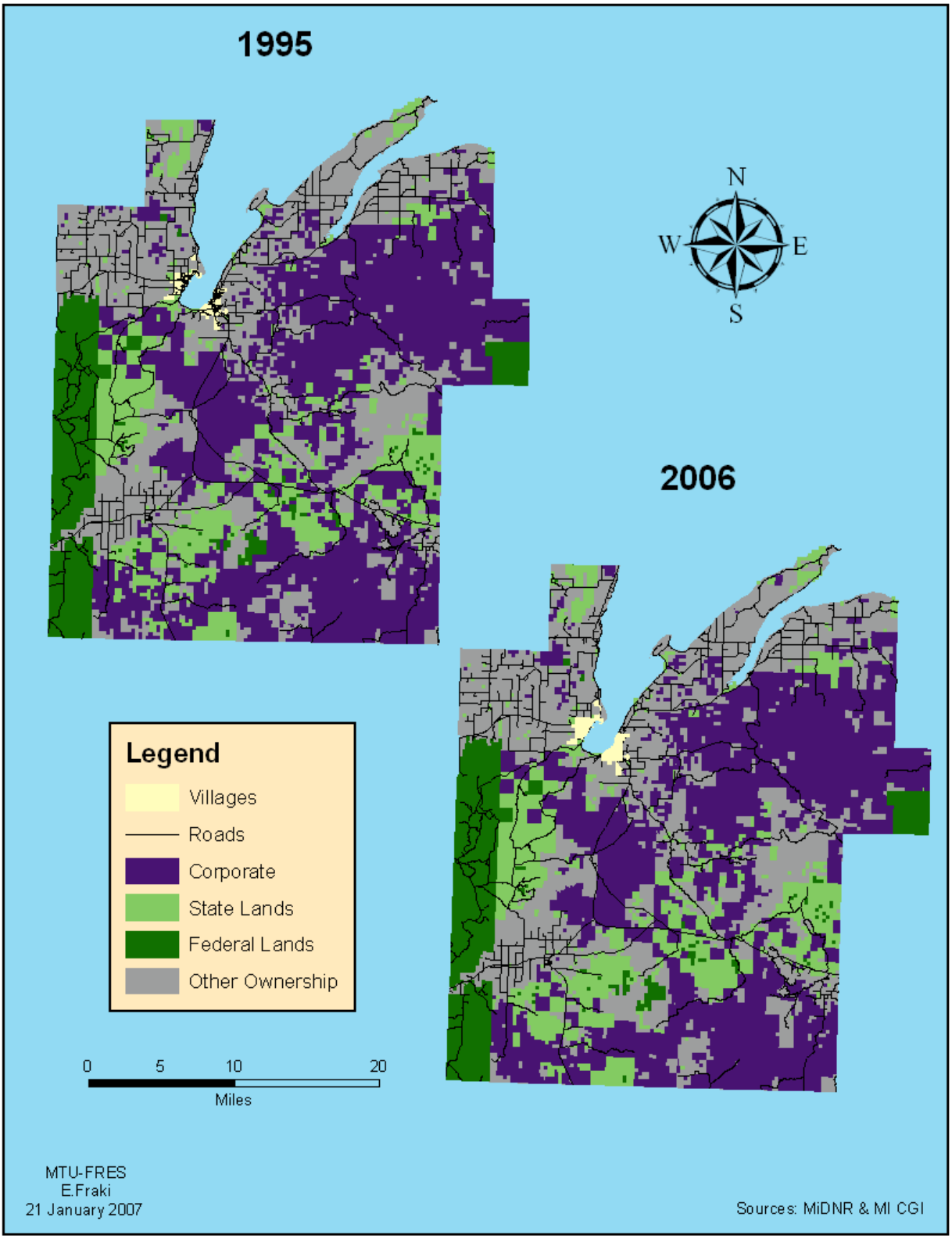


Figure A-2. 2: Comparison of Corporate Lands (1995-2006) with Proximities to Roads, Urban Areas, State and Federal Lands for Baraga County.

The contiguous nature of large-tract holdings in Baraga County comparing the sampling dates 1995 and 2006 is detailed below in Table A-2.3.

Table A-2. 3: Contiguous Large-Tract Holdings (acres) for Baraga County.

Year	#Parcels	#Parcels <40 acres	Area (acres)			Perimeter (miles)		
			Min	Max	Mean	Min	Max	Mean
1995	127	29	23	76,595	710	<1	269	7
2006	110	25	4	102,581	2,129	<1	265	8

The number of isolated parcels decreased (14%) over the sampling period while the maximum area of contiguous large-tract holdings increased 25,986 acres or approximately 34%.

Of the total 2006 land holdings of 234,117 acres, approximately 64% or 149,404 acres fall within the buffered areas of potential alternate land use including parcels of less than 40 acres in area. This represents a decrease of 9,784 acres (6%) in these types of lands during the time interval studied for this county. A spatial depiction of these lands is shown in Figure A-2.3.

Frontages to the identified features of lakes, rivers, Great Lake shoreline, roads and urban areas are shown for the two sample dates in Table A-2.4 with the associated gain (loss) of area during the time interval studied.

Table A-2. 4: Feature Adjacencies (acres) for Baraga County.

Feature	1995	2006	Gain (Loss)
Lake	5,065	4,024	(1,041)
River	76,272	72,135	(4,137)
Shoreline	93	0	(93)
Roads	31,847	28,870	(2,977)
Urban	0	0	0

Shoreline adjacent large-tract holdings ended the study period completely divested. Lake and road frontage lands decreased 21% and 9% respectively. River adjacent large-tract holdings decreased at a rate of 5% over this time period but represented the largest acreage loss.

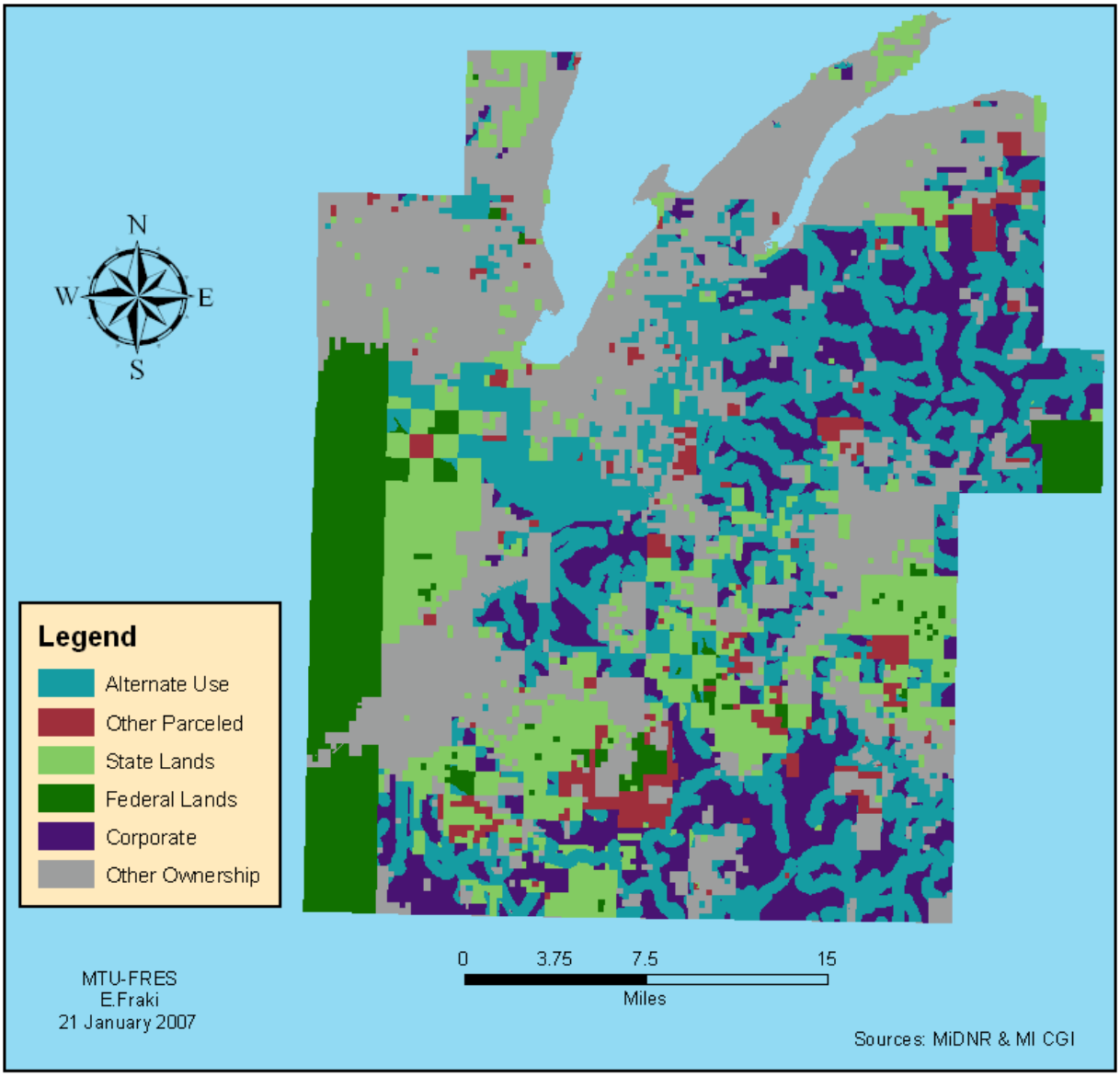
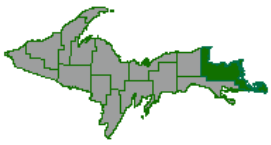


Figure A-2.3: Corporate Lands Showing Areas of Possible Higher Value Alternate Use for Baraga County.

A-3: Chippewa County



The sampling dates for this county were 1994 and 2003 giving a comparison period of 9 years. Escanaba Paper represented the largest single corporate holding at both sample years slightly declining over the period. The major transfer of ownership was found between Benson Forests and the Bishop Trust. Champion showed near complete divestiture during this period while The Nature Conservancy increased holdings. A breakdown of these ownerships is found in Table A-3.1 with the distribution of divestitures shown in Table A-3.2. For this time period, large tract holdings decreased 7,313 acres or approximately 14%.

Table A-3. 1: Large-Tract Holdings (acres) for Chippewa County.

Company	Type	Year		Gain (Loss)
		1994	2003	
BFI	LAND	14,731	0	**(14,731)**
BTr	LAND	0	14,731	**14,731**
CCI	MNRL	3,062	3,022	**(40)**
CIC	VITPC	5,736	50	**(5,686)**
EPC	VITPC	29,169	27,228	**(1,941)**
FLG	TIMO	0	283	**283**
TNC	CONS	1,476	1,830	**354**
Total Holdings		**54,174**	**47,144**	**(7,030)**

Parcels that transferred out of the large-tract category during this period to “Other” owners totaled 9,064 acres or approximately 17% of the 1994 total large-tract holdings. This area loss was partially offset by a 1,944-acre increase to the large-tract category resulting in final holdings of 46,861 acres for the 2003 sample date.

Table A-3. 2: Large-Tract Transfers (acres) from 1994-2003 for Chippewa County.

Buyers	Sellers						Total Acquired
	BFI	CCI	CIC	EPC	TNC	OTH	
BTr	14,731	0	0	0	0	0	**14,731**
CCI	0		0	0	0	40	**40**
CIC	0	0		0	0	50	**50**
EPC	0	0	0		0	1,300	**1,300**
FLG	0	0	0	0	0	283	**283**
TNC	0	0	0	0		361	**361**
OTH	0	80	5,736	3,241	7		**9,064**
Total Divested	**14,731**	**80**	**5,736**	**3,241**	**7**	**2,034**	

Spatial representation of large-tract holdings found in Chippewa County in relationship to the features of lakes, rivers, roads, urban areas, and public lands can be seen in Figures A-3.1 and A-3.2. For the 2003 sampling date, those lands that transferred out of large-tract ownership during the sampling period are shown as “Other Parceled”.

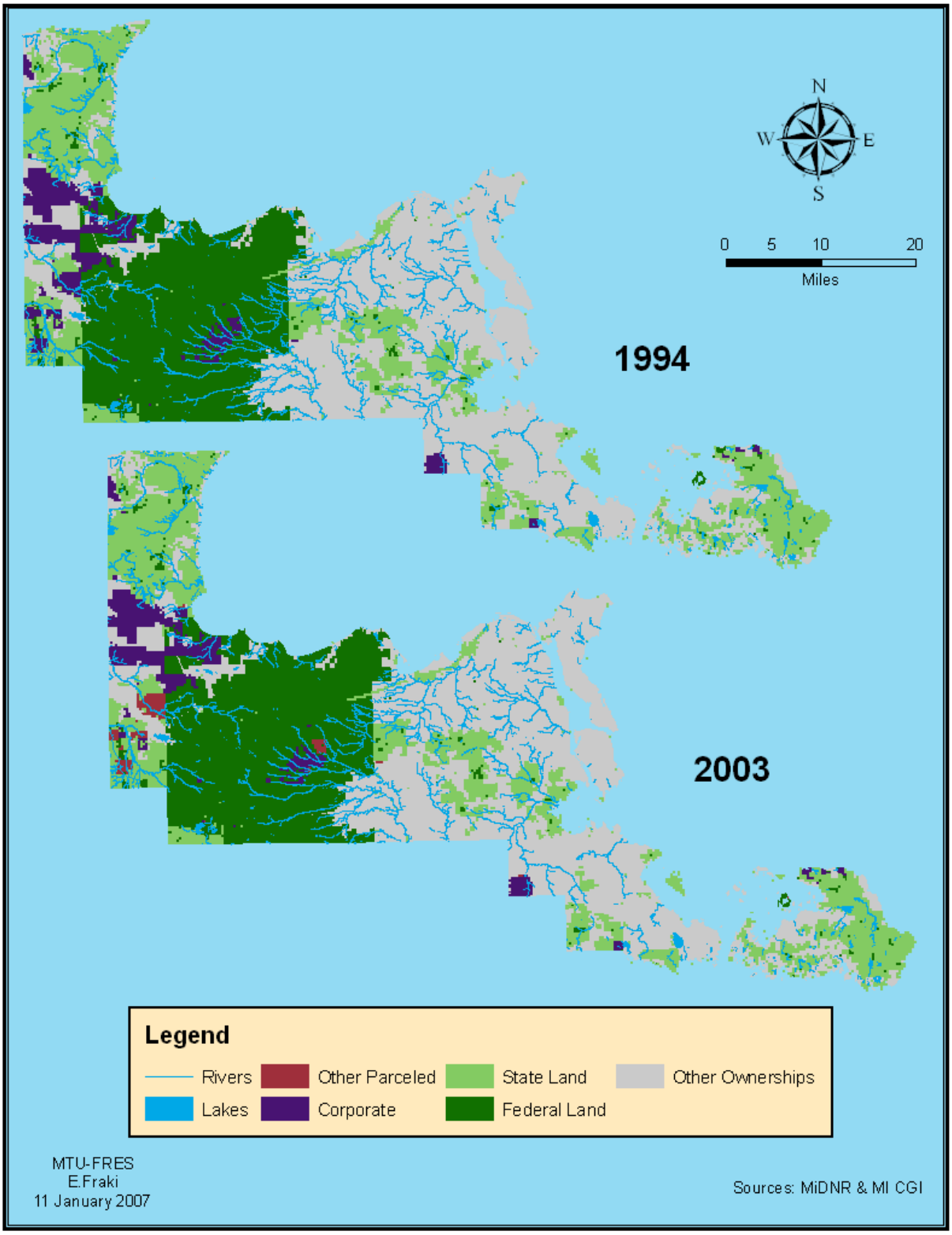


Figure A-3.1: Comparison of Corporate Lands (1994-2003) with Proximities to Lakes, Rivers, State and Federal Lands for Chippewa County.

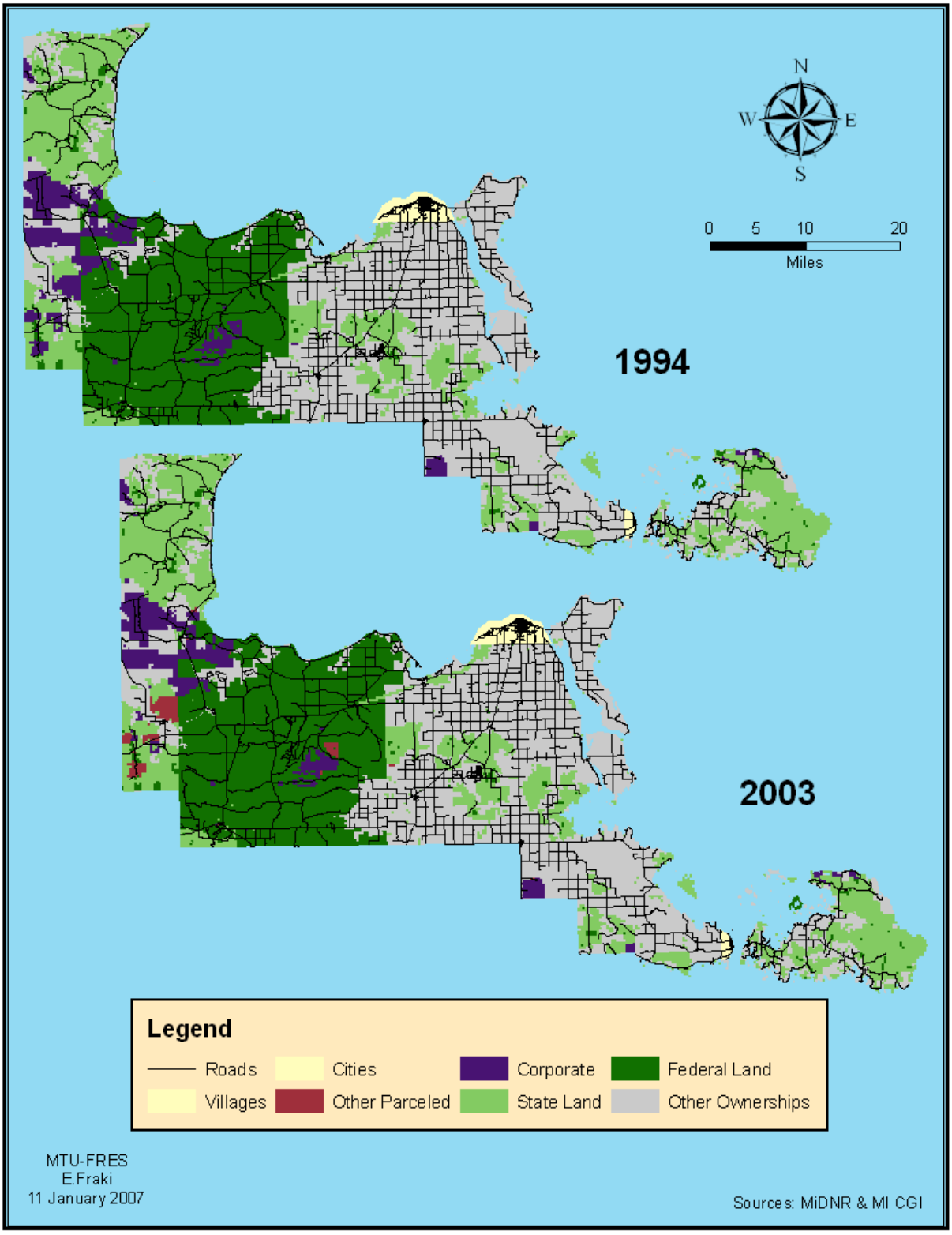


Figure A-3.2: Comparison of Corporate Lands (1994-2003) with Proximities to Roads, Urban Areas, State and Federal Lands for Chippewa County.

Current (2006) MiDNR CFA listings for Chippewa County indicate Plum Creek with enrolled land totaling 25,380 acres. The Forestland Group is listed having the second largest enrollment of 14,651 acres with no other major corporate owners indicated. Total CFA enrolled lands of non-individual (corporate, organizational, etc.) ownership for the county is 42,130 acres.

The contiguous nature of large-tract holdings in Chippewa County comparing the sample dates 1994 and 2003 is detailed below in Table A-3.3.

Table A-3. 3: Contiguous Large-Tract Holdings (acres) for Chippewa County.

Year	#Parcels	#Parcels <40 acres	Area (acres)			Perimeter (miles)		
			Min	Max	Mean	Min	Max	Mean
1994	36	7	7	21,824	1,505	1	83	7
2003	30	5	28	31,943	1,562	1	93	7

This data indicates a decrease in the number of isolated parcels, with those less than 40 acres in area decreasing by over 28%. The maximum area of contiguous large-tract holdings was increased 10,119 acres or approximately 46%.

Of the total corporate 2003 land holdings of 46,861 acres, approximately 48% or 22,379 acres fall within the buffered areas of potential alternate land use including parcels of less than 40 acres in area. This represents a decrease of 4,220 acres (16%) in these types of lands during the time interval studied for this county. A spatial depiction of these lands is shown in Figure A-3.3.

Frontages to the identified features of lakes, rivers, Great Lake shoreline, roads and urban areas are shown for the two sample dates in Table A-3.4 with the associated gain (loss) of area during the time interval studied.

Table A-3.4: Feature Adjacencies (acres) for Chippewa County.

Feature	1994	2003	Gain (Loss)
Lake	680	796	116
River	11,063	8,180	(2,883)
Shoreline	114	183	69
Roads	8,627	7,635	(992)
Urban	0	0	0

Great Lake shoreline adjacencies increased approximately 61% and lake frontage lands saw a 17% increase over this period. Proximities to roads and rivers declined approximately 12% and 26% respectively with river adjacencies of large-tract holdings showing the largest decline in acreage.

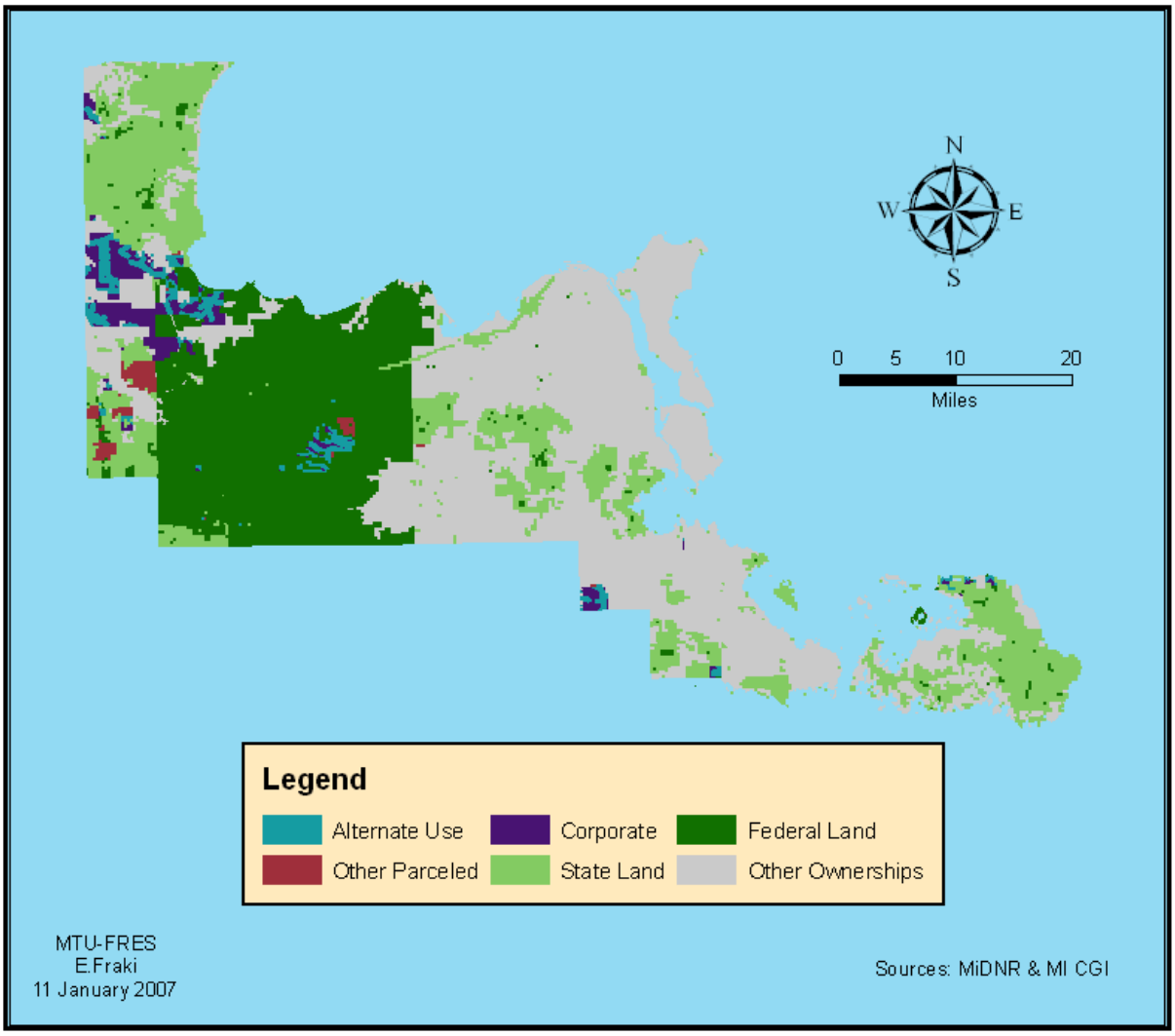
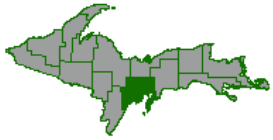


Figure A-3.3: Corporate Lands Showing Areas of Possible Higher Value Alternate Use for Chippewa County.

A-4: Delta County



The sampling dates for this county were 1990 and 2004 giving a comparison period of 14 years. Champion and Escanaba Paper were identified as the largest holdings for this period with Champion ending the period completely divested. Escanaba Paper, as the county's largest corporate forestland owner, ended the period with over 61,000 acres. A breakdown of these ownerships is found in Table A-4.1 with the distribution of divestitures shown in Table A-4.2. For this time period, large tract holdings decreased 9% or 6,164 acres.

Table A-4.1: Large-Tract Holdings (acres) for Delta County.

Company	Type	Years		Gain (Loss)
		1990	2004	
CCI	MNRL	108	0	(108)
CIC	VITPC	18,588	0	(18,588)
EPC	VITPC	49,362	61,564	12,202
FLG	TIMO	0	29	29
SJF	VITPC	633	934	301
Total Holdings		**68,691**	**62,527**	**(6,164)**

Parcels that transferred out of the large-tract ownership category during this period totaled 8,370 acres or approximately 12% of the 1990 total large-tract holdings. This area loss was partially offset by an increase of 2,206 acres resulting in final large-tract holdings of 62,527 acres for the 2004 sampling date.

Table A-4. 2: Large Tract Transfers (acres) from 1990 to 2004 for Delta County.

Buyers	Sellers					Total
	CCI	CIC	EPC	SJF	OTH	Acquired
EPC	0	13253		0	1510	**14,763**
FLG	29	0	0	0	0	**29**
SJF	0	0	0		696	**696**
OTH	79	5335	2561	395		**8,370**
Total Divested	**108**	**18,588**	**2,561**	**395**	**2,206**	

Current (2006) MiDNR CFA listings for Delta County indicate Plum Creek as the sole large-tract owner with enrolled holdings of 58,078 acres. Total CFA enrolled lands of non-individual (corporate, organizational, etc.) ownership for the county is 60,371 acres.

Spatial representation of large-tract holdings found in Delta County in relationship to the features of lakes, rivers, roads, urban areas, and public lands can be seen in Figures A-4.1 and A-4.2. For the 2004 sampling date, those lands that transferred out of large-tract ownership during the sampling period are shown as "Other Parceled".

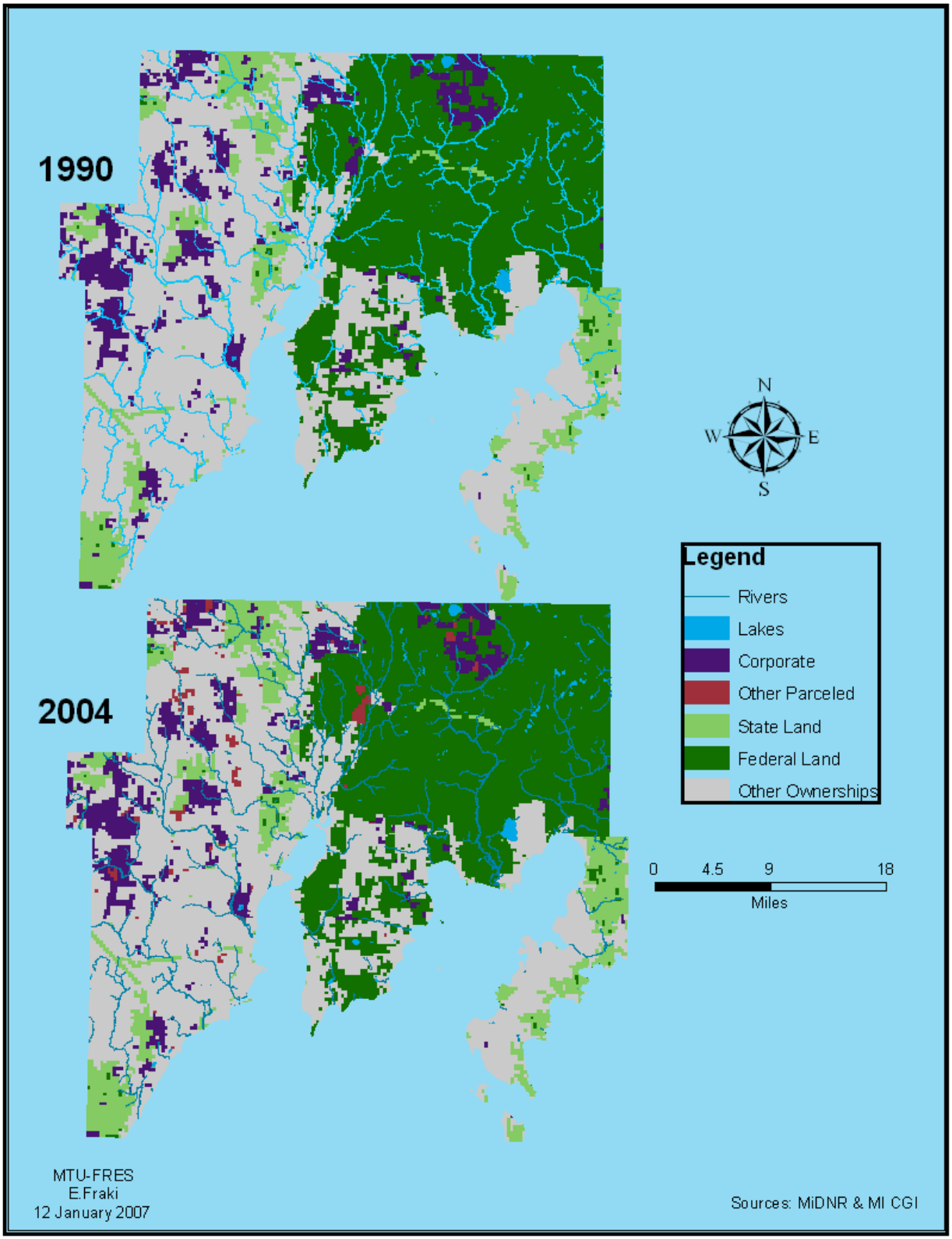


Figure A-4.1 Comparison of Corporate Lands (1990-2004) with Proximities to Lakes, Rivers, State and Federal Lands for Delta County.

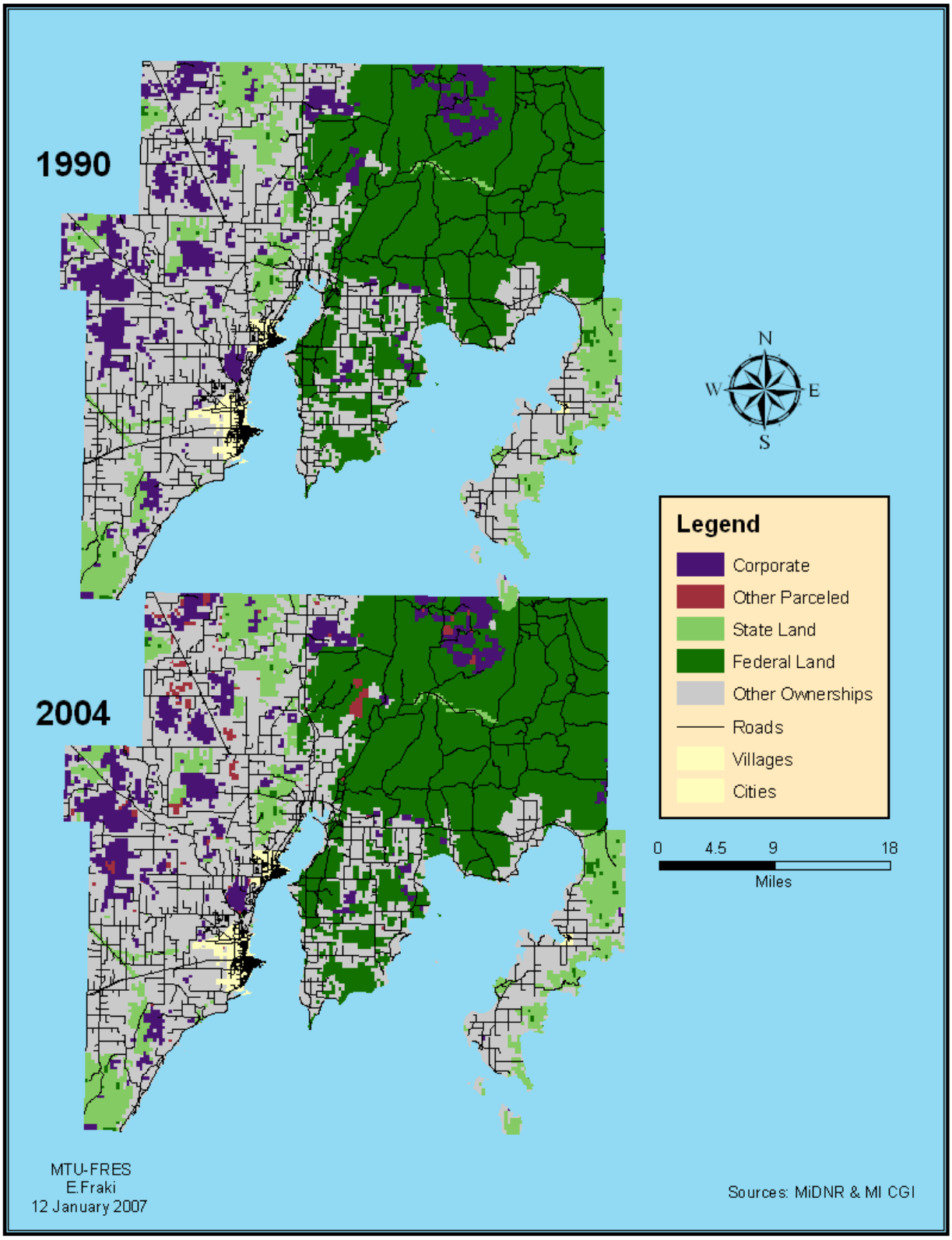


Figure A-4. 2: Comparison of Corporate Lands (1990-2004) with Proximities to Roads, Urban Areas, State and Federal Lands for Delta County.

The contiguous nature of large-tract land holdings in Delta County comparing the sampling dates 1990 and 2004 is detailed below in Table A-4.3.

Table A-4.3: Contiguous Large-Tract Holdings for Delta County.

Year	#Parcels	#Parcels <40 acres	Area (acres)			Perimeter (miles)		
			Min	Max	Mean	Min	Max	Mean
1990	134	26	19	9,178	513	1	47	4
2004	113	13	18	8,511	554	1	35	4

This data indicates a decrease in the number of isolated parcels, with those less than 40 acres in area decreasing by 50%. The maximum area of contiguous large-tract holdings decreased 667 acres or approximately 7%.

Of the total large-tract 2004 land holdings of 62,527 acres, approximately 45% or 28,325 acres fall within the buffered areas of potential alternate land use including parcels of less than 40 acres in area. This represents a decrease of 1,921acres (6%) in these types of lands during the time interval studied for this county. A spatial depiction of these lands is shown in Figure A-4.3.

Frontages to the identified features of lakes, rivers, Great Lake shoreline, roads and urban areas are shown for the two sample dates in Table A-4.4 with the associated gain (loss) of area during the time interval studied.

Table A-4.4: Feature Adjacencies (acres) for Delta County.

Feature	1990	2004	Gain (Loss)
Lake	604	402	(202)
River	13579	12638	(941)
Shoreline	0	29	29
Roads	5857	5813	(44)
Urban	307	18	(289)

The most dramatic change in adjacent land area was associated with urban features, declining 94%. All feature adjacencies declined over this period with the exception of Great Lake shoreline. Lake frontage declined approximately 33%, rivers 7%, and road frontages 1%. The increase in Great Lake shoreline (29 acres) is an island parcel and may represent corporate retreat or other purpose beyond forest management.

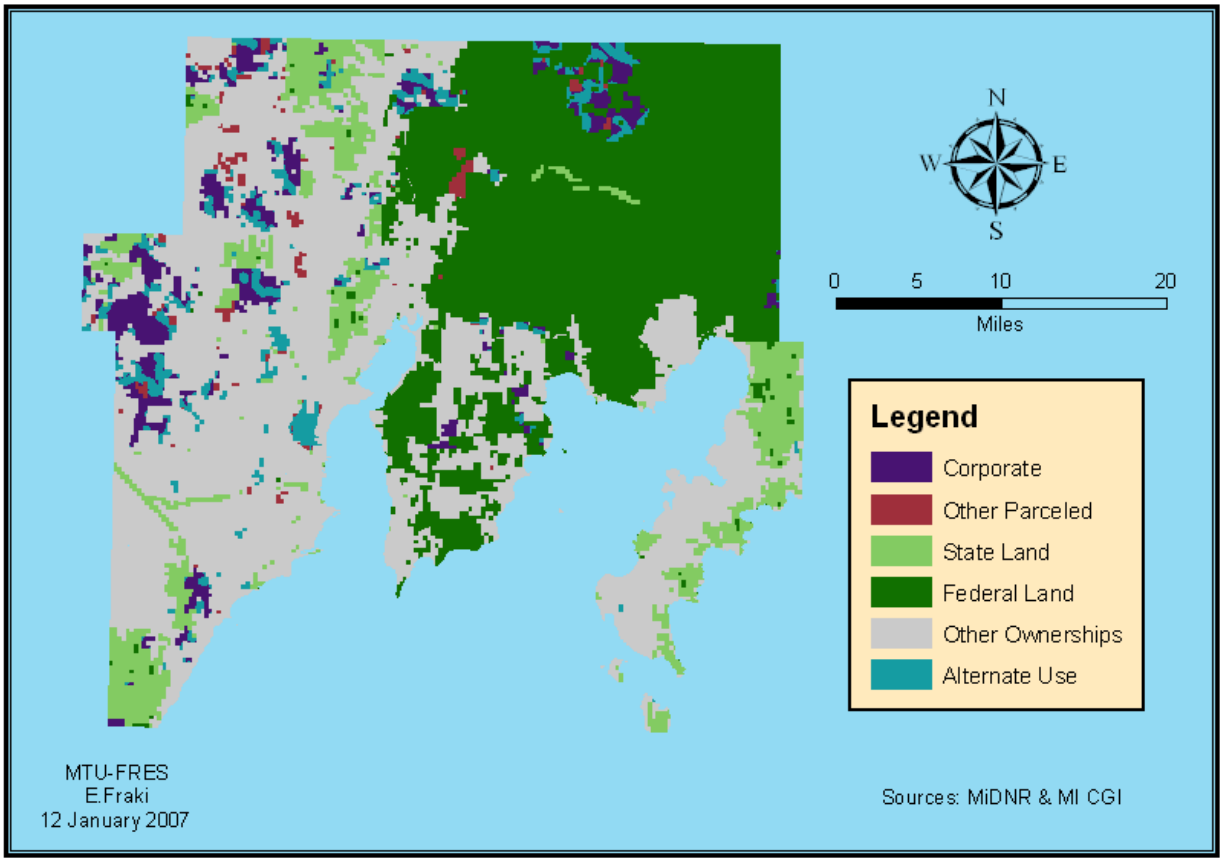
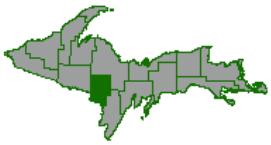


Figure A-4. 3: Corporate Lands Showing Areas of Possible Higher Value Alternate Use for Delta County.

A-5: Dickinson County



The sampling dates for this county were 1990 and 2006 giving a comparison period of 16 years. Many major corporate landholders are present in this county with Champion beginning the period as the largest owner and International Paper ending the period the largest having acquired the majority of Champion's holdings. Escanaba Paper increased ownership during this period while Keweenaw Land, the second largest landholder, declined. A breakdown of these ownerships is found in Table A-5.1 with the distribution of divestitures shown in Table A-5.2. For this time period, large-tract holdings decreased 18,820 acres or nearly 28%.

Table A-5.1: Large-Tract Holdings (acres) for Dickinson County.

Company	Type	Years		Gain (Loss)
		1990	2006	
CCI	MNRL	718	238	(480)
CIC	VITPC	41,442	271	(41,171)
EPC	VITPC	1,486	4,491	3,005
IP	VITPC	0	30,213	30,213
KLA	LAND	20,467	11,659	(8,808)
LYR	LAND	2,274	365	(1,909)
MD	VITPC	637	0	(637)
SJF	VITPC	398	1,365	967
Total Holdings		**67,422**	**48,602**	**(18,820)**

Parcels that transferred out of the corporate category during this period to "Other" owners totaled 21,373 acres or approximately 32% of the 1990 total large-tract holdings. This area loss was partially offset by a 2,553 acre increase to the large-tract category resulting in final holdings of 48,602 acres for the 2006 sampling date.

Table A-5.2: Large Tract Transfers (acres) for Dickinson County.

Buyers	Sellers								Total Acquired
	CCI	CIC	EPC	KLA	LYR	MD	SJF	OTH	
CCI		0	0	0	0	0	0	0	**0**
CIC	0		0	0	0	0	0	28	**28**
EPC	0	2,519		0	0	516	0	88	**3,123**
IP	120	24,625	0	3,220	122	40	120	1,966	**30,213**
KLA	0	0	0		0	0	0	320	**320**
LYR	0	0	0	0		0	0	33	**33**
SJF	0	1,087	0	0	0	0	0	118	**1,205**
OTH	360	12,968	118	5,908	1,820	81	118		**21,373**
Total Divested	**480**	**41,199**	**118**	**9,128**	**1,942**	**637**	**238**	**2,553**	

Current (2006) MiDNR CFA listings for Dickinson County indicate International Paper as the largest large-tract owner with 24,822 acres enrolled, followed by Keweenaw Land at

10,860 acres and Plum Creek with 4,488 enrolled acres. Total CFA enrolled lands of non-individual (corporate, organizational, etc.) ownership for the county is approximately 43,540 acres.

Spatial representation of large-tract holdings found in Dickinson County in relationship to the features of lakes, rivers, roads, urban areas, and public lands can be seen in Figures A-5.1 and A-5.2. For the 2006 sampling date, those lands that transferred out of large-tract ownership during the sampling period are shown as “Other Parceled”.

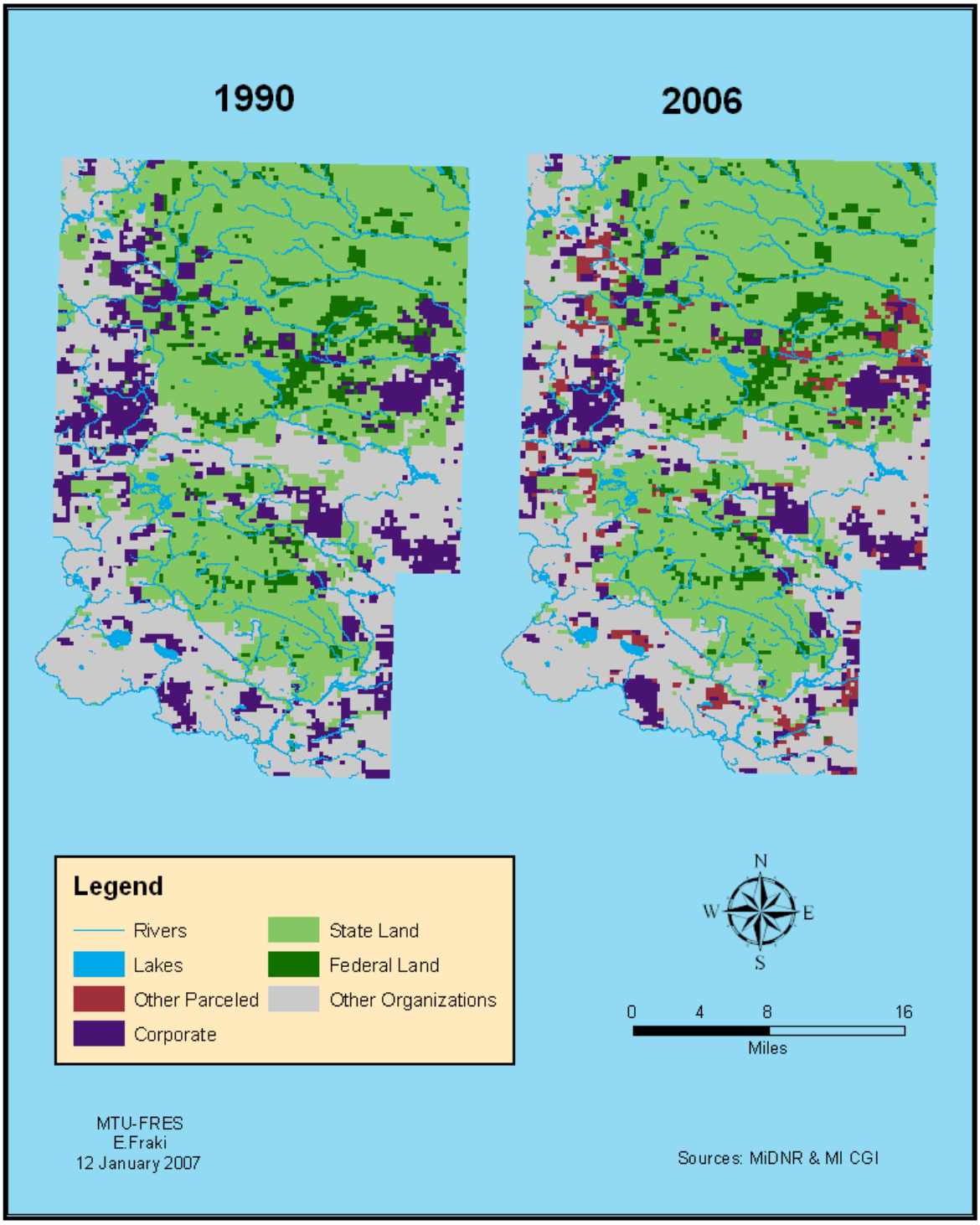


Figure A-5.1: Comparison of Corporate Lands (1990-2006) with Proximities to Lakes, Rivers, State and Federal Lands for Dickinson County.

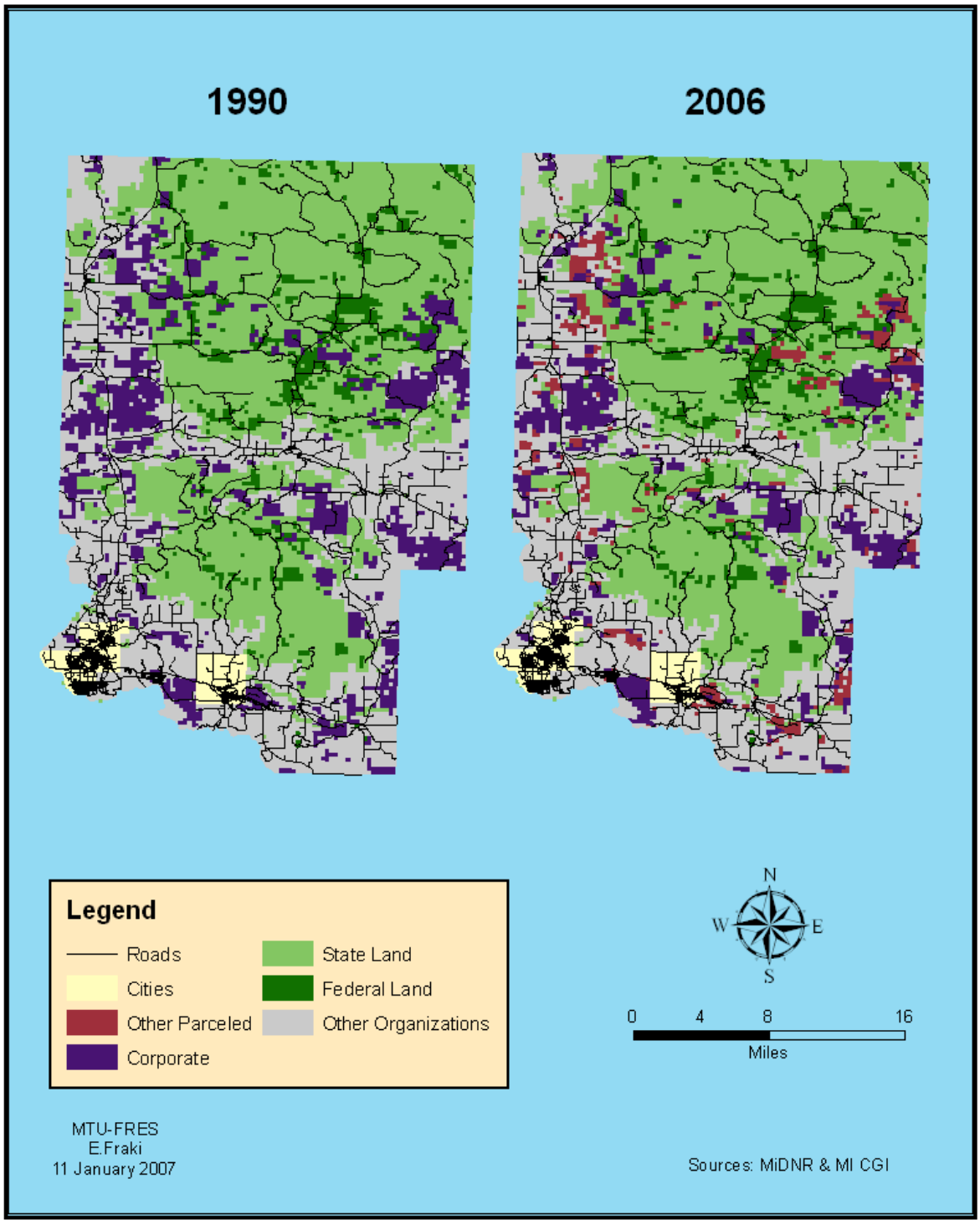


Figure A-5.2: Comparison of Corporate Lands (1990-2006) with Proximities to Roads, Urban Areas, State and Federal Lands for Dickinson County.

The contiguous nature of large-tract holdings in Dickinson County comparing the sampling dates 1990 and 2006 is detailed below in Table A-5.3.

Table A-5. 3: Contiguous Large-Tract Holdings for Dickinson County.

Year	#Parcels	#Parcels <40 acres	Area (acres)			Perimeter (miles)		
			Min	Max	Mean	Min	Max	Mean
1990	182	28	<1	9,543	371	<1	53	3
2006	135	18	19	8,476	360	1	45	3

This data indicates a decrease in the number of isolated parcels with those less than 40 acres in area decreasing by approximately 36%. The maximum area of contiguous corporate holdings decreased 1,067 acres or approximately 11%.

Of the total large-tract 2006 land holdings of 48,602 acres, nearly 50% or 24,167 acres fall within the buffered areas of potential alternate land use including parcels of less than 40 acres in area. This represents a decrease of 12,003 acres (33%) of these types of lands during the time interval studied for this county. A spatial depiction of these lands is shown in Figure A-5.3.

Frontages to the identified features of lakes, rivers, Great Lake shoreline, roads and urban areas are shown for the two sample dates in Table A-5.4 with the associated gain (loss) of area during the time interval studied.

Table A-5. 4: Feature Adjacencies (acres) for Dickinson County.

Feature	1990	2006	Gain (Loss)
Lake	1,080	489	(591)
River	9,960	5,520	(4,440)
Shoreline	0	0	0
Roads	14,785	9,957	(4,828)
Urban	659	309	(350)

Dickinson County is one of two counties in the UP that does not have Great Lake shoreline. All other feature adjacencies declined over this period with lake frontage parcels decreasing approximately 55%, rivers 45%, roads 33% and urban areas 53%.

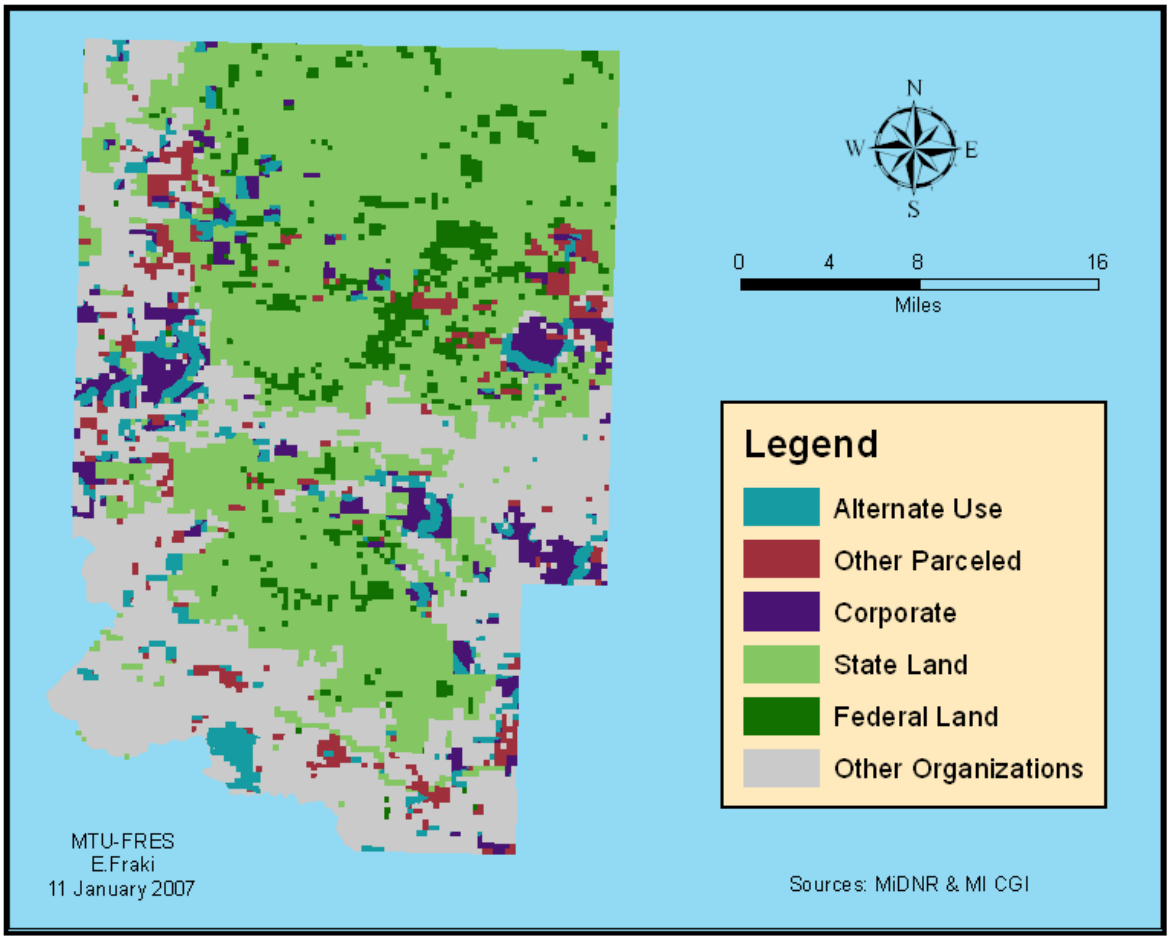


Figure A-5.3: Corporate Lands Showing Areas of Possible Higher Value Alternate Use for Dickinson County.

A-6: Gogebic County

The sampling dates for this county were 1991 and 2005 giving a comparison period of 14 years. Keweenaw Land Association remained the leading large-tract owner and increased holdings over the sample period to approximately 75,629 acres through various acquisitions including the majority purchase of the Neenah Paper lands as this company completely divested of holdings. The Forestland Group along with International Paper became new owners during this period mainly through the purchase of Connor holdings. A breakdown of these ownerships is found in Table A-6.1 with the distribution of divestitures shown in Table A-6.2. For this time period, large-tract holdings decreased 9,842 acres or nearly 6%.

Table A-6. 1: Large-Tract Holdings (acres) for Gogebic County.

Company	Type	Year		Gain (Loss)
		1991	2005	
CCI	MNRL	2,976	2,570	(406)
CIC	VITPC	54,005	49,583	(4,422)
CFI	VITPC	32,326	4,554	(27,772)
KLA	LAND	48,648	75,629	26,981
FLG	TIMO	0	12,809	12,809
IP	VITPC	0	2,661	2,661
LYR	LAND	16,522	11,387	(5,135)
NP	VITPC	14,459	0	(14,459)
SLC	VITPC	7,348	7,249	(99)
Total Holdings		**176,284**	**166,442**	**(9,842)**

Parcels that transferred out of the large-tract category during this period to “Other” owners totaled 24,716 acres or approximately 14% of the 1991 total large-tract holdings. This area loss was partially offset by a 14,874 acre increase to the large-tract category resulting in final 2005 holdings of 166,442 acres.

Table A-6.2: Large-Tract Transfers (acres) for Gogebic County.

Buyers	Sellers								Total
	CCI	CIC	CFI	LYR	KLA	NP	SLC	OTH	Acquired
CCI		519	0	0	0	0	0	316	**835**
CIC	0		6,958	0	0	0	0	3,445	**10,403**
CFI	0	0		0	0	0	0	76	**76**
KLA	10	3,787	40	3,384		14,390	0	9,430	**31,041**
FLG	0	0	12,190	0	0	0	0	619	**12,809**
IP	40	305	1,607	0	0	0	0	709	**2,661**
LYR	0	0	40		0	0	0	79	**119**
SLC	0	0	119	0	0	0		200	**319**
OTH	1,191	10,214	6,894	1,870	4,060	69	418		**24,716**
Total Divested	**1,241**	**14,825**	**27,848**	**5,254**	**4,060**	**14,459**	**418**	**14,874**	

Current MiDNR CFA listings for Gogebic County indicate Keweenaw Land as the leading large-tract owner with 75,492 acres enrolled followed by International Paper at 52,052 acres, The Forestland

Group with 13,252 acres and the Longyear holdings and associations reported at approximately 10,530 enrolled acres. Total CFA enrolled lands of non-individual (corporate, organizational, etc.) ownership for the county is approximately 163,171 acres.

Spatial representation of large-tract holdings found in Gogebic County in relationship to the features of lakes, rivers, roads, urban areas, and public lands can be seen in Figures A-6.1 and A-6.2. For the 2005 sampling date, those lands that transferred out of large-tract ownership during the sample period are shown as “Other Parceled”.

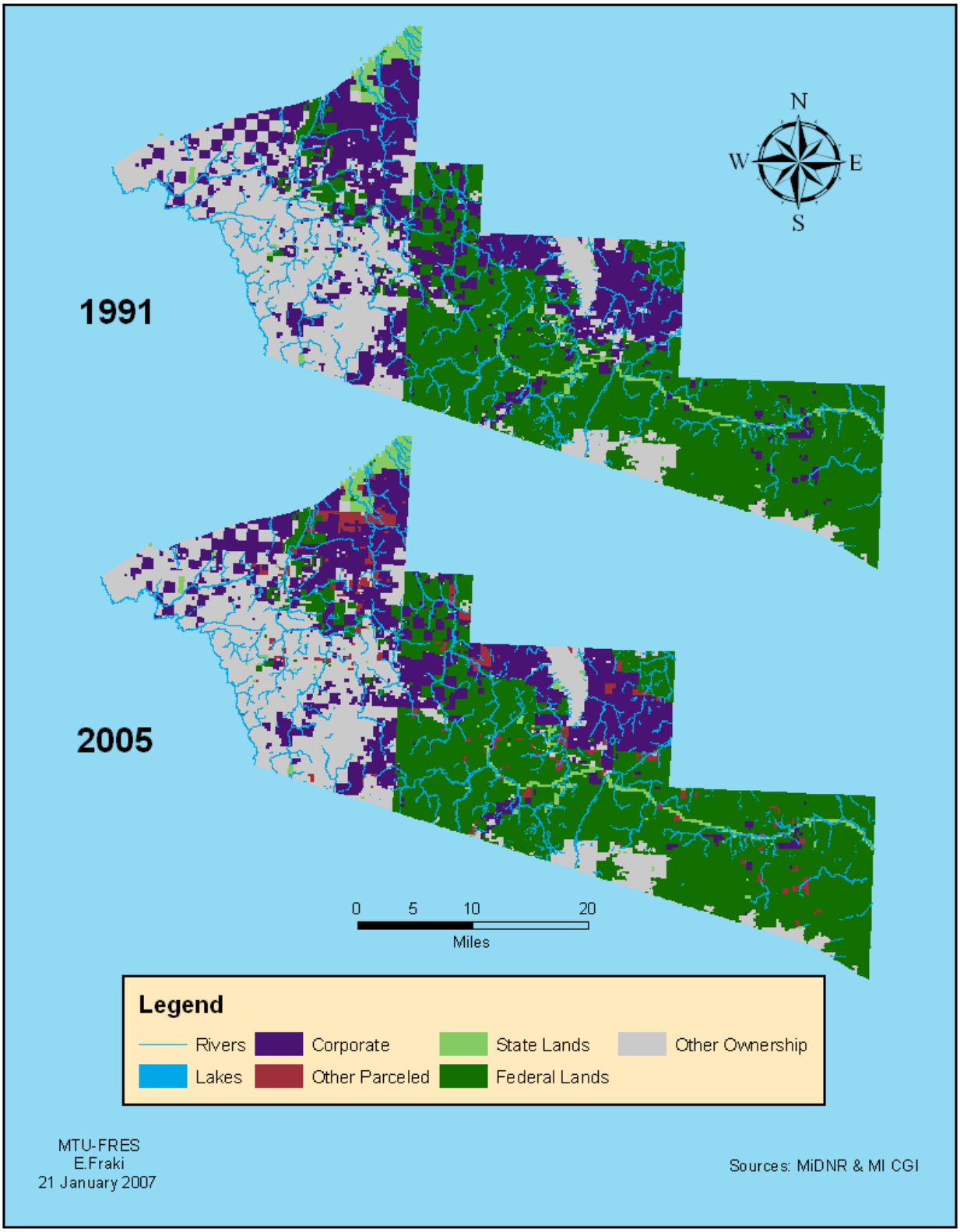


Figure A-6.1: Comparison of Corporate Lands (1991-2005) with Proximities to Lakes, Rivers, State and Federal Lands for Gogebic County.

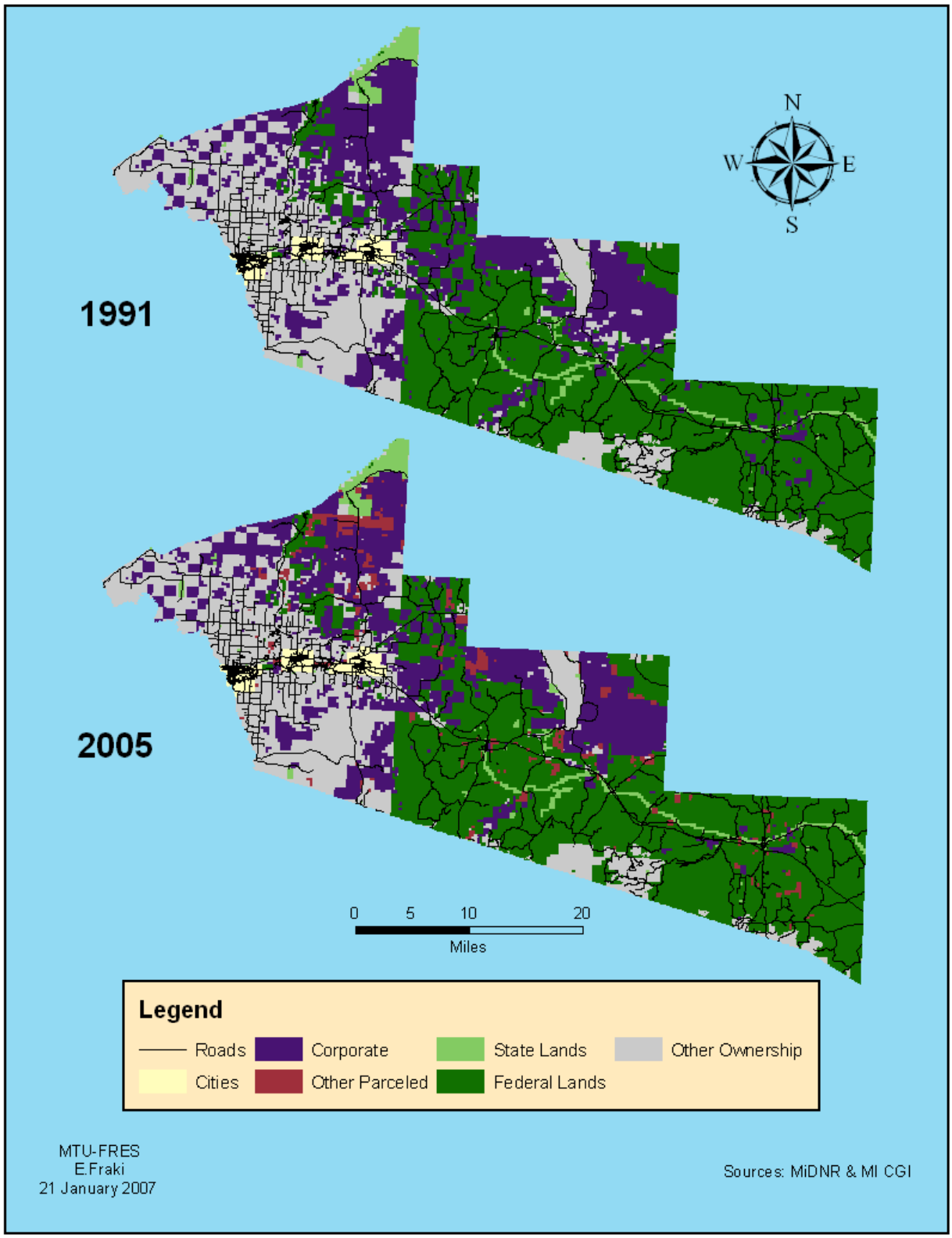


Figure A-6. 2: Comparison of Corporate Lands (1991-2005) with Proximities to Roads, Urban Areas, State and Federal Lands for Gogebic County.

The contiguous nature of large-tract holdings in Gogebic County comparing the sample dates 1991 and 2005 is detailed below in Table A-6.3.

Table A-6. 3: Contiguous Large-Tract Holdings for Gogebic County.

Year	#Parcels	#Parcels <40 acres	Area (acres)			Perimeter (miles)		
			Min	Max	Mean	Min	Max	Mean
1991	214	33	21	50,395	825	1	135	4
2005	155	32	9	41,549	1,074	1	161	5

This data indicates an overall decrease in the number of contiguous parcels with those less than 40 acres in area remaining fairly stable. The maximum area of contiguous large-tract holdings decreased 8,846 acres or approximately 18%.

Of the total 2005 holdings of 166,442 acres, approximately 57% or 94,947 acres fall within the buffered areas of potential alternate land use including parcels of less than 40 acres in area. This represents an increase of 6,662 (7%) in these types of lands during the time interval studied for this county. A spatial depiction of these lands is shown in Figure A-6.3.

Frontages to the identified features of lakes, rivers, Great Lake shoreline, roads and urban areas are shown for the two sample dates in Table A-6.4 with the associated gain (loss) of area during the time interval studied.

Table A-6. 4: Feature Adjacencies (acres) for Gogebic County.

Feature	1991	2005	Gain (Loss)
Lake	2124	998	(1,126)
River	43496	38772	(4,724)
Shoreline	1184	1178	(6)
Roads	16788	14386	(2,402)
Urban	1330	391	(939)

Lands identified adjacent to all of the identified features declined in total area during the given time interval. Urban features saw the greatest percent decline at approximately 71% while lake frontages declined approximately 53% followed by roads (14%) and rivers (11%). Great Lake shoreline adjacencies remained stable, declining approximately 1%.

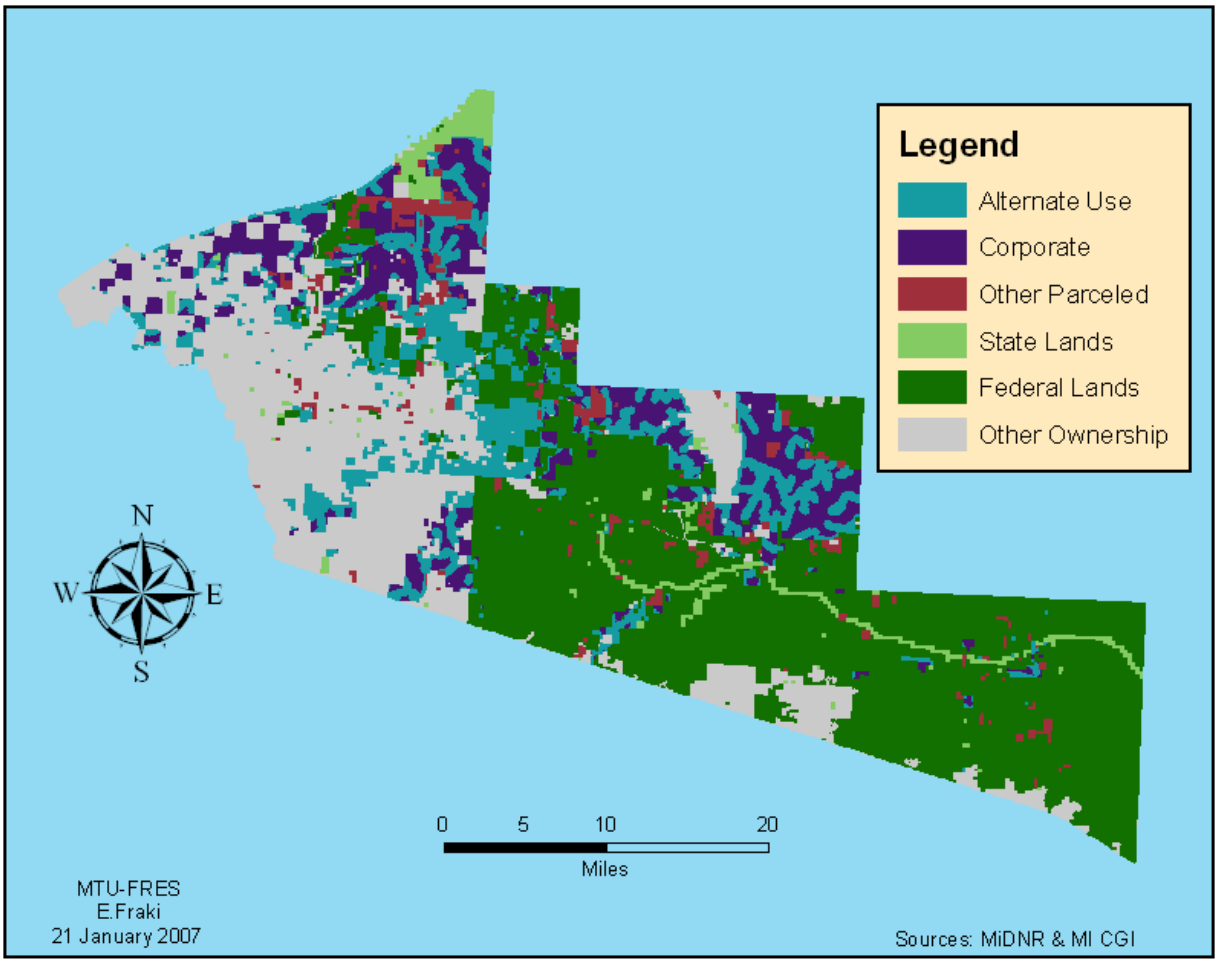


Figure A-6.3: Corporate Lands Showing Areas of Possible Higher Value Alternate Use for Gogebic County.

A-7: Houghton County

The sampling dates for this county were 1997 and 2006, giving a comparison period of nine years. Many of the major UP corporate owners own land in this county. The largest transfer of ownership was found between Escanaba Paper and The Forestland Group. The Bishop Trust, Champion, and Ned Lake Timber ended the period completely divested of relatively small holdings and the Forestland Group emerged as the leading large-tract ownership followed by IP. A breakdown of these ownerships is found in Table A-7.1 with the distribution of divestitures shown in Table A-7.2. For this time period, large tract holdings remained relatively stable decreasing 1,277 acres or approximately 1%.

Table A-7. 1: Large-Tract Holdings (acres) for Houghton County.

Company	Type	Year		Gain (Loss)
		1997	2006	
BTr	LAND	1,936	0	(1,936)
CCI	MNRL	40	117	77
CIC	VITPC	243	0	(243)
CFI	VITPC	202	162	(40)
EPC	VITPC	60,620	2,424	(58,196)
FLG	TIMO	0	60,556	60,556
IP	VITPC	61,906	58,927	(2,979)
KLA	LAND	15,454	17,234	1,780
LYR	LAND	200	1,090	890
NLT	LAND	1,386	0	(1,386)
PC	REIT	0	119	119
SLC	VITPC	159	159	0
VUL	VITPC	3,746	3,827	81
Total Holdings		**145,892**	**144,615**	**(1,277)**

Parcels that transferred out of the large-tract category during this period to “Other” owners totaled 6,201 acres or approximately 4% of the 1997 total large-tract holdings. This area loss was offset by a 4,924 acre increase to the large-tract category resulting in the final holdings of 144,615 acres for the 2006 sample date.

Table A-7.2: Large-Tract Transfers (acres) from 1997-2006 for Houghton County.

Buyers	Sellers								Total
	BTr	CIC	CFI	EPC	IP	KLA	NLT	OTH	Acquired
CCI	0	0	0	0	0	0	0	77	**77**
CFI	0	0		0	0	0	0	0	**0**
EPC	0	0	0		0	0	0	152	**152**
FLG	1,936	0	0	55,942	0	0	1,386	1,292	**60,556**
IP	0	0	0	86		0	0	917	**1,003**
KLA	0	0	0	271	0		0	2,204	**2,475**
LYR	0	0	0	689	0	0	0	201	**890**
PC	0	0	0	119	0	0	0	0	**119**
SLC	0	0	0	0	0	0	0	0	**0**
VUL	0	0	0	0	0	0	0	81	**81**
OTH	0	243	40	1,241	3,982	695	0		**6,201**
Total Divested	**1,936**	**243**	**40**	**58,348**	**3,982**	**695**	**1,386**	**4,924**	

Spatial representation of large-tract holdings found in Houghton County in relationship to the features of lakes, rivers, roads, urban areas, and public lands can be seen in Figures A-7.1 and A-7.2. For the 2006 sample date, those lands that transferred out of large-tract ownership during the sampling period are shown as “Other Parceled”.

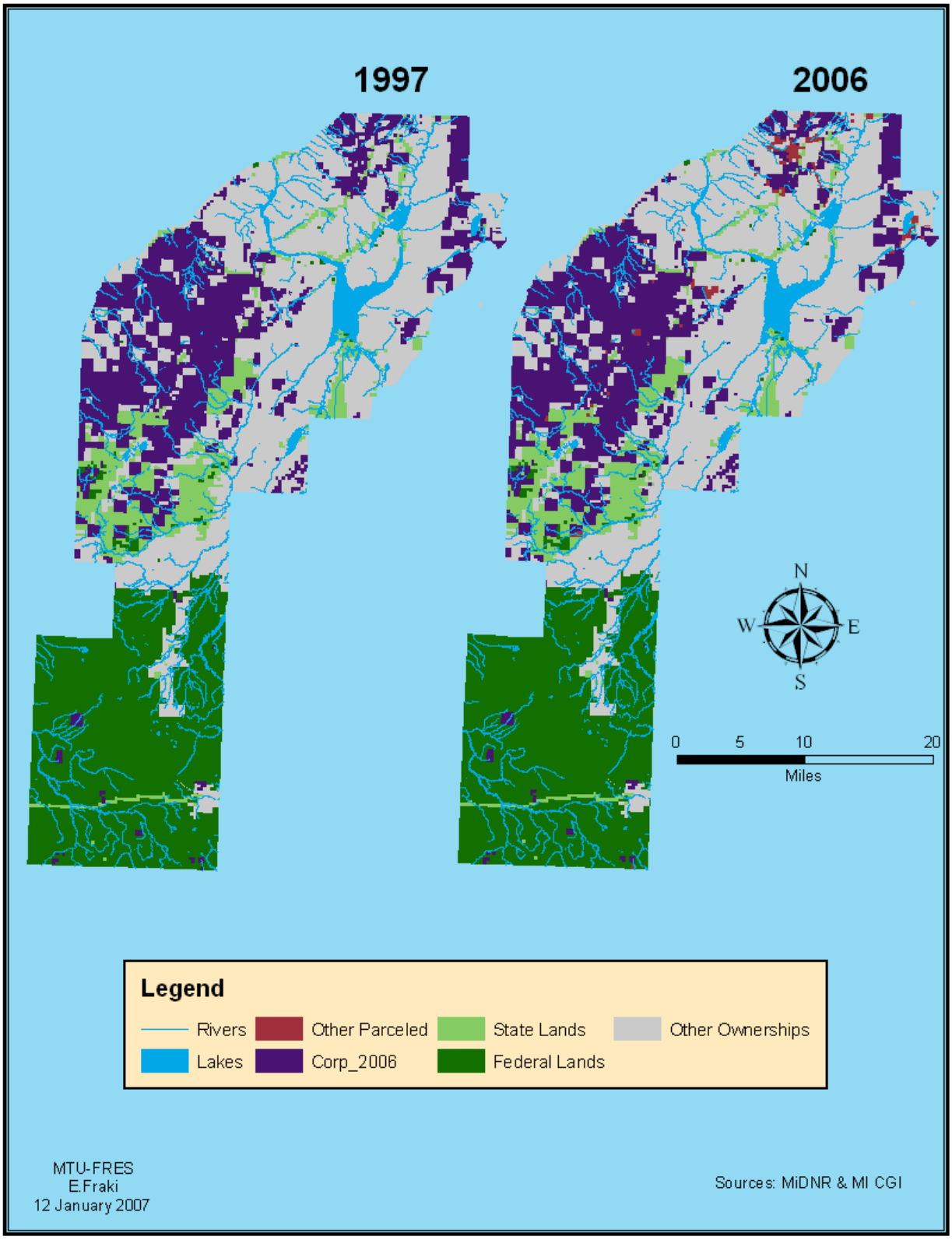


Figure A-7. 1: Comparison of Corporate Lands (1997-2006) with Proximities to Lakes, Rivers, State and Federal Lands for Houghton County.

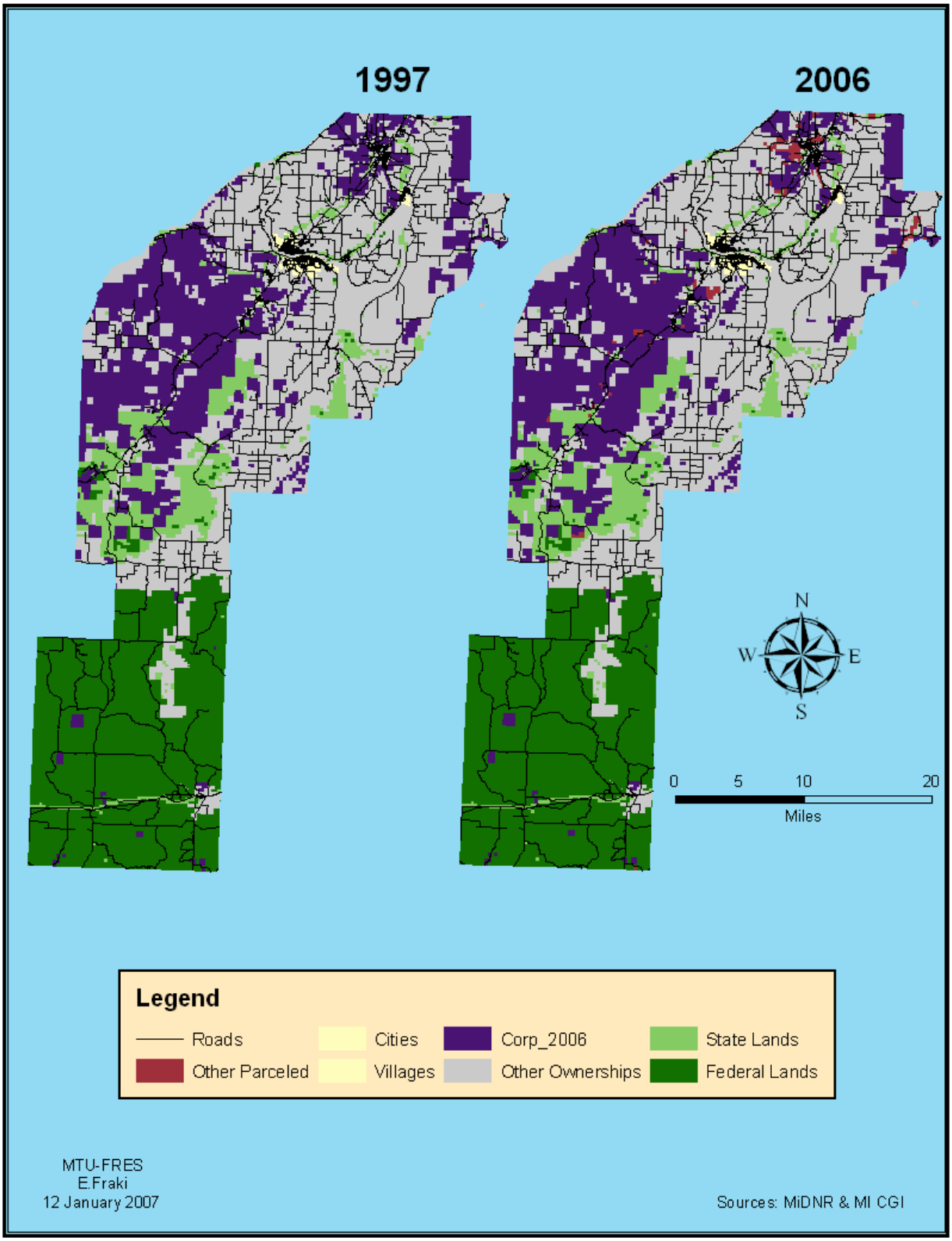


Figure A-7. 2: Comparison of Corporate Lands (1997-2006) with Proximities to Roads, Urban Areas, State and Federal Lands for Houghton County.

Current (2006) MiDNR CFA listings for Houghton County indicate The Forestland Group with 58,693 acres and International Paper with 55,723 enrolled acres as the leading corporate ownerships. Keweenaw Land follows at 16,717 acres with Plum Creek and Vulcan reported acreages under 5,000. Total CFA enrolled lands of non-individual (corporate, organizational, etc.) ownership for the county is approximately 149,943 acres.

The contiguous nature of large-tract holdings in Houghton County comparing the sampling dates 1997 and 2006 is detailed below in Table A-7.3.

Table A-7.3: Contiguous Large-Tract Holdings for Houghton County.

Year	#Parcels	#Parcels <40 acres	Area (acres)			Perimeter (miles)		
			Min	Max	Mean	Min	Max	Mean
1997	101	17	11	92,251	1,446	1	242	7
2006	109	9	24	92,235	1,328	1	245	6

This data indicates a decrease in the number of isolated parcels with those less than 40 acres in area decreasing by 47%. The maximum area of contiguous holdings remained steady over the given interval.

Of the total corporate 2006 land holdings of 144,615 acres, approximately 64% or 92,915 acres fall within the buffered areas of potential alternate land use including parcels of less than 40 acres in area. This represents a decrease of 2,966 (3%) in these types of lands during the time interval studied for this county. A spatial depiction of these lands is shown in Figure A-7.3.

Frontages to the identified features of lakes, rivers, Great Lake shoreline, roads and urban areas are shown for the two sample dates in Table A-7.4 with the associated gain (loss) of area during the time interval studied.

Table A-7.4: Feature Adjacencies (acres) for Houghton County.

Feature	1997	2006	Gain (Loss)
Lake	2650	1779	(871)
River	30009	29945	(64)
Shoreline	888	994	106
Roads	24789	22875	(1,914)
Urban	672	521	(151)

Lands identified adjacent to features declined in total area during the given time interval with the exception of the Great Lake shoreline feature which increased approximately 12%. Lake frontages showed the greatest decline in adjacent large-tract ownerships, decreasing nearly 33%.

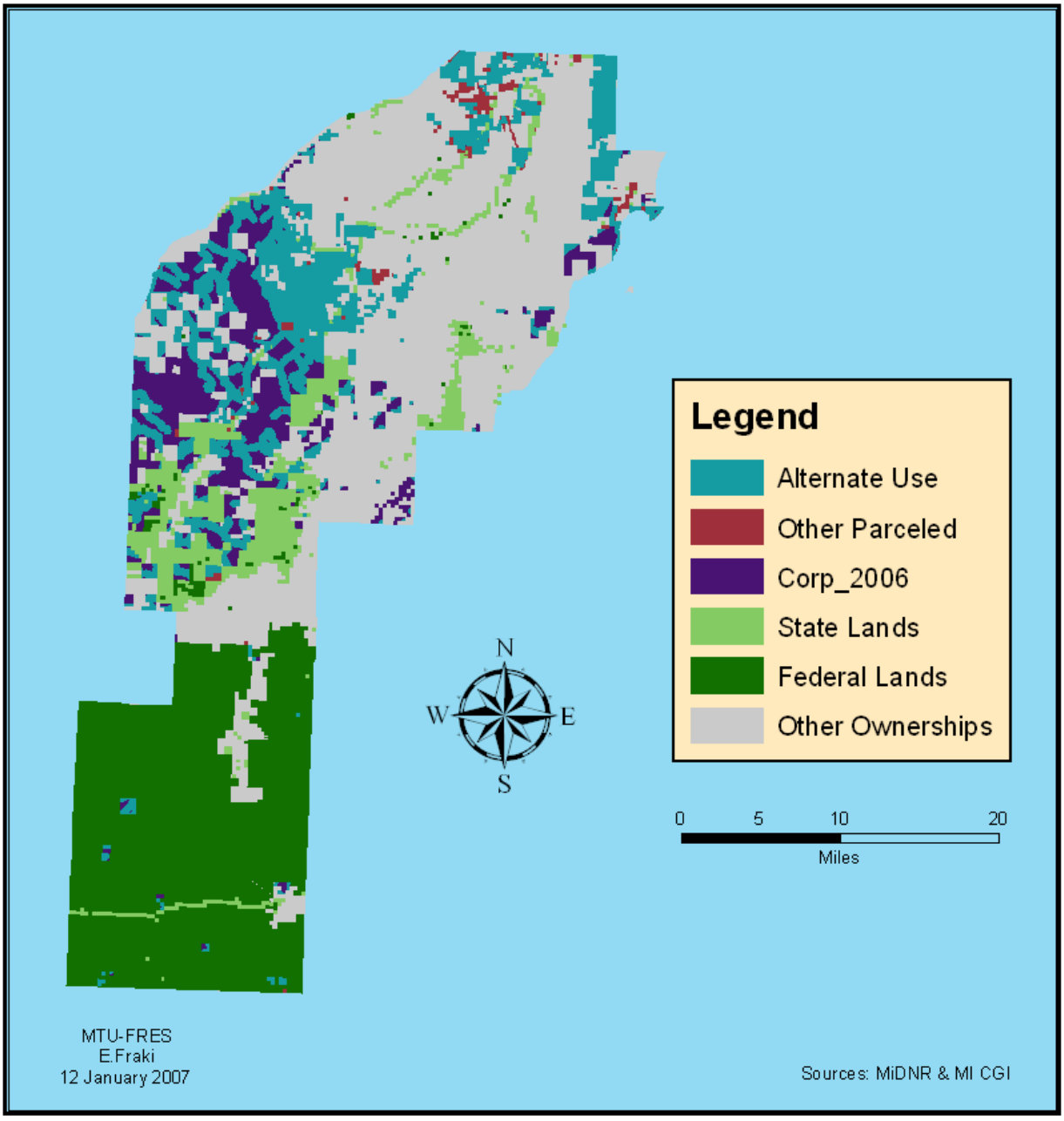
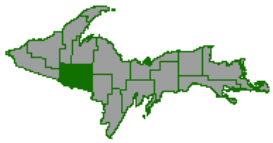


Figure A-7. 3: Corporate Lands Showing Areas of Possible Higher Value Alternate Uses for Houghton County.

A-8: Iron County



The sampling dates for this county were 1995 and 2006, giving a comparison period of 11 years. Many of the major UP corporate owners own land in this county. Escanaba Paper and The Forestland Group are the largest and near equal owners with International Paper and Keweenaw Land both with ownerships over 10,000 acres. Champion had near complete divestiture during this period with the majority of lands going to International Paper and Escanaba Paper. A breakdown of these ownerships is found in Table A-8.1 with the distribution of divestitures shown in Table A-8.2. For this time period, large tract holdings decreased 9,504 acres or approximately 5%.

Table A-8.1: Large-Tract Holdings (acres) for Iron County.

Company	Type	Year		Gain (Loss)
		1995	2006	
CCI	MNRL	1,372	677	(695)
CIC	VITPC	56,151	40	(56,111)
CFI	VITPC	81	39	(42)
EPC	VITPC	42,087	58,887	16,800
KLA	LAND	12,691	10,581	(2,110)
LYR	LAND	2,550	2,057	(493)
MD	VITPC	244	36	(208)
NLT	LAND	60,392	119	(60,273)
FLG	TIMO	0	60,975	60,975
IP	VITPC	0	33,083	33,083
SJF	VITPC	664	234	(430)
Total Holdings		**176,232**	**166,728**	**(9,504)**

Parcels that transferred out of the large-tract category during this period to “Other” owners totaled 17,094 acres or approximately 10% of the 1995 total large-tract holdings. This area loss was partially offset by a 7,590-acre increase to the large-tract category resulting in final holdings of 166,728 acres for the 2006 sample date.

Table A-8. 2: Large-Tract Transfers (acres) from 1995-2006 for Iron County.

Buyers	Sellers										Total
	CCI	CIC	CFI	EPC	KLA	LYR	MD	NLT	SJF	OTH	Acquired
CCI		0	0	0	244	0	0	0	0	0	**244**
CIC	0		0	0	0	0	0	0	0	0	**0**
CFI	0	0		0	0	0	0	0	0	39	**39**
EPC	0	17,455	0		35	0	244	0	0	974	**18,708**
KLA	0	0	0	0		0	0	0	0	226	**226**
LYR	0	0	0	0	38		0	0	0	120	**158**
MD	0	0	0	0	0	0		0	0	36	**36**
NLT	0	0	0	0	0	0	0		0	18	**18**
FLG	0	40	0	40	0	0	0	58,090	0	2,805	**60,975**
IP	162	28,638	0	309	79	201	0	0	362	3,332	**33,083**
SJF	0	0	0	0	0	0	0	0		40	**40**
OTH	777	9,978	81	1,559	1,940	450	0	2,201	108		**17,094**
Total Divested	**939**	**56,111**	**81**	**1,908**	**2,336**	**651**	**244**	**60,291**	**470**	**7,590**	

Spatial representation of large-tract holdings found in Iron County in relationship to the features of lakes, rivers, roads, urban areas, and public lands can be seen in Figures A-8.1 and A-8.2. For the 2006 sample date, those lands that transferred out of large-tract ownership during the sampling period are shown as “Other Parceled”.

Current (2006) MiDNR CFA listings for Iron County indicate The Forestland Group at 58,723 acres and Plum Creek with 58,636 enrolled acres as the leading corporate ownerships. International Paper follows at 25,518 acres with Keweenaw Land listed at 9540 enrolled acres. Longyear holdings and associations totaled less than 2,000 acres. Total CFA enrolled lands of non-individual (corporate, organizational, etc.) ownership for the county is approximately 176,551 acres.

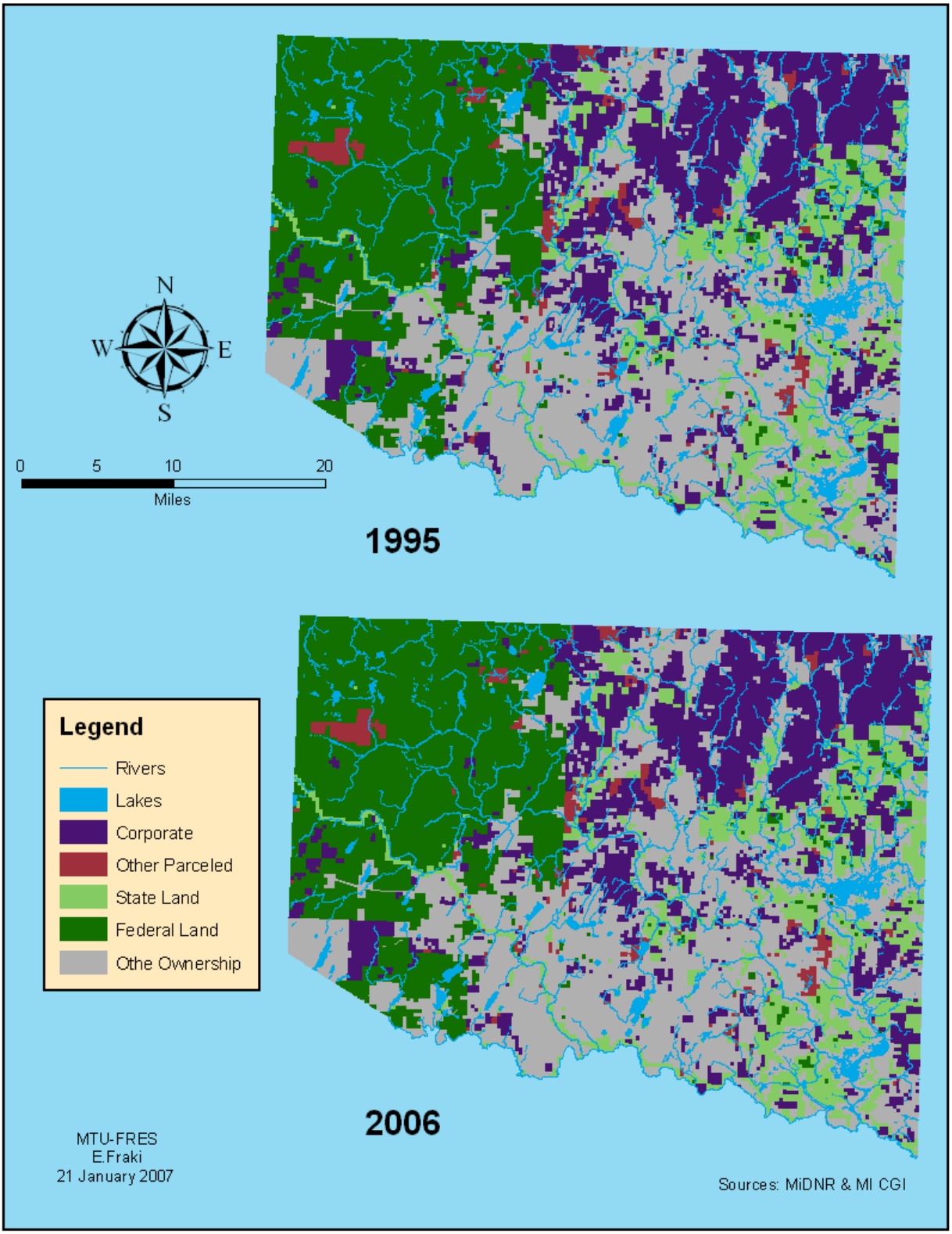


Figure A-8.1: Comparison of Corporate Lands (1995-2006) with Proximities to Lakes, Rivers, State and Federal Lands for Iron County.

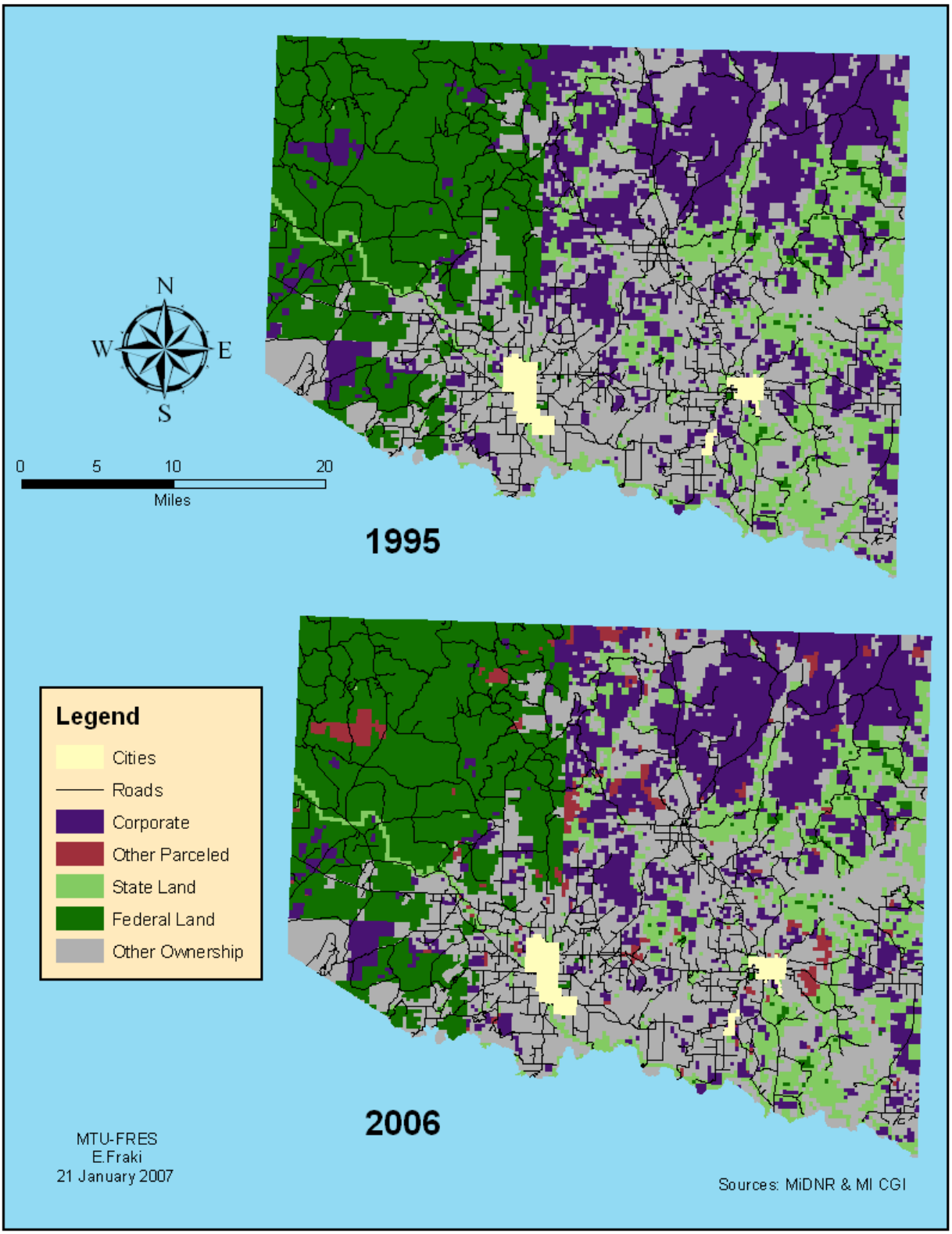


Figure A-8.3: Comparison of Corporate Lands (1995-2006) with Proximities to Roads, Urban Areas, State and Federal Lands for Iron County.

The contiguous nature of large-tract holdings in Iron County comparing the sample dates 1995 and 2006 is detailed below in Table A-8.3.

Table A-8. 3: Contiguous Large-Tract Holdings (acres) for Iron County.

Year	#Parcels	#Parcels <40 acres	Area (acres)			Perimeter (miles)		
			Min	Max	Mean	Min	Max	Mean
1995	253	44	23	76,595	710	1	210	4
2006	251	53	6	76,966	665	1	200	4

This data indicates an increase in the number of isolated parcels less than 40 acres in area by 21%. The maximum area of contiguous corporate holdings remained stable, slightly increasing over the given interval.

Of the total large-tract 2006 land holdings of 166,728 acres, approximately 58% or 95,971 acres fall within the buffered areas of potential alternate land use including parcels of less than 40 acres in area. This represents a decrease of 9,515 acres (9%) in these types of lands during the time interval studied for this county. A spatial depiction of these lands is shown in Figure A-8.3.

Frontages to the identified features of lakes, rivers, Great Lake shoreline, roads and urban areas are shown for the two sample dates in Table A-8.4 with the associated gain (loss) of area during the time interval studied.

Table A-8. 1: Feature Adjacencies (acres) for Iron County.

Feature	1995	2006	Gain (Loss)
Lake	2,679	1,933	(746)
River	40,473	34,805	(5,668)
Shoreline	0	0	0
Roads	29,312	27,713	(1,599)
Urban	1,049	619	(430)

Iron County is one of two counties in the UP that does not have Great Lake shoreline. All other feature adjacencies decreased over this period with the largest percentage decrease found with road adjacencies (41%). Lake adjacent parcels decreased 28% and river areas decreased 14% over the sample period and had the highest loss of acreage.

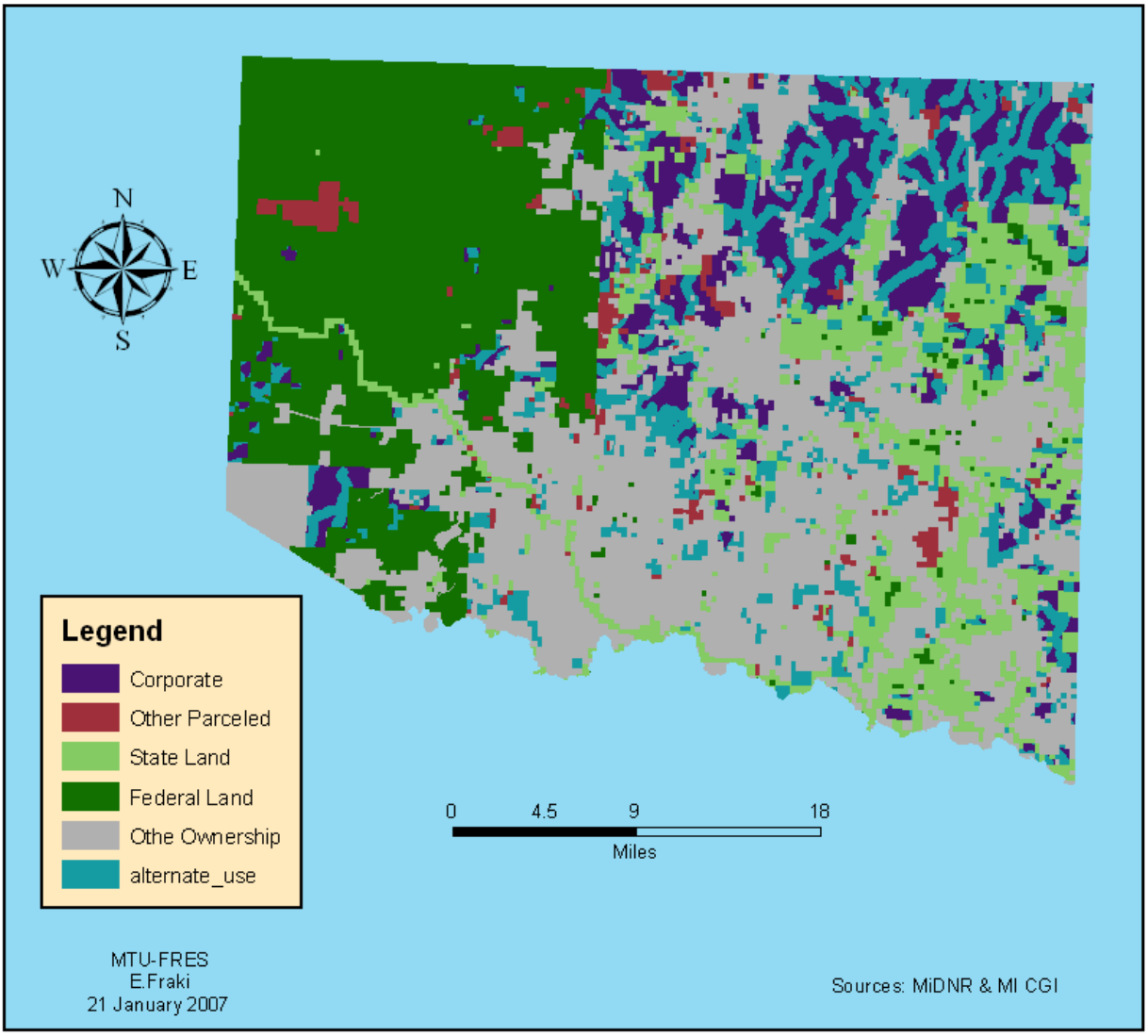
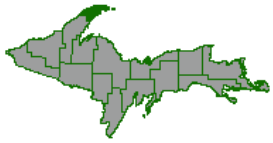


Figure A-8. 4: Corporate Lands Showing Areas of Possible Higher Value Alternate Uses for Iron County.

A-9: Keweenaw County



The sampling dates for this county were 1994 and 2006, giving a comparison period of 12 years. The largest transfer of ownership was found between Escanaba Paper (EPC) and the Forestland Group (FLG). EPC ended the period with near complete divesture and the FLG became a new owner with over 12,000 acres. International Paper (IP) began and ended the period as the leading large-tract owner but decreased in total holdings divesting nearly 20,000 acres, over 18,000 acres of which went outside of the large-tract category. A breakdown of these ownerships is found in Table A-9.1 with the distribution of divestitures shown in Table A-9.2. For this time period, large tract corporate holdings decreased 22,574 acres or nearly 14%.

Table A-9. 1: Large-Tract Holdings (acres) for Keweenaw County.

Company	Type	Year		Gain (Loss)
		1994	2006	
EPC	VITPC	22,319	162	(22,157)
FLG	TIMO	0	12,676	12,676
IP	VITPC	142,781	123,416	(19,365)
KLA	LAND	349	0	(349)
LYR	LAND	1,213	4,854	3,641
TNC	CONS	546	3,526	2,980
Total Holdings		**167,208**	**144,634**	**(22,574)**

Parcels that transferred out of the large-tract category during this period to “Other” owners totaled 25,345 acres or approximately 15% of the 1994 total large-tract holdings. This area loss was partially offset by a 2,771-acre increase to the large-tract category resulting in final holdings of 144,634 acres for the 2006 sample date.

Table A-9. 2: Large-Tract Transfers (acres) from 1994 to 2006 for Keweenaw County.

Buyers	Sellers					Total
	EPC	IP	KLA	LYR	OTH	Acquired
EPC		0	0	0	0	**0**
FLG	12,676	0	0	0	0	**12,676**
IP	323		0	0	476	**799**
LYR	2,936	5	0		1,169	**4,110**
TNC	0	1,854	0	0	1,126	**2,980**
OTH	6,222	18,305	349	469		**25,345**
Total Divested	**22,157**	**20,164**	**349**	**469**	**2,771**	

Current (2006) MiDNR CFA listings for Keweenaw County indicate International Paper as the largest enrolled holding at 119,372 acres. The Forestland Group follows at 15,274 acres with Longyear and Plum Creek having less than 1,000 acres enrolled. Total CFA enrolled lands of non-individual (corporate, organizational, etc.) ownership for the county is approximately 145,128 acres.

Spatial representation of large-tract holdings found in Keweenaw County in relationship to the features of lakes, rivers, roads, urban areas, and public lands can be seen in Figures A-9.1 and A-9.2. For the 2006 sampling date, those lands that transferred out of large-tract ownership during the sampling period are shown as “Other Parceled”.

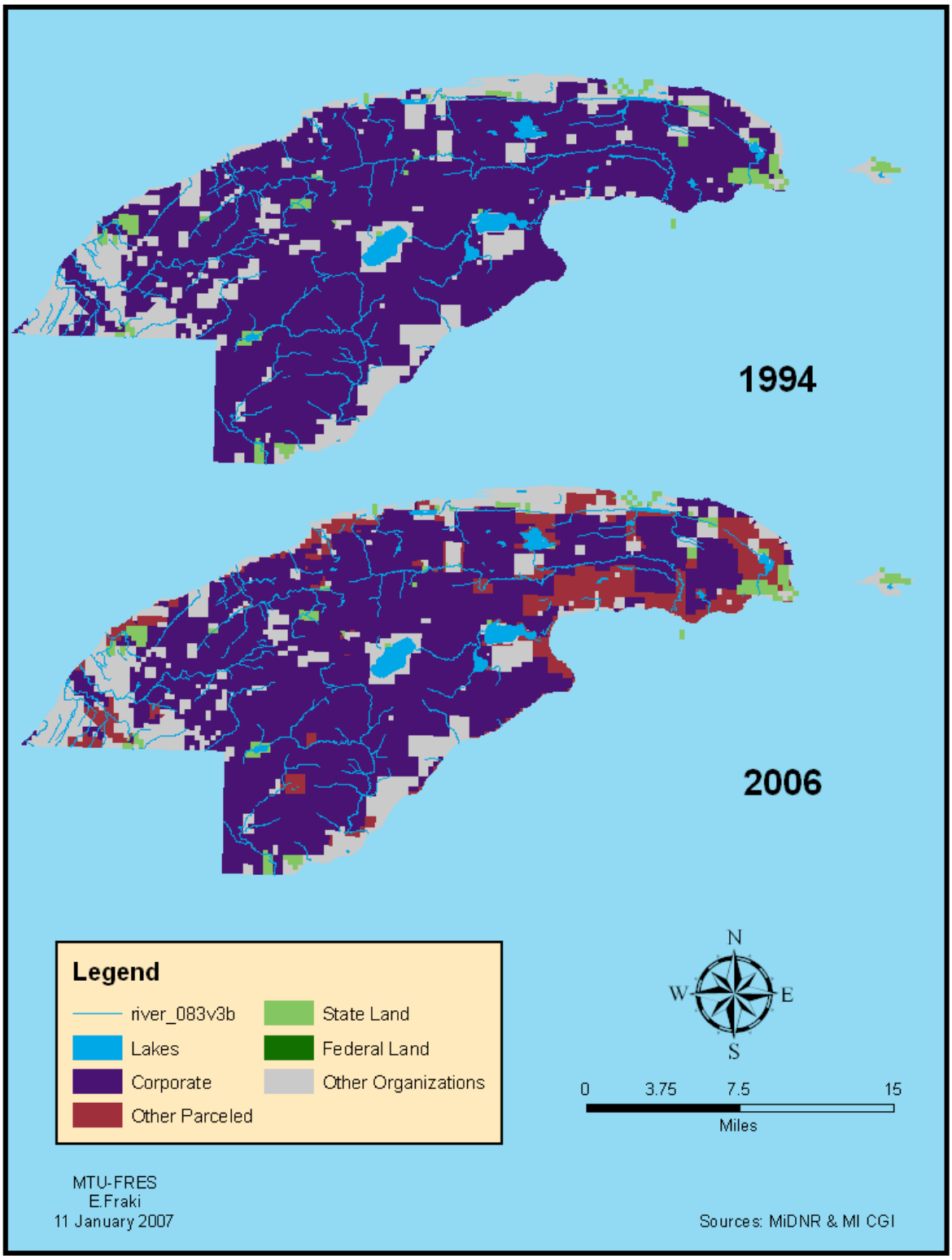


Figure A-9. 1: Comparison of Corporate Lands (1994-2006) with Proximities to Lakes, Rivers, State and Federal Lands for Keweenaw County.

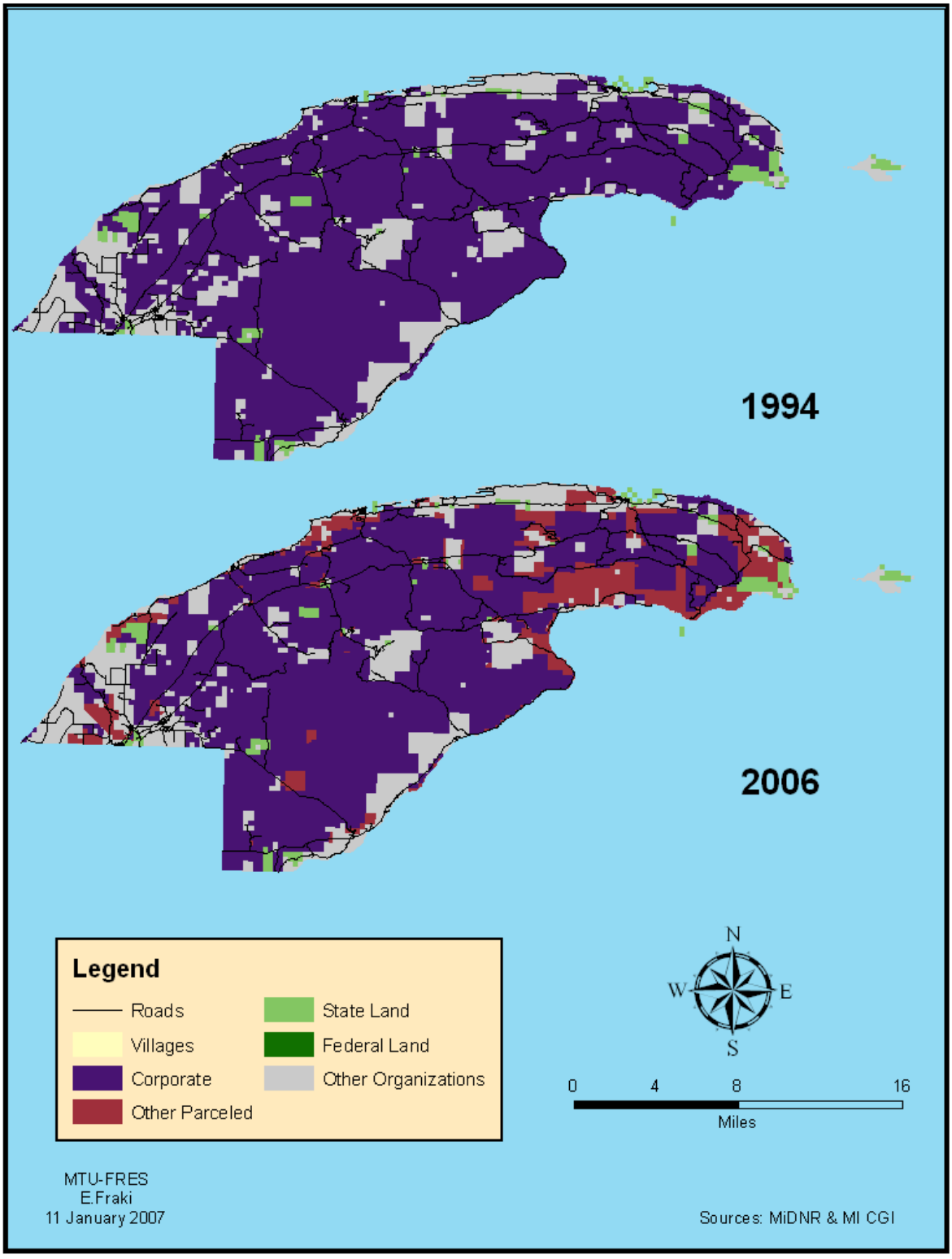


Figure A-9. 2: Comparison of Corporate Lands (1994-2006) with Proximities to Roads, Urban Areas, State and Federal Lands for Keweenaw County.

The contiguous nature of large-tract holdings in Keweenaw County comparing the sample dates 1994 and 2006 is detailed below in Table A-9.3.

Table A-9. 3: Contiguous Large-Tract Holdings for Keweenaw County.

Year	#Parcels	#Parcels <40 acres	Area (acres)			Perimeter (miles)		
			Min	Max	Mean	Min	Max	Mean
1994	16	8	<1	162,827	10,471	<1	307	22
2006	27	14	8	124,808	5,367	1	241	13

This data indicates a 75% increase in the number of isolated parcels less than 40 acres in area. The maximum area of contiguous large-tract holdings decreased over 38,000 acres (23%) for the given interval.

Of the total 2006 large-tract holdings of 144,634 acres, approximately 60% or 87,218 acres fall within the buffered areas of potential alternate land use including parcels of less than 40 acres in area. This represents a decrease of 17,166 acres or nearly 17% in these types of holdings. A spatial depiction of these lands is shown in Figure A-9.3.

Frontages to the identified features of lakes, rivers, Great Lake shoreline, roads and urban areas are shown for the two sample dates in Table A-9.4 with the associated gain (loss) of area during the time interval studied.

Table A-9.4: Feature Adjacencies (acres) for Keweenaw County.

Feature	1994	2006	Gain (Loss)
Lake	6840	3504	(3,336)
River	38407	33021	(5,386)
Shoreline	2982	1462	(1,520)
Roads	38411	30927	(7,484)
Urban	31	0	(31)

Lands identified adjacent to the selected features declined in total area during the given time interval. The Great Lake shoreline and lake features saw the greatest declines at approximately 51% and 48% respectively followed by roads (20%) and rivers (14%). No large-tract holdings remained adjacent to urban areas for the 2006 sample date.

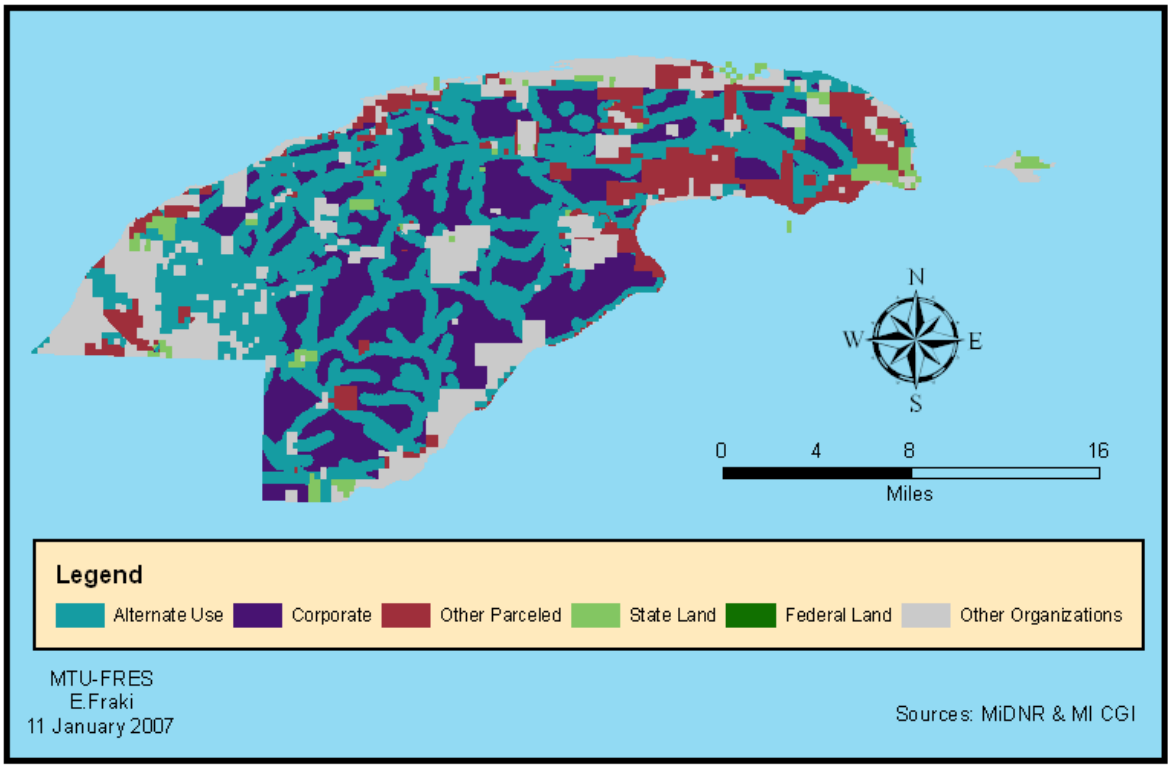
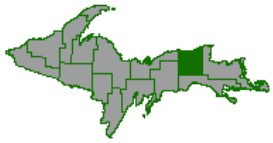


Figure A-9. 3: Corporate Lands Showing Areas of Possible Higher Value Alternate Use for Keweenaw County.

A-10: Luce County



The sampling dates for this county were 1994 and 2005, giving a comparison period of 11 years. The largest transfer of ownership was found between Benson and The Forestland Group with The Forestland Group ending the period as the largest owner. The Nature Conservancy also saw large gains during this period while three companies completely divested. A breakdown of these ownerships is found in Table A-10.1 with the distribution of divestitures shown in Table A-10.2. For this time period, large tract holdings decreased 10,808 acres or nearly 9%.

Table A-10.1: Large-Tract Holdings (acres) for Luce County.

Company	Type	Year		Gain (Loss)
		1994	2005	
BF	LAND	92,185	0	**(92,185)**
CCI	MNRL	40	0	**(40)**
CIC	VITPC	21,856	0	**(21,856)**
EPC	VITPC	3,341	6,601	**3,260**
FLG	TIMO	0	71,773	**71,773**
IP	VITPC	1,374	8,335	**6,961**
TNC	CONS	3,238	24,517	**21,279**
Total Holdings		**122,034**	**111,226**	**(10,808)**

Parcels that transferred out of the large-tract category during this period to “Other” owners totaled 14,048 acres or approximately 12% of the 1994 total large-tract holdings. This area loss was partially offset by a 2,952 acre increase to the large-tract category resulting in final holdings of 111,226 acres for the 2005 sample date.

Table A-10.2: Large-Tract Transfers (acres) from 1994 to 2005 for Luce County.

Buyers	Sellers						Total
	BF	CCI	CIC	EPC	IP	OTH	Acquired
EPC	0	0	1,765		0	1,574	**3,339**
FLG	71,450	40	0	0	0	283	**71,773**
IP	0	0	8,248	0		87	**8,335**
TNC	20,271	0	0	0	0	1,008	**21,279**
OTH	464	0	11,843	79	1,374		**13,760**
Total Divested	**92,185**	**40**	**21,856**	**79**	**1,374**	**2,952**	

Current (2006) MiDNR CFA listings for Luce County indicate The Forestland Group as the largest corporate owner of enrolled lands at 67,639 acres. The Nature Conservancy has the second largest holding with 23,076 acres. International Paper and Plum Creek have enrolled

lands less than 10,000 acres. Total CFA enrolled lands of non-individual (corporate, organizational, etc.) ownership for the county is approximately 107,545 acres.

Spatial representation of large-tract holdings found in Luce County in relationship to the features of lakes, rivers, roads, urban areas, and public lands can be seen in Figures A-10 and A-10.2. For the 2005 sampling date, those lands that transferred out of large-tract ownership during the sampling period are shown as “Other Parceled”.

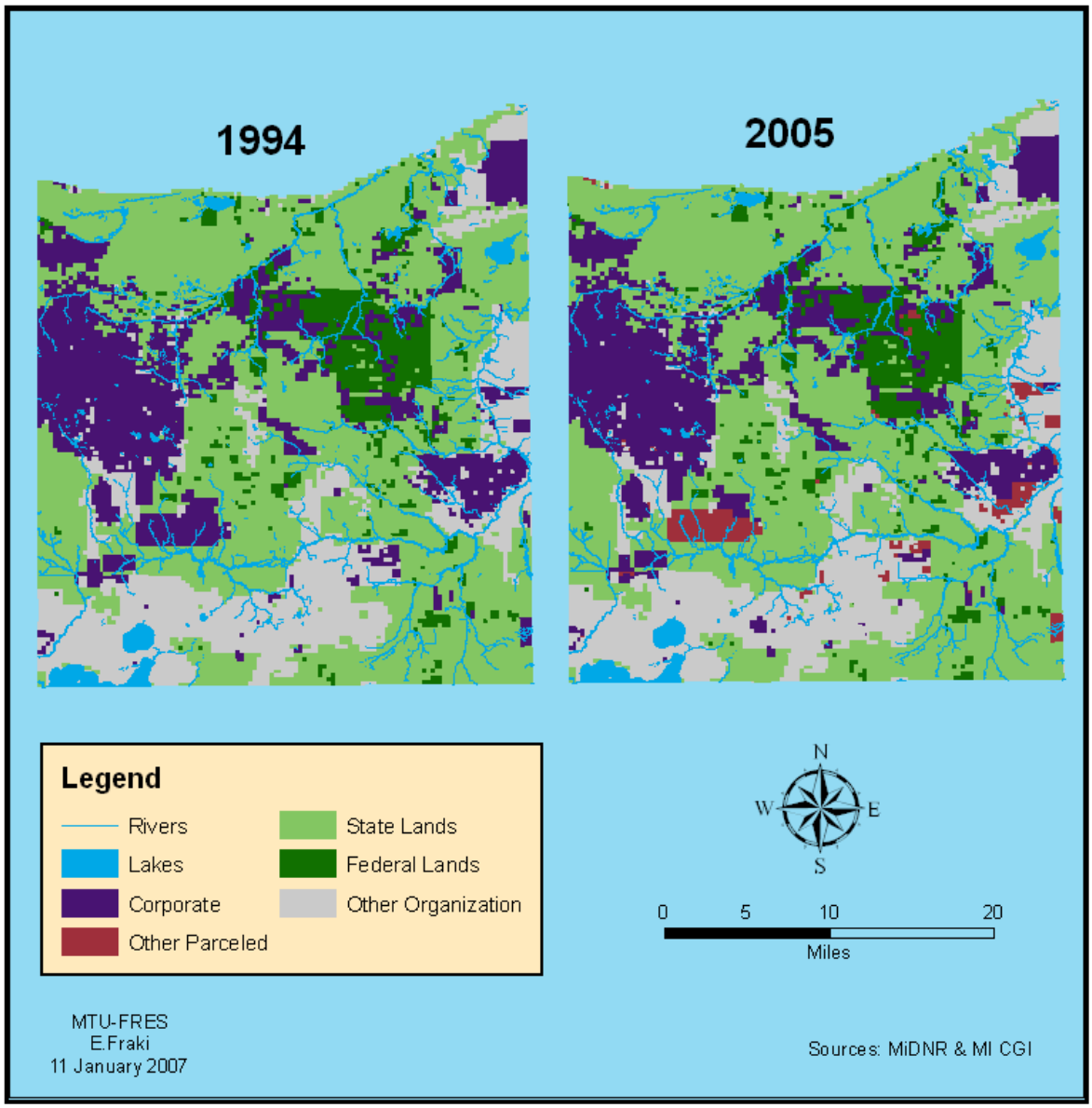


Figure A-10.1: Comparison of Corporate Lands (1994-2005) with Proximities to Lakes, Rivers, State and Federal Lands for Luce County.

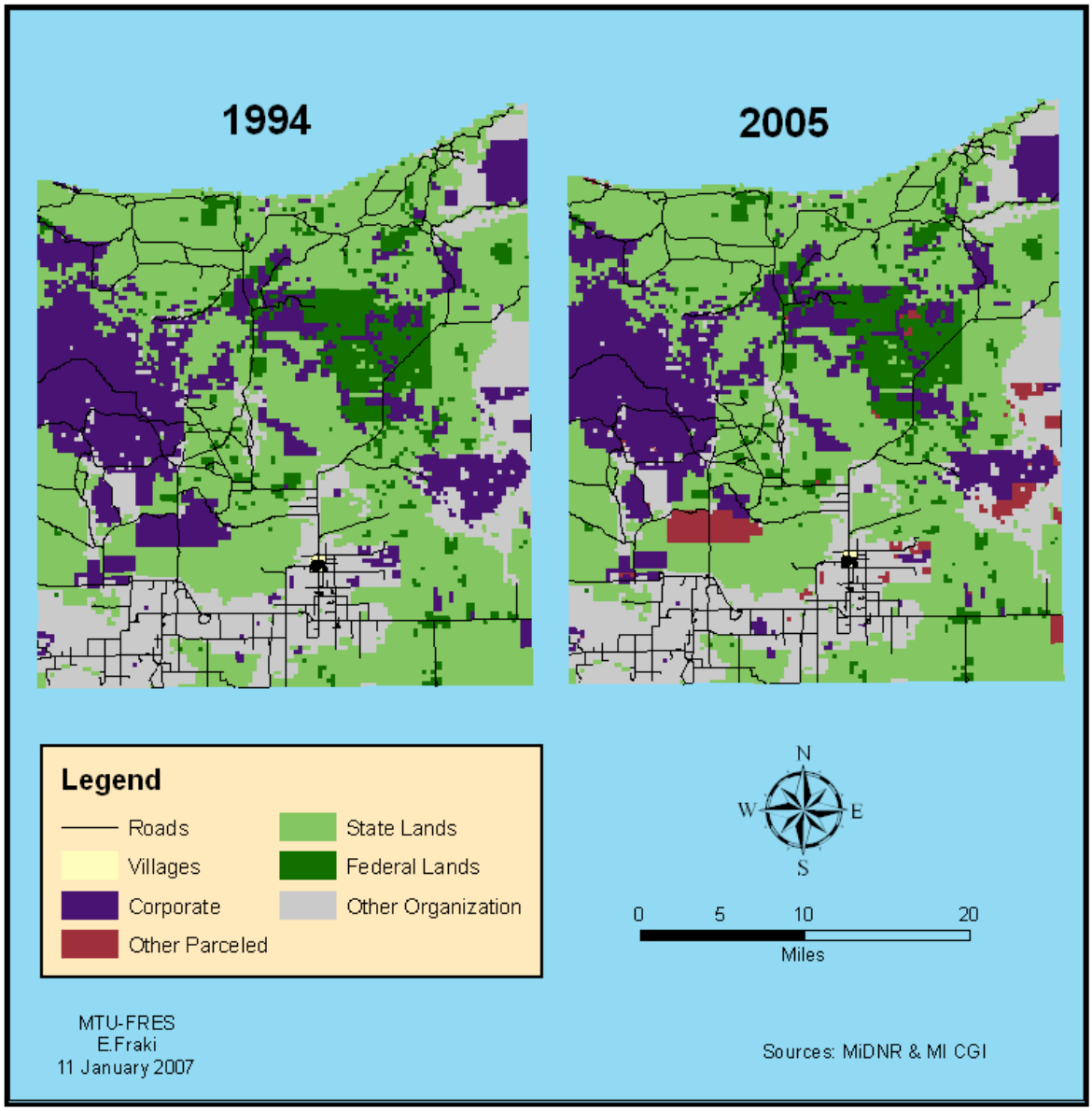


Figure A-10.2: Comparison of Corporate Lands (1994-2005) with Proximities to Roads, Urban Areas, State and Federal Lands for Luce County.

The contiguous nature of large-tract holdings in Luce County comparing the sample dates 1994 and 2005 is detailed below in Table A-10.3.

Table A-10.3: Contiguous Large-Tract Holdings (acres) for Luce County.

Year	#Parcels	#Parcels <40 acres	Area (acres)			Perimeter (miles)		
			Min	Max	Mean	Min	Max	Mean
1994	121	18	24	54,107	1,009	1	151	5
2005	108	17	12	54,181	1,030	1	149	5

This data indicates a relative stable contiguous nature of large-tract holdings over the given period.

Of the total corporate 2005 land holdings of 111,226 acres, approximately 44% or 48,615 acres fall within the buffered areas of potential alternate land use including parcels of less than 40 acres in area. This represents a decrease of 7,327 acres (13%) in these types of lands during the time interval studied for this county. A spatial depiction of these lands is shown in Figure A-10.3.

Frontages to the identified features of lakes, rivers, Great Lake shoreline, roads and urban areas are shown for the two sample dates in Table A-10.4 with the associated gain (loss) of area during the time interval studied.

Table A-10.4: Feature Adjacencies (acres) for Luce County.

Feature	1994	2005	Gain (Loss)
Lake	6,619	6,686	67
River	19,982	16,372	(3,610)
Shoreline	84	0	(84)
Roads	13,460	12,567	(893)
Urban	0	0	0

Adjacencies to Great Lake shoreline were completely divested during this period. Lake adjacent areas increased modestly while river features declined 18%.

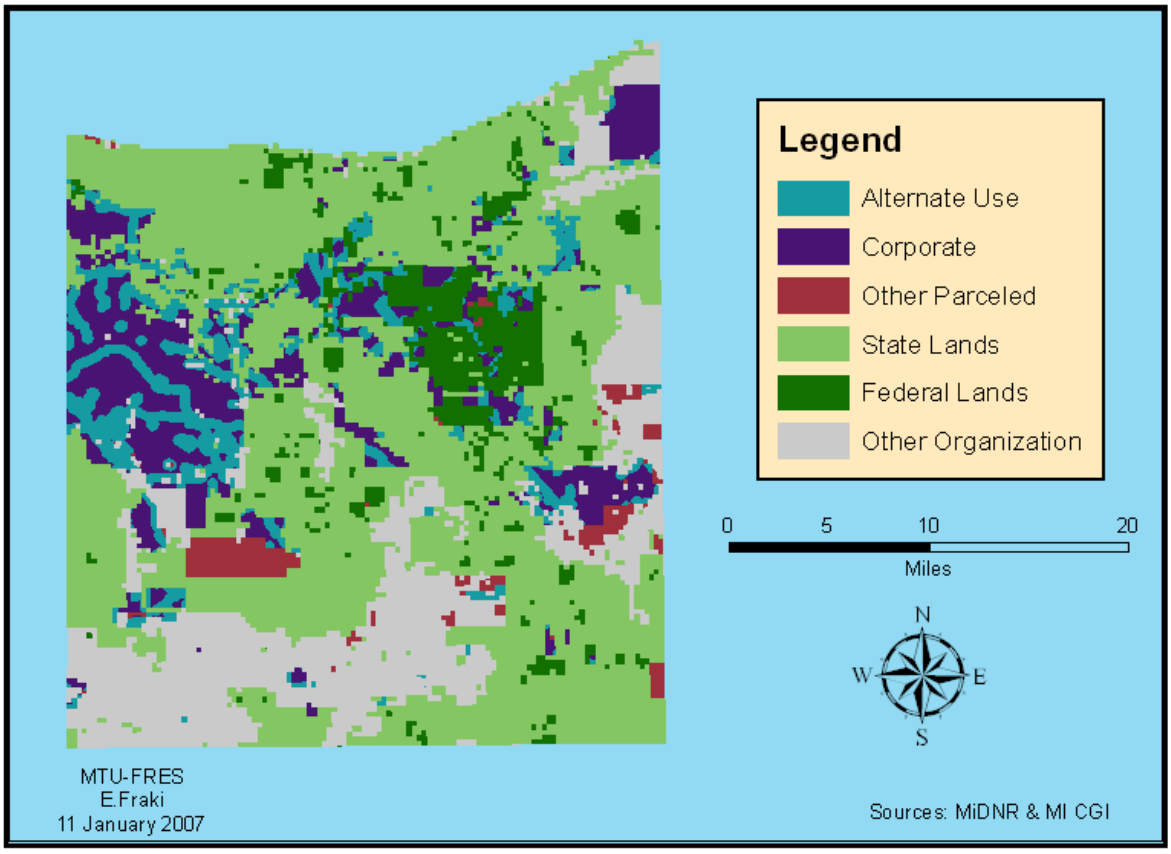
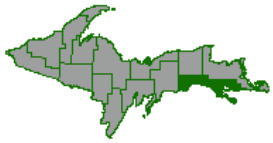


Figure A-10.3: Corporate Lands Showing Areas of Possible Higher Value Alternate Use for Luce County.

A-11: Mackinac County



The sampling dates for this county were 1996 and 2006, giving a comparison period of 10 years. Escanaba Paper ended the period as the single largest holder acquiring the majority of Mead and Champion land as these companies completely divested. A breakdown of these ownerships is found in Table A-11.1 with the distribution of divestitures shown in Table A-11.2. For this time period, large-tract holdings decreased 2,316 acres or nearly 11%.

Table A-11. 1: Large-Tract Holdings (acres) for Mackinac County.

Company	Type	Year		Gain (Loss)
		1996	2006	
CCI	MNRL	345	0	**(345)**
CIC	VITPC	5,259	0	**(5,259)**
EPC	VITPC	160	19,039	**18,879**
MD	VITPC	14,716	0	**(14,716)**
TNC	CONS	1,515	479	**(1,036)**
PC	REIT	0	161	**161**
Total Holdings		**21,995**	**19,679**	**(2,316)**

Parcels that transferred out of the large-tract category during this period to “Other” owners totaled 3,681 acres or approximately 17% of the 1996 total large-tract holdings. This area loss was partially offset by a 1,365 acre increase to the large-tract category resulting in final holdings of 19,679 acres for the 2006 sample date.

Table A-11. 2: Large Tract Transfers (acres) from 1996 to 2006 for Mackinac County.

Buyers	Sellers						Total
	CCI	CIC	EPC	MD	TNC	OTH	Acquired
EPC	0	4,468		13,564	0	1,007	**19,039**
PC	0	0	0	161	0	0	**161**
TNC	0	0	0	0		358	**358**
OTH	345	791	160	991	1,394		**3,681**
Total Divested	**345**	**5,259**	**160**	**14,716**	**1,394**	**1,365**	

Current (2006) MiDNR CFA listings for Mackinac County indicate Plum Creek having the only CFA enrolled lands of non-individual (corporate, organizational, etc.) ownership in the county at approximately 19,140 acres.

Spatial representation of large-tract holdings found in Mackinac County in relationship to the features of lakes, rivers, roads, urban areas, and public lands can be seen in Figures A-11.1 and A-11.2. For the 2006 sampling date, those lands that transferred out of large-tract ownership during the sampling period are shown as “Other Parceled”.

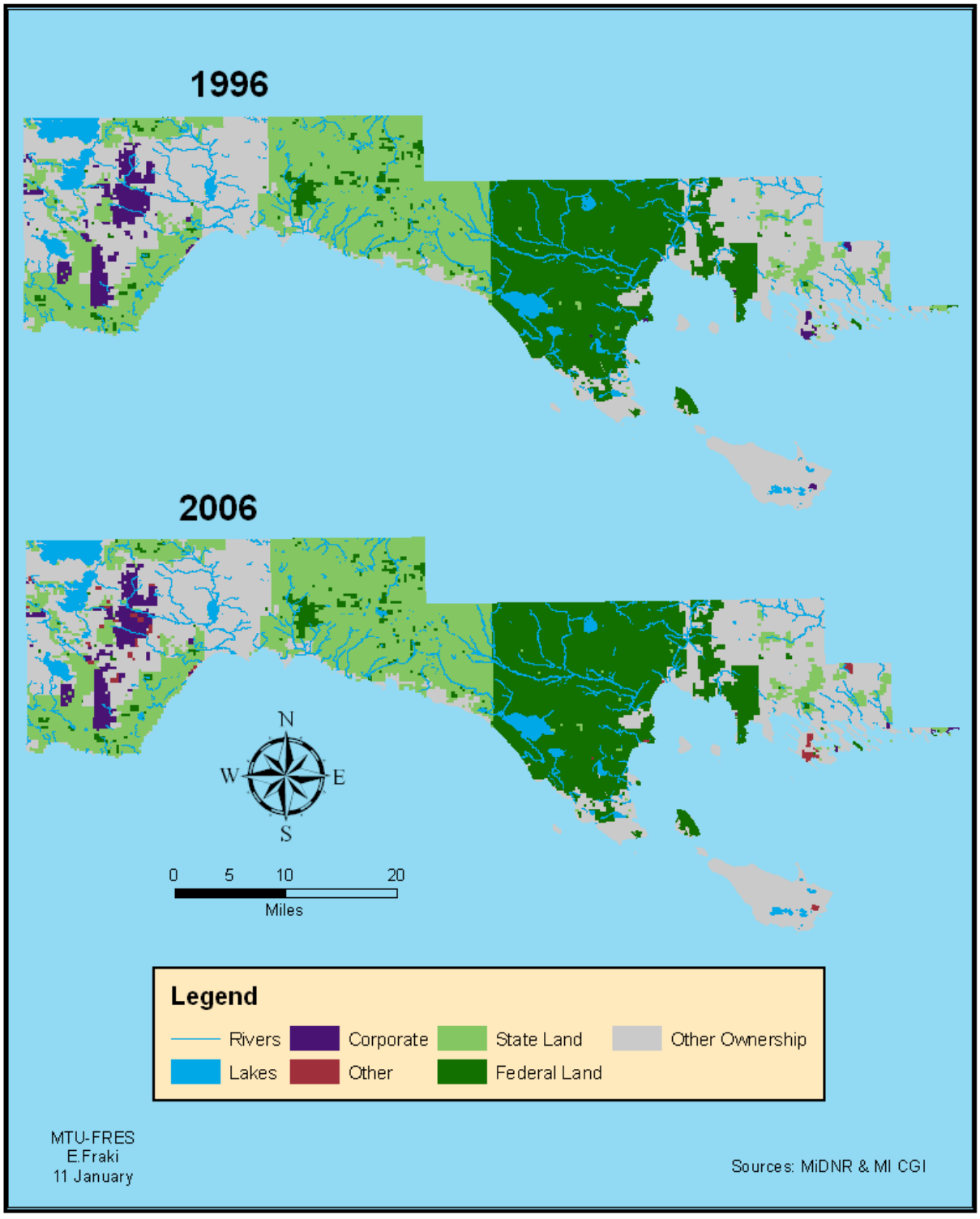


Figure A-11.1: Comparison of Corporate Lands (1996-2006) with Proximities to Lakes, Rivers, State and Federal Lands for Mackinac County.

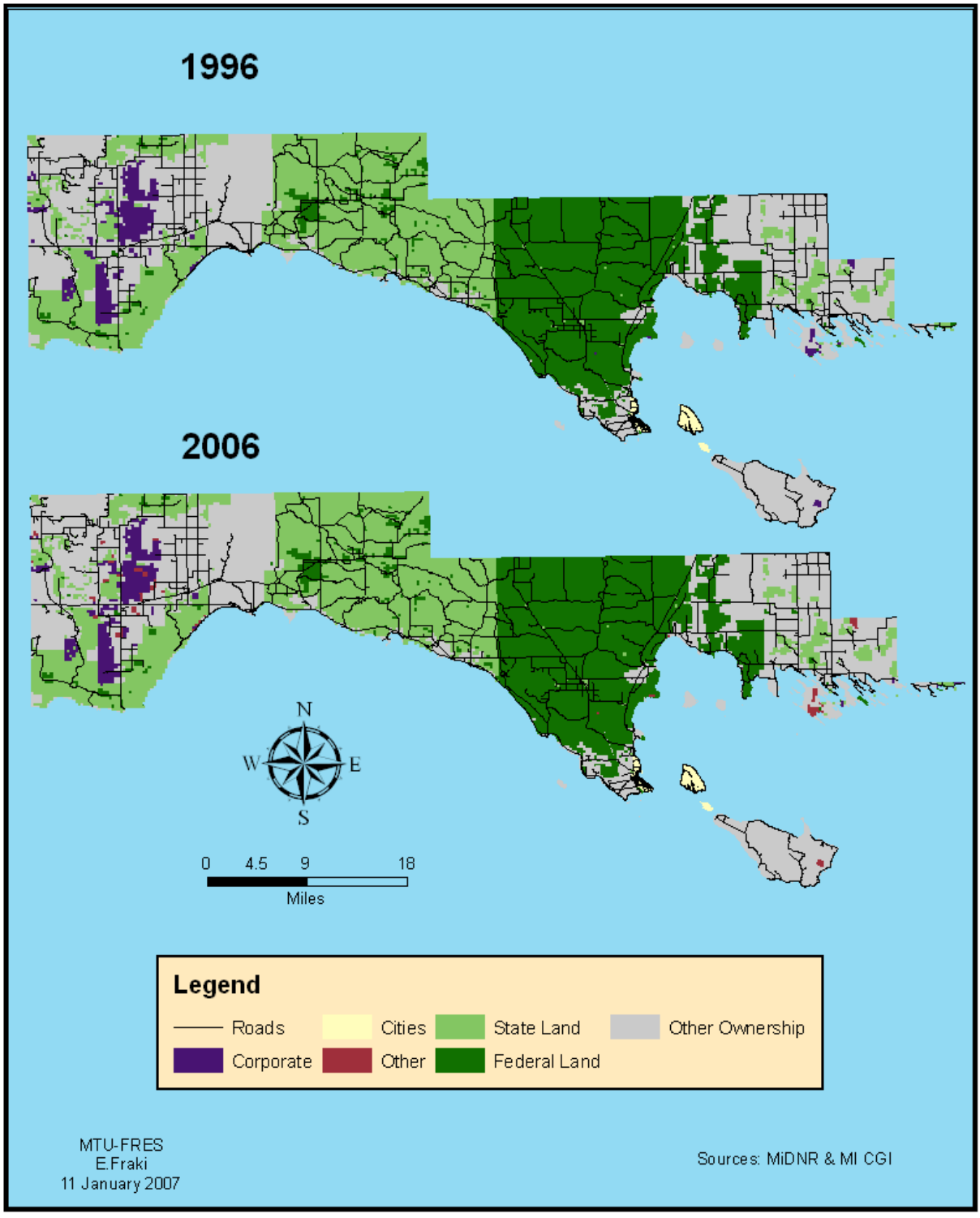


Figure A-11.2: Comparison of Corporate Lands (1996-2006) with Proximities to Roads, Urban Areas, State and Federal Lands for Mackinac County.

The contiguous nature of large-tract holdings in Mackinac County comparing the sample dates 1996 and 2006 is detailed below in Table A-11.3.

Table A-11. 3: Contiguous Large-Tract Holdings for Mackinac County.

Year	#Parcels	#Parcels <40 acres	Area (acres)			Perimeter (miles)		
			Min	Max	Mean	Min	Max	Mean
1996	40	14	<1	11,291	550	<1	49	4
2006	24	5	20	19,690	820	1	42	5

This data indicates a 64% decrease in the number of isolated parcels less than 40 acres in area. The maximum area of contiguous holdings increased approximately 74% over the given time interval.

Of the total 2006 large-tract holdings of 19,679 acres, approximately 38% or 7,455 acres fall within the buffered areas of potential alternate land use including parcels of less than 40 acres in area. This represents a decrease of 833 acres or approximately 10% in these types of lands during the time interval studied for this county. A spatial depiction of these lands is shown in Figure A-11.3.

Frontages to the identified features of lakes, rivers, Great Lake shoreline, roads and urban areas are shown for the two sample dates in Table A-11.4 with the associated gain (loss) of area during the time interval studied.

Table A-11.4: Feature Adjacencies (acres) for Mackinac County.

Feature	1996	2006	Gain (Loss)
Lake	81	0	(81)
River	2,842	2,597	(245)
Shoreline	464	310	(154)
Roads	2,742	2,735	(7)
Urban	0	0	0

Lake adjacent areas were completely divested during this period and lands adjacent to Great Lake shoreline declined 33%. Relatively modest decreases were found in other selected feature adjacencies.

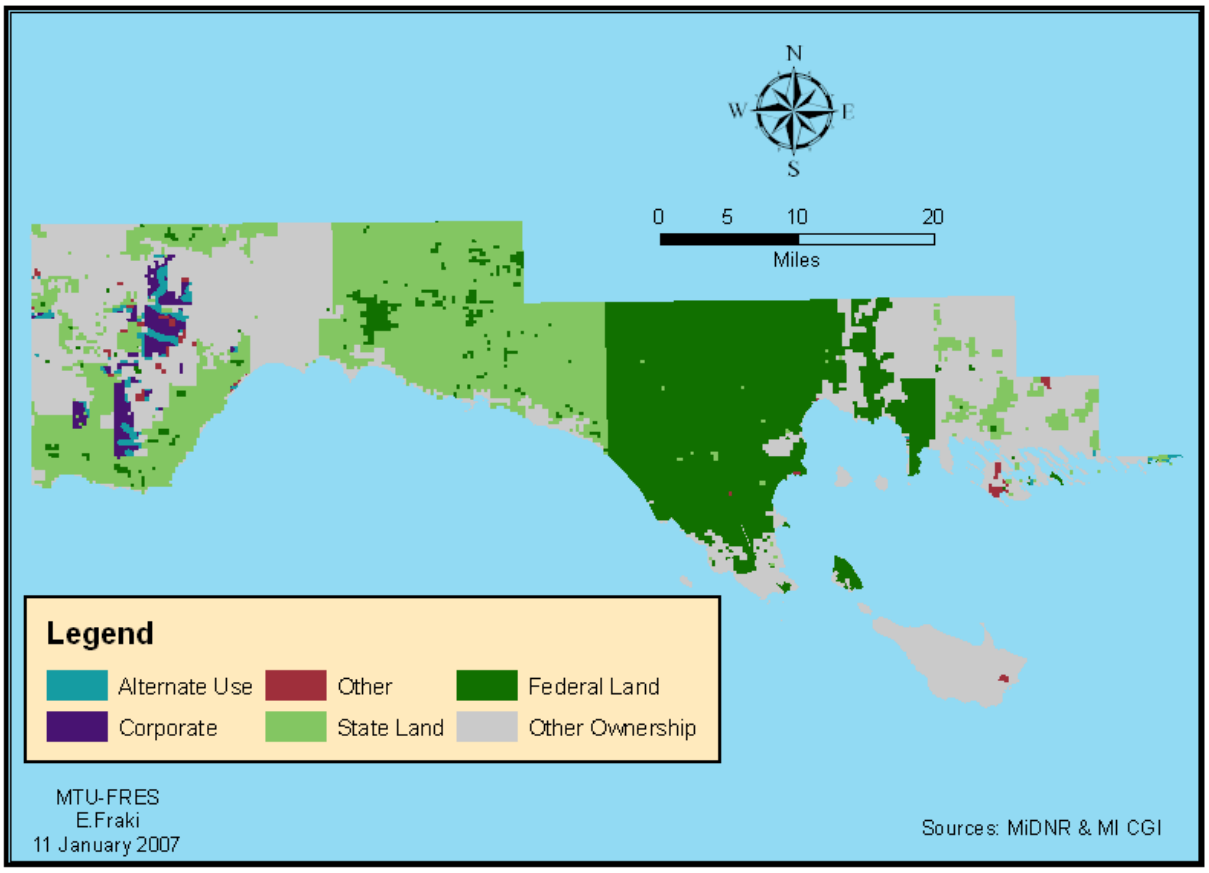
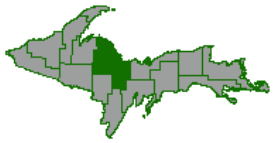


Figure A-11.3: Corporate Lands Showing Areas of Possible Higher Value Alternate Use for Mackinac County.

A-12: Marquette County



The sampling dates for this county were 1995 and 2006, giving a comparison period of 11 years. Most major corporations of our study own land in this county. Plum Creek ended the period a new, leading large-tract owner with more than twice the amount of land as the next owner in size. Many entities completely divested of holdings during the sample period including the Bishop Trust, Benson, Champion, and Escanaba Paper. The Forestland Group and The Nature Conservancy both became new owners by 2006, the Forestland Group having obtained most of the Bishop Trust lands. A breakdown of these ownerships is found in Table A-12.1 with the distribution of divestitures shown in Table A-12.2. For this time period, large-tract holdings decreased 49,208 acres or approximately 12%.

Table A-12.1: Large-Tract Holdings (acres) for Marquette County.

Company	Type	Year		Gain (Loss)
		1995	2006	
BF	LAND	941	0	(941)
BTr	LAND	38,538	0	(38,538)
CCI	MNRL	96,370	72,411	(23,959)
CIC	VITPC	40,988	0	(40,988)
CFI	VITPC	2,549	282	(2,267)
EPC	VITPC	156,760	0	(156,760)
FLG	TIMO	0	36,159	36,159
IP	VITPC	122	18,190	18,068
KLA	LAND	60	2,155	2,095
LYR	LAND	51,764	47,271	(4,493)
MD	VITPC	14,842	39	(14,803)
PC	REIT	0	175,701	175,701
SJF	VITPC	4,736	4,773	37
TNC	CONS	0	1,481	1,481
Total Holdings		**407,670**	**358,462**	**(49,208)**

Parcels that transferred out of the large-tract category during this period to “Other” owners totaled 58,130 acres or approximately 14% of the 1995 total large-tract holdings. This area loss was partially offset by an 8,922-acre increase to the large-tract category resulting in final large-tract holdings of 358,462 acres for the 2006 sample date. Not shown in Table 12.2 are lands transferred from IP (122 acres) to the “Other” category.

Buyers	Sellers										Total
	BF	BTr	CCI	CIC	CFI	EPC	LYR	MD	SJF	OTH	Acquired
CCI	0	52		0	0	0	0	0	0	1,185	**1,237**
CFI	0	0	0	0		0	0	0	0	0	**0**
FLG	120	35,705	0	0	0	0	0	0	40	294	**36,159**
IP	0	0	0	17,659	106	0	0	0	172	253	**18,190**
KLA	0	0	1,774	0	0	0	39	0	0	282	**2,095**
LYR	0	0	0	0	0	0		0	0	1,035	**1,035**
MD	0	0	0	0	0	0	0		0	0	**0**
PC	0	394	0	16,820	0	139,084	161	14,321	40	4,881	**175,701**
SJF	0	40	0	0	0	0	0	0		612	**652**
TNC	0	0	0	0	941	160	0	0	0	380	**1,481**
OTH	821	2,347	23,422	6,509	1,220	17,516	5,328	482	363		**58,008**
Total Divested	**941**	**38,538**	**25,196**	**40,988**	**2,267**	**156,760**	**5,528**	**14,803**	**615**	**8,922**	

Table A-12.2: Large-Tract Transfers (acres) 1995-2006 for Marquette County.

Current (2006) MiDNR CFA listings for Marquette County indicate many primary companies of this study with enrolled lands. Plum Creek is the largest owner with 169,901 acres. Longyear holdings and associations are second with 43,439 acres followed by The Forestland Group (34,625 acres), International Paper (17,019 acres), CCI (15,540), and Keweenaw Land with 2,655 enrolled acres. Total CFA enrolled lands of non-individual (corporate, organizational, etc.) ownership for the county is approximately 304,435 acres.

Spatial representation of large-tract holdings found in Marquette County in relationship to the features of lakes, rivers, roads, urban areas, and public lands can be seen in Figures A-12.1 and A-12.2. For the 2006 sampling date, those lands that transferred out of large-tract ownership during the sampling period are shown as “Other Parceled”.

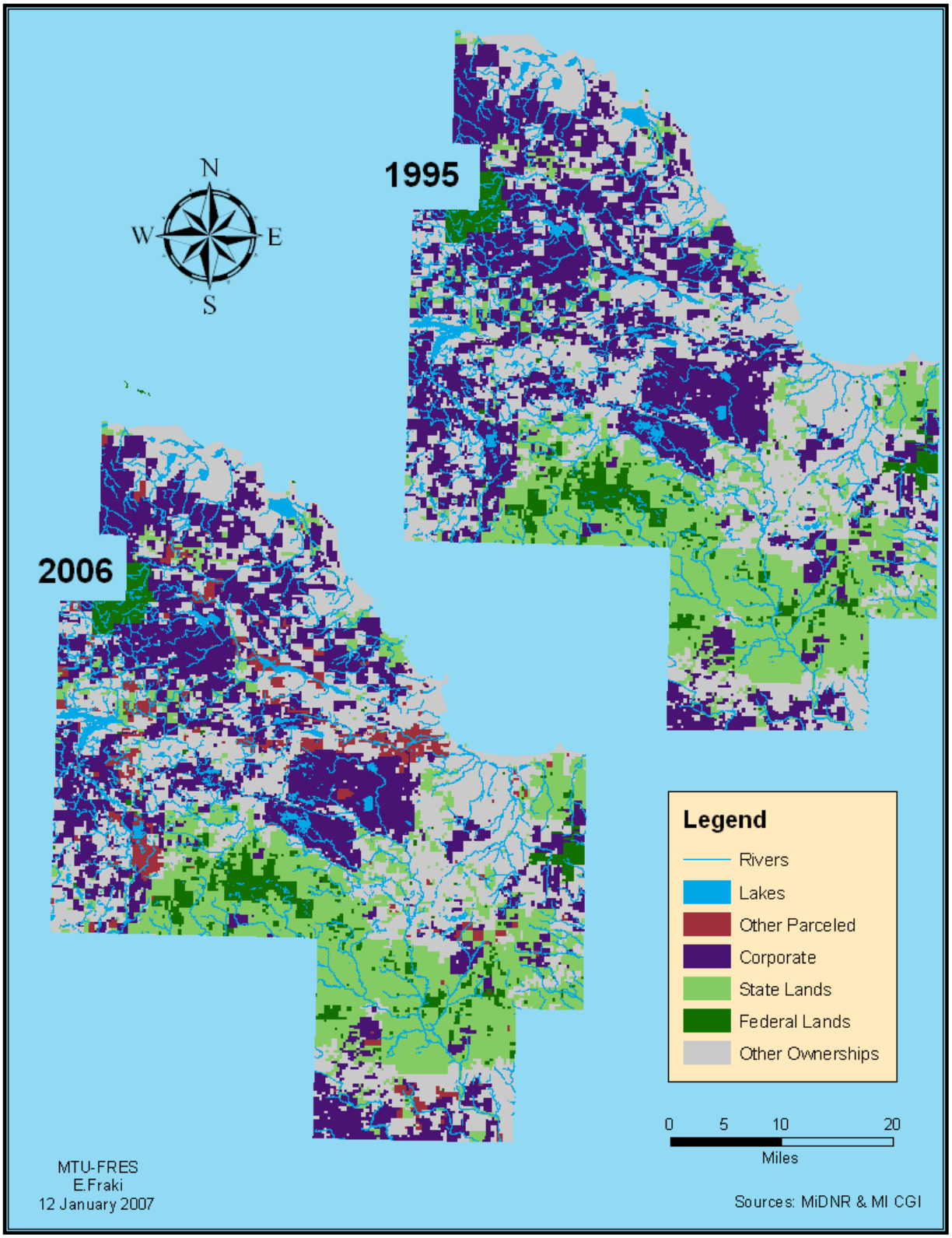


Figure A-12. 1: Comparison of Corporate Lands (1995-2006) with Proximities to Lakes, Rivers, State and Federal Lands for Marquette County.

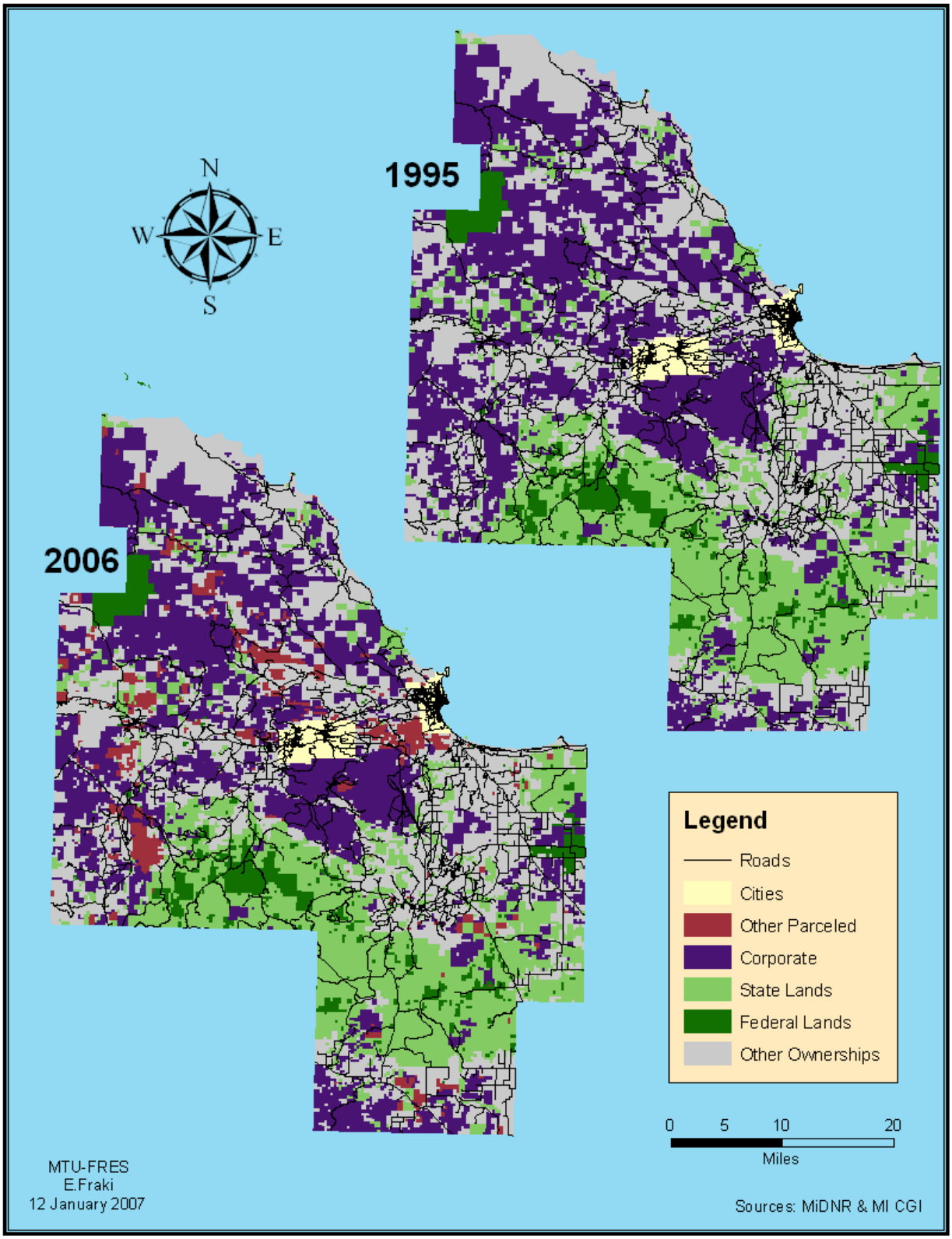


Figure A-12. 2: Comparison of Corporate Lands (1995-2006) with Proximities to Roads, Urban Areas, State and Federal Lands for Marquette County.

The contiguous nature of large-tract holdings in Marquette County comparing the sample dates 1995 and 2006 is detailed below in Table A-12.3.

Table A-12.3: Contiguous Large-Tract Holdings (acres) for Marquette County.

Year	#Parcels	#Parcels <40 acres	Area (acres)			Perimeter (miles)		
			Min	Max	Mean	Min	Max	Mean
1995	246	44	2	147,492	1,658	<1	558	8
2006	259	45	10	67,009	1,385	1	244	7

These data indicates a slight increase in the number of isolated parcels less than 40 acres in area. The maximum area of contiguous large-tract holdings decreased nearly 55% over the given time interval.

Of the total large-tract 2006 holdings of 358,462 acres, approximately 76% or 271,290 acres fall within the buffered areas of potential alternate land use including parcels of less than 40 acres in area. This represents a decrease of 43,955 acres (14%) in these types of lands during the time interval studied for this county. A spatial depiction of these lands is shown in Figure A-12.3.

Frontages to the identified features of lakes, rivers, Great Lake shoreline, roads and urban areas are shown for the two sample dates in Table A-12.4 with the associated gain (loss) of area during the time interval studied.

Table A-12. 4: Feature Adjacencies (acres) for Marquette County.

Feature	1995	2006	Gain (Loss)
Lake	30,197	22,229	(7,968)
River	101,857	88,505	(13,352)
Shoreline	37	153	116
Roads	67,672	57,576	(10,096)
Urban	10,582	6,623	(3,959)

Great Lake shoreline adjacency increased over 300% during this period. All other features showed decline in area with road adjacency diminishing 15%, urban areas 38%, lakes 26% and rivers 13%.

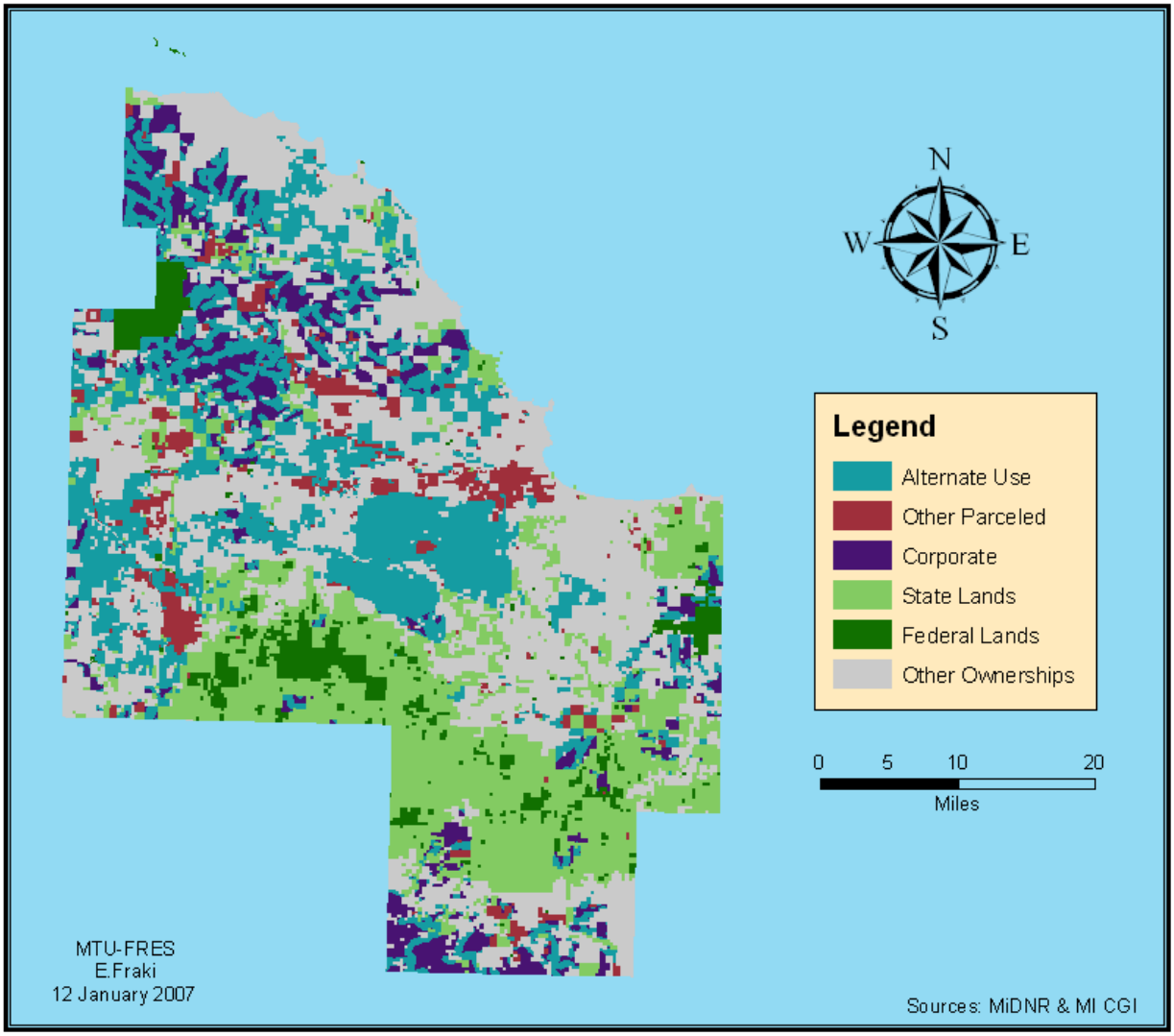
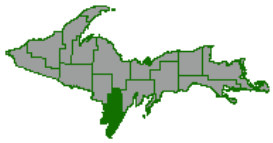


Figure A-12. 3: Corporate Lands Showing Areas of Possible Higher Value Alternate Use for Marquette County.

A-13: Menominee County



The sampling dates for this county were 1996 and 2003, giving a comparison period of seven years. The largest transfer of ownership was found between Champion International and International Paper. Escanaba Paper began and ended the period as the largest ownership. A breakdown of these ownerships is found in Table A-13.1 with the distribution of divestitures shown in Table A-13.2. For this time period, large-tract holdings remained relatively stable, decreasing 891 acres or approximately 1%.

Table A-13.1: Large-Tract Holdings (acres) for Menominee County.

Company	Type	Year		Gain (Loss)
		1996	2003	
CIC	VITPC	38,621	9,225	(29,396)
EPC	VITPC	73,271	76,963	3,692
IP	VITPC	0	14,902	14,902
KLA	Land	51	0	(51)
MD	VITPC	41	400	359
SJF	VITPC	4,877	14,480	9,603
Total Holdings		**116,861**	**115,970**	**(891)**

Parcels that transferred out of the large-tract category during this period to “Other” owners totaled 6,715 acres or approximately 6% of the 1996 total large-tract holdings. This area loss was offset by a 5,824 acre increase to the large-tract category resulting in final holdings of 115,970 acres at the 2003 sample date.

Table A-13.2: Large-Tract Transfers (acres) from 1996 to 2003 for Menominee County.

Buyers	Sellers					Total
	CIC	EPC	KLA	SJF	OTH	Acquired
CIC		0	0	0	178	**178**
EPC	4545		0	0	476	**5021**
IP	14781	0	0	0	121	**14902**
MD	0	359	0	0	0	**359**
SJF	4934	0	0		5049	**9983**
OTH	5314	970	51	380		**6715**
Total Divested	**29,574**	**1,329**	**51**	**380**	**5,824**	

Current (2006) MiDNR CFA listings for Menominee County indicate the companies of Plum Creek and IP representing large-tract owners of enrolled lands at 76,670 and 15,547 acres respectively. Total CFA enrolled lands of non-individual (corporate, organizational, etc.) ownership for the county is approximately 104,640 acres.

Spatial representation of large-tract holdings found in Menominee County in relationship to the features of lakes, rivers, roads, urban areas, and public lands can be seen in Figures A-13.1 and A-13.2. For the 2003 sampling date, those lands that transferred out of large-tract ownership during the sampling period are shown as “Other Parceled”.

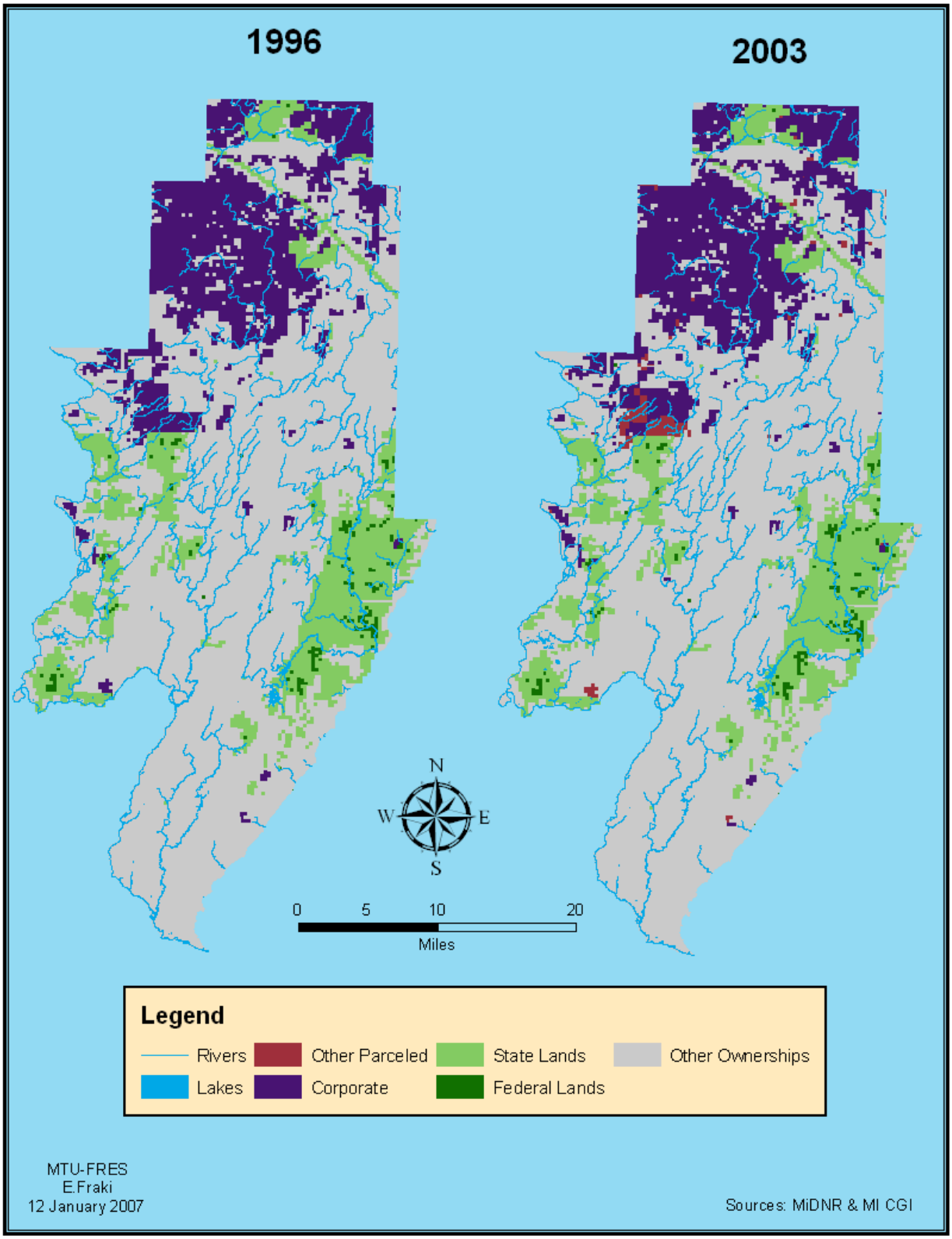


Figure A-13.1: Comparison of Corporate Lands (1996-2003) with Proximities to Lakes, Rivers, State and Federal Lands for Menominee County.

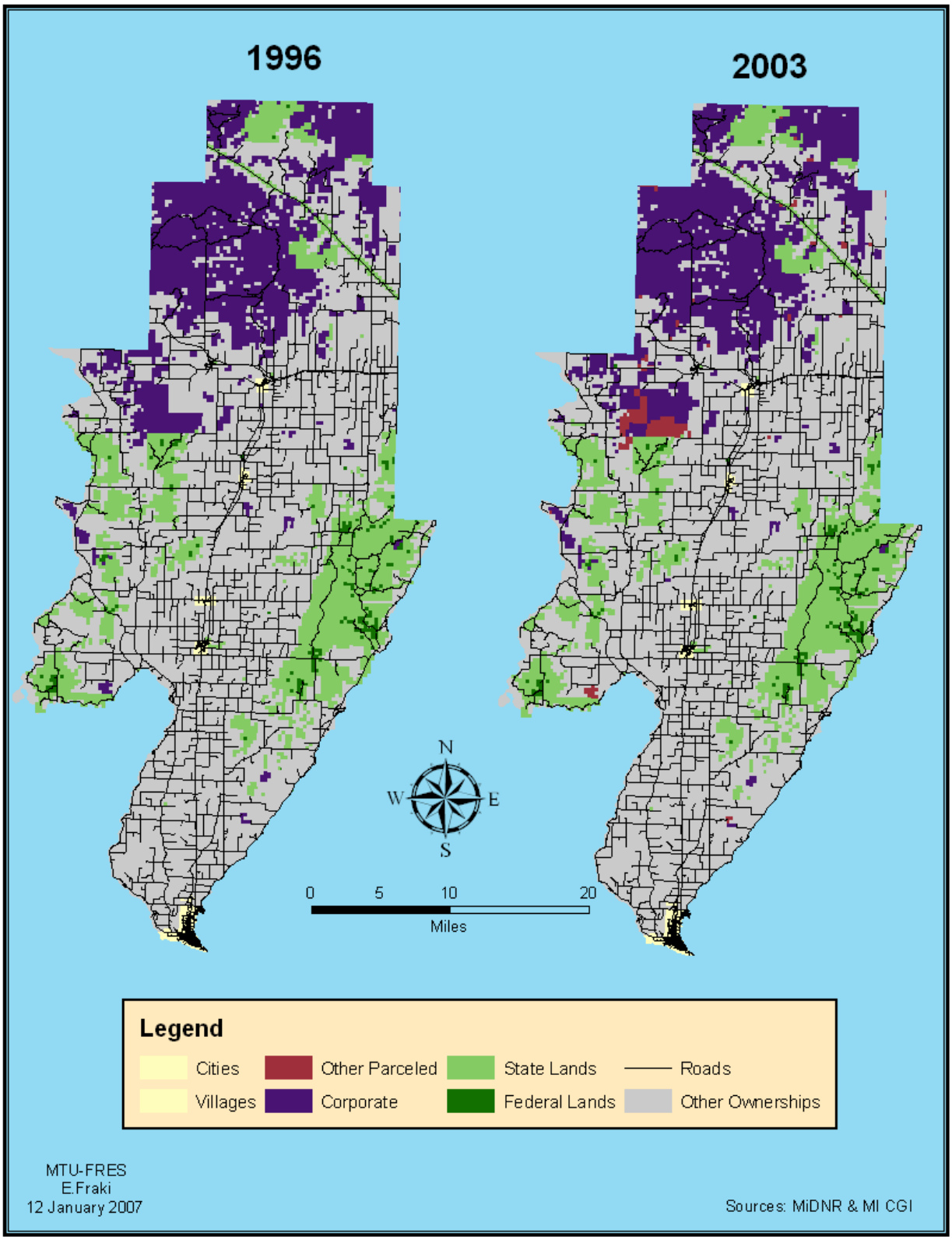


Figure A-13. 2: Comparison of Corporate Lands (1996-2003) with Proximities to Roads, Urban Areas, State and Federal Lands for Menominee County.

The contiguous nature of large-tract holdings in Menominee County comparing the sample dates 1996 and 2003 is detailed below in Table A-13.3.

Table A-13. 3: Contiguous Large-Tract Holdings for Menominee County.

Year	#Parcels	#Parcels <40 acres	Area (acres)			Perimeter (miles)		
			Min	Max	Mean	Min	Max	Mean
1996	79	20	11	67,209	1,479	1	187	7
2003	81	25	6	66,817	1,432	1	183	6

This data indicates a 25% increase in the number of isolated parcels less than 40 acres in area. The maximum area of contiguous holdings remained essentially constant over the given time interval, decreasing approximately 392 acres or less than 1%.

Of the total corporate 2003 land holdings of 115,970 acres, approximately 47% or 54,074 acres fall within the buffered areas of potential alternate land use including parcels of less than 40 acres in area. This represents a decrease of 4,620 acres (8%) in these types of lands during the time interval studied for this county. A spatial depiction of these lands is shown in Figure A-13.3.

Frontages to the identified features of lakes, rivers, Great Lake shoreline, roads and urban areas are shown for the two sample dates in Table A-13.4 with the associated gain (loss) of area during the time interval studied.

Table A-13. 4: Feature Adjacencies (acres) for Menominee County.

Feature	1996	2003	Gain (Loss)
Lake	756	519	(237)
River	22,747	21,194	(1,553)
Shoreline	0	0	0
Roads	18,921	18,904	(17)
Urban	0	0	0

Lake features showed the greatest percentage loss of adjacent lands at 31%. River adjacent large-tract holdings decreased by 7% over the given period.

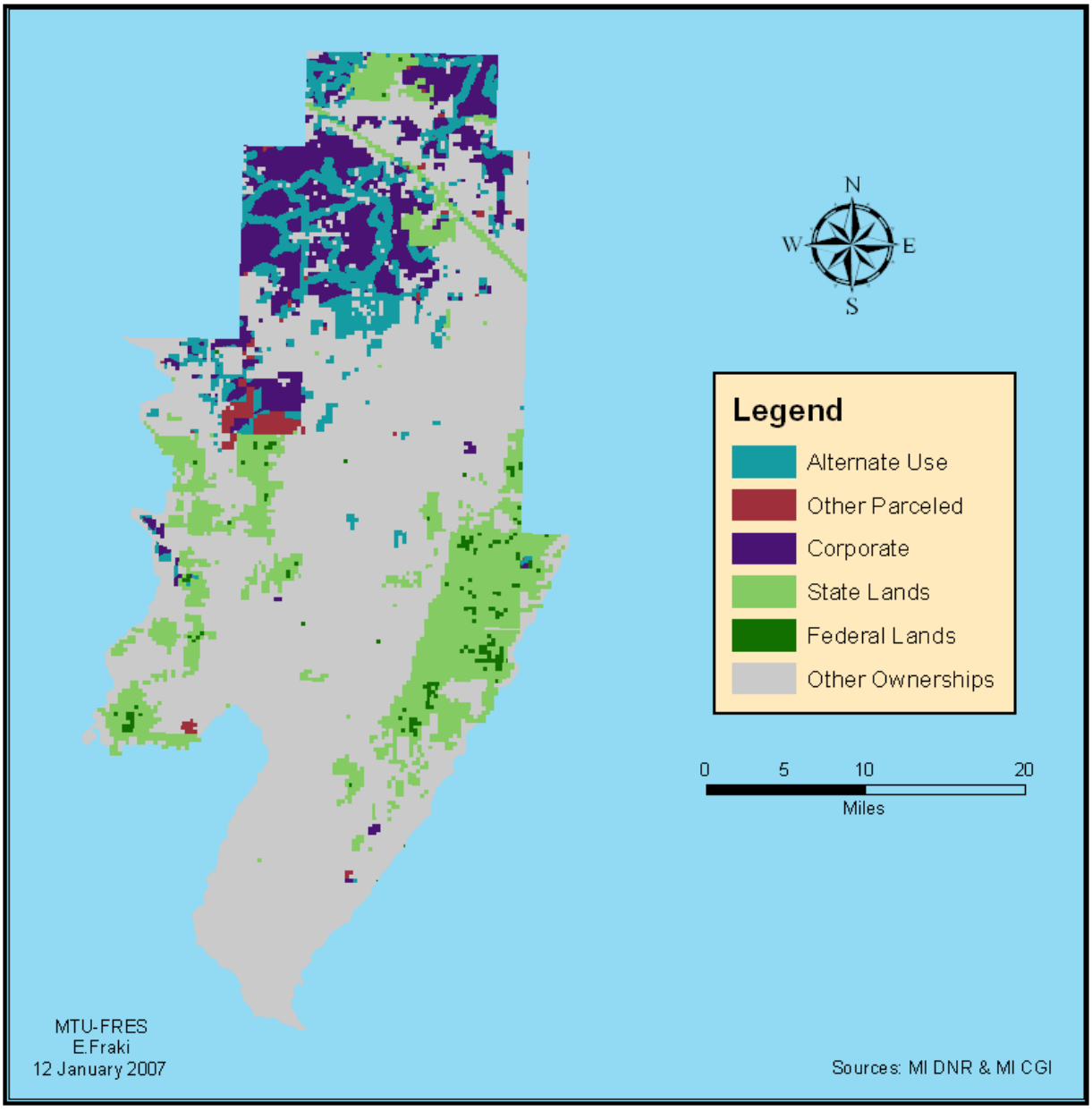


Figure A-13. 3: Corporate Lands Showing Areas of Possible Higher Value Alternate Use for Menominee County.

A-14: Ontonagon County

The sampling dates for this county were 1993 and 2004, giving a comparison period of 11 years. Many large-tract corporate owners have been active in this county and have retained ownerships over the period notwithstanding the complete divestiture of five owners. A breakdown of these ownerships is found in Table A-14.1 with the distribution of divestitures shown in Table A-14.2. For this time period, large tract corporate holdings decreased 29,404 acres or approximately 14%.

Table A-14.1: Large-Tract Holdings (acres) for Ontonagon County.

Company	Type	Year		Gain (Loss)
		1993	2004	
BF	LAND	13,402	0	(13,402)
BTr	LAND	15,911	0	(15,911)
CCI	MNRL	1,222	1,312	90
CIC	VITPC	56,603	46,661	(9,942)
CFI	VITPC	8,306	634	(7,672)
EPC	VITPC	18,976	42,306	23,330
FLG	TIMO	0	26,531	26,531
IP	VITPC	16,646	15,538	(1,108)
KLA	LAND	21,141	32,623	11,482
LYR	LAND	9,391	0	(9,391)
MD	VITPC	27,772	0	(27,772)
NLT	LAND	6,439	0	(6,439)
SLC	VITPC	2,766	2,957	191
VUL	VITPC	9,908	10,517	609
Total Holdings		**208,483**	**179,079**	**(29,404)**

Parcels that transferred out of the large-tract category during this period to “Other” owners totaled 36,882 acres or nearly 18% of the 1993 total large-tract holdings. This area loss was partially offset by a 7,478 acre increase to the large-tract category resulting in final holdings of 179,079 acres for the 2004 sample date.

Not shown in Table A-14.2 are divestitures of Cleveland Cliffs, Keweenaw Land, and Steiger Lumber. These transfers were less than 400 acres combined, with all lands transferring out of the large-tract category of owners.

Table A-14.2: Large-Tract Transfers (acres) from 1993 to 2004 for Ontonagon County.

Buyers	Sellers										Total
	BF	BTr	CIC	CFI	EPC	IP	LYR	MD	NLT	OTH	Acquired
CCI	0	0	0	0	0	0	0	0	0	120	**120**
CIC	0	0		3,263	4,001	0	0	0	0	1,644	**8,908**
CFI	0	0	0		0	0	0	0	0	0	**0**
EPC	0	0	0	0		0	0	27,560	0	424	**27,984**
FLG	9,753	15,782	0	0	0	0	0	0	964	32	**26,531**
IP	0	0	0	0	0		0	0	0	56	**56**
KLA	0	0	1,525	1,495	0	0	3,553	0	237	4,841	**11,651**
SLC	0	0	0	0	0	0	0	0	0	361	**361**
VUL	0	0	0	0	0	609	0	0	0	0	**609**
OTH	3,649	129	17,325	2,914	653	555	5,838	212	5,238		**36,513**
Total Divested	**13,402**	**15,911**	**18,850**	**7,672**	**4,654**	**1,164**	**9,391**	**27,772**	**6,439**	**7,478**	

Current (2006) MiDNR CFA listings for Ontonagon County indicate most large tract companies with enrolled lands. International Papers is the largest owner with 57,668 enrolled acres. Plum Creek is the second largest owner at 40,834 enrolled acres. The Forestland Group and Keweenaw Land have nearly equal holdings of 28,423 and 29,637 acres respectively. Vulcan has 10,149 acres enrolled and the Longyear holdings and associations total less than 10,000 acres. Total CFA enrolled lands of non-individual (corporate, organizational, etc.) ownership for the county is approximately 196,145 acres.

Spatial representation of large-tract lands found in Ontonagon County in relationship to the features of lakes, rivers, roads, urban areas, and public lands can be seen in Figures A-14.1 and A-14.2. For the 2004 sampling date, those lands that transferred out of large-tract ownership during the sampling period are shown as “Other Parceled”.

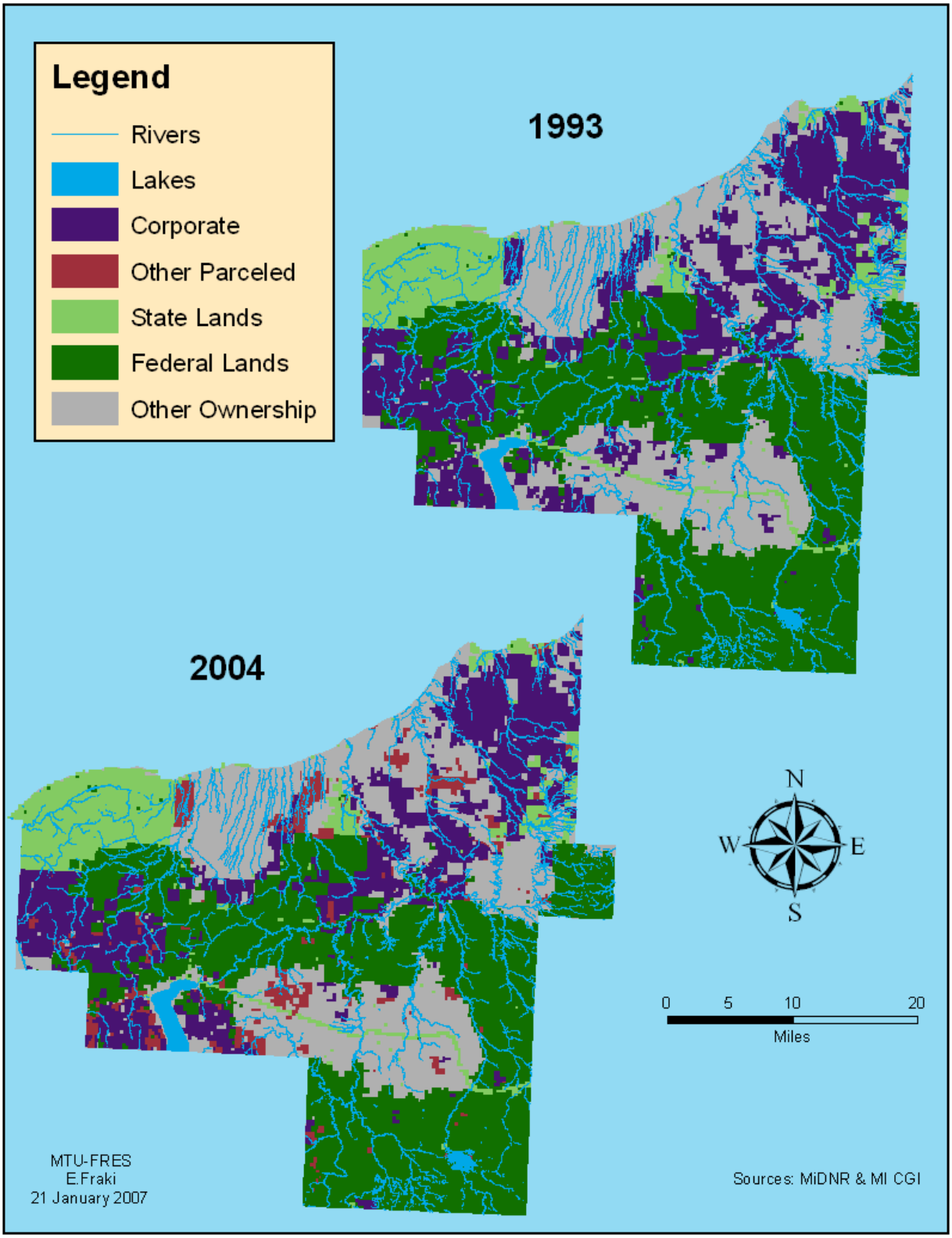


Figure A-14. 1: Comparison of Corporate Lands (1993-2004) with Proximities to Lakes, Rivers, State and Federal Lands for Ontonagon County.

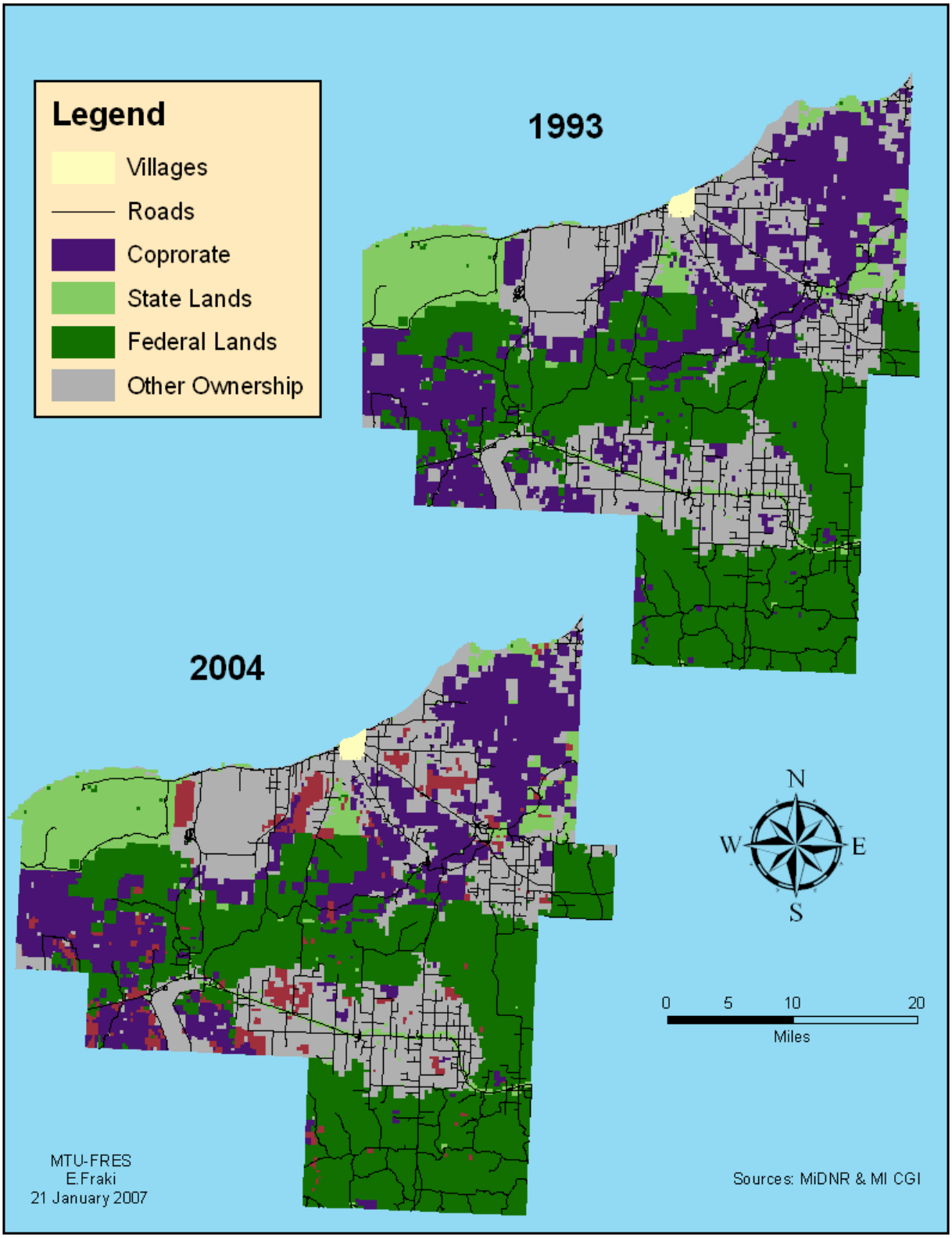


Figure A-14.2: Comparison of Corporate Lands (1993-2004) with Proximities to Roads, Urban Areas, State and Federal Lands for Ontonagon County.

The contiguous nature of large-tract land holdings in Ontonagon County comparing the sampling dates 1993 and 2004 is detailed below in Table A-14.3.

Table A-14.3: Contiguous Large-Tract Holdings (acres) for Ontonagon County.

Year	#Parcels	#Parcels <40 acres	Area (acres)			Perimeter (miles)		
			Min	Max	Mean	Min	Max	Mean
1993	124	14	19	102,216	1,682	1	285	7
2004	89	4	20	59,159	2,013	1	132	8

This data indicates a decrease in the total number of parcels during the period with the number of isolated parcels less than 40 acres in area declining approximately 74%. The maximum area of contiguous large-tract holdings declined an estimated 42% for the given time interval.

Of the total corporate 2004 land holdings of 179,079 acres, approximately 51% or 91,063 acres fall within the buffered areas of potential alternate land use including parcels of less than 40 acres in area. This represents a decrease of 21,320 acres (19%) in these types of lands during the time interval studied for this county. A spatial depiction of these lands is shown in Figure A-14.3.

Frontages to the identified features of lakes, rivers, Great Lake shoreline, roads and urban areas are shown for the two sample dates in Table A-14.4 with the associated gain (loss) of area during the time interval studied.

Table A-14.4: Feature Adjacencies (acres) for Ontonagon County.

Feature	1993	2004	Gain (Loss)
Lake	909	520	(389)
River	65,538	51,447	(14,091)
Shoreline	64	0	(64)
Roads	16,564	12,975	(3,589)
Urban	0	0	0

All features with land area adjacencies decreased during this period. Large-tract holdings with shoreline feature adjacency ended the period 100% divested. Lake feature adjacent lands dropped by estimated 43% and both river and road adjacencies declined approximately 22%.

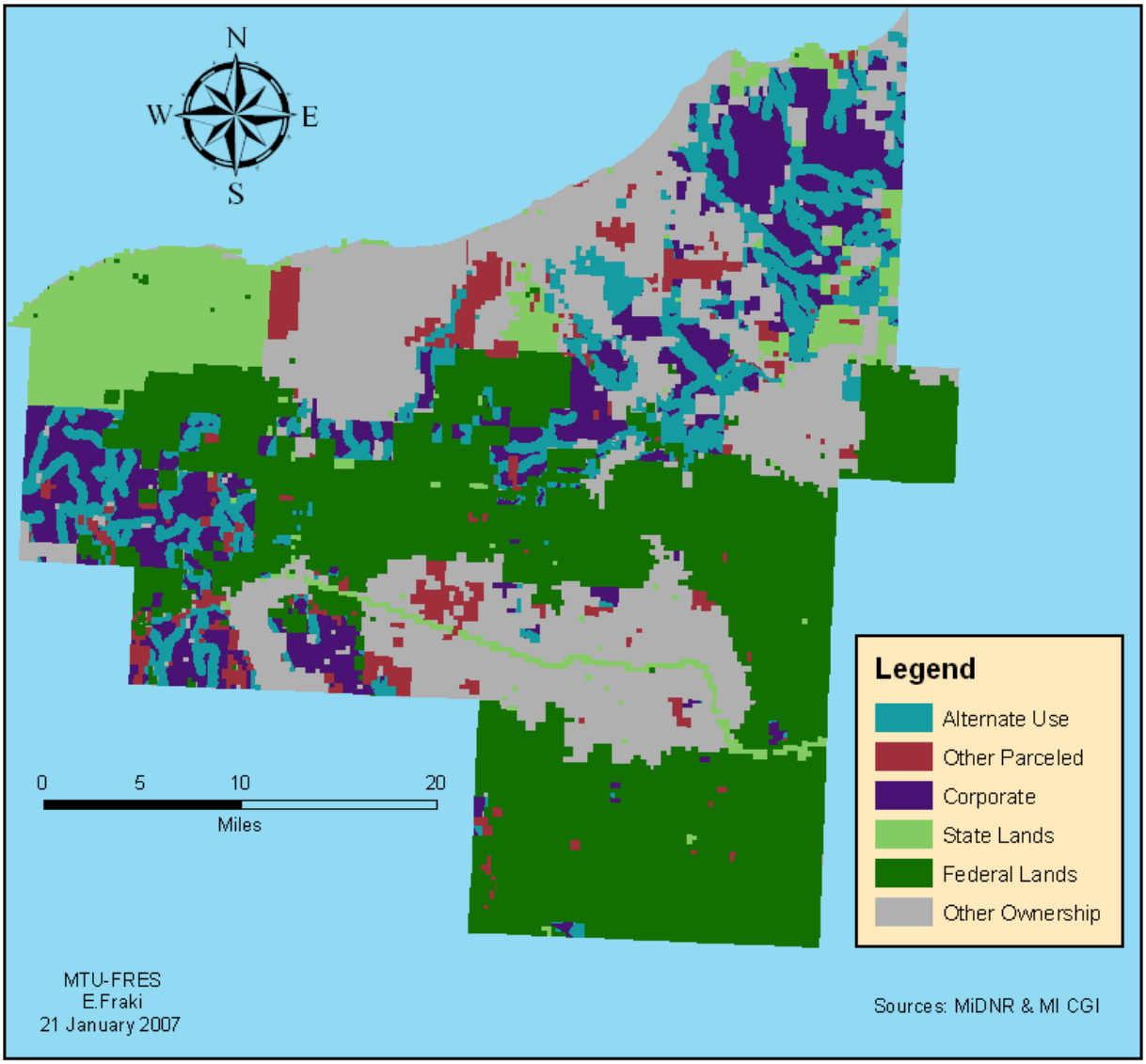
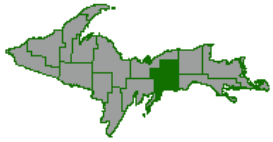


Figure A-14. 3: Corporate Lands Showing Areas of Possible Higher Value Alternate Use for Ontonagon County.

A-15: Schoolcraft County



The sampling dates for this county were 1993 and 2005, giving a comparison period of 12 years. The Forestland Group became the second largest ownership behind Escanaba Paper by acquiring the majority of Benson holdings. Benson, CCI, and Champion ended the period completely divested. A breakdown of these ownerships is found in Table A-15.1 with the distribution of divestitures shown in Table A-15.2. For this time period, large tract corporate holdings increased 12,942 acres or nearly 17%.

Table A-15.1: Large-Tract Holdings (acres) for Schoolcraft County.

Company	Type	Year		Gain (Loss)
		1993	2005	
BF	LAND	28,002	0	(28,002)
CCI	MNRL	20	0	(20)
CIC	VITPC	11,778	0	(11,778)
EPC	VITPC	35,734	33,921	(1,813)
MD	VITPC	398	198	(200)
SJF	VITPC	1,151	789	(362)
FLG	TIMO	0	29,233	29,233
Total Holdings		**77,083**	**64,141**	**(12,942)**

Parcels that transferred out of the corporate category during this period to “Other” owners totaled 17,049 acres or nearly 22% of the 1993 total large-tract holdings. This area loss was partially offset by a 4,107 acre increase to the large-tract category resulting in final holdings of 64,141 acres for the 2005 sample date.

Table A-15.2: Large-Tract Transfers (acres) for Schoolcraft County.

Buyers	Sellers							Total
	BF	CCI	CIC	EPC	MD	SJF	OTH	Acquired
EPC	0	0	559		194	199	1761	**2,713**
FLG	26927	0	0	0	0	0	2306	**29,233**
MD	0	0	0	0		0	0	**0**
SJF	0	0	0	0	0		40	**40**
OTH	1075	20	11219	4526	6	203		**17,049**
Total Divested	**28,002**	**20**	**11,778**	**4,526**	**200**	**402**	**4,107**	

Current (2006) MiDNR CFA listings for Schoolcraft County indicate three large tract companies with nearly equal holdings of enrolled lands. Plum Creek had reported ownership of 33,306 acres with International Papers (29,174 acres) and The Forestland Group (28,938 acres) closely following in enrolled ownerships. Total CFA enrolled lands of non-individual (corporate, organizational, etc.) ownership for the county is approximately 63,701 acres.

Spatial representation of large-tract holdings found in Schoolcraft County in relationship to the features of lakes, rivers, roads, urban areas, and public lands can be seen in Figures A-15.1 and A-15.2. For the 2005 sampling date, those lands that transferred out of large-tract ownership during the sampling period are shown as “Other Parceled”.

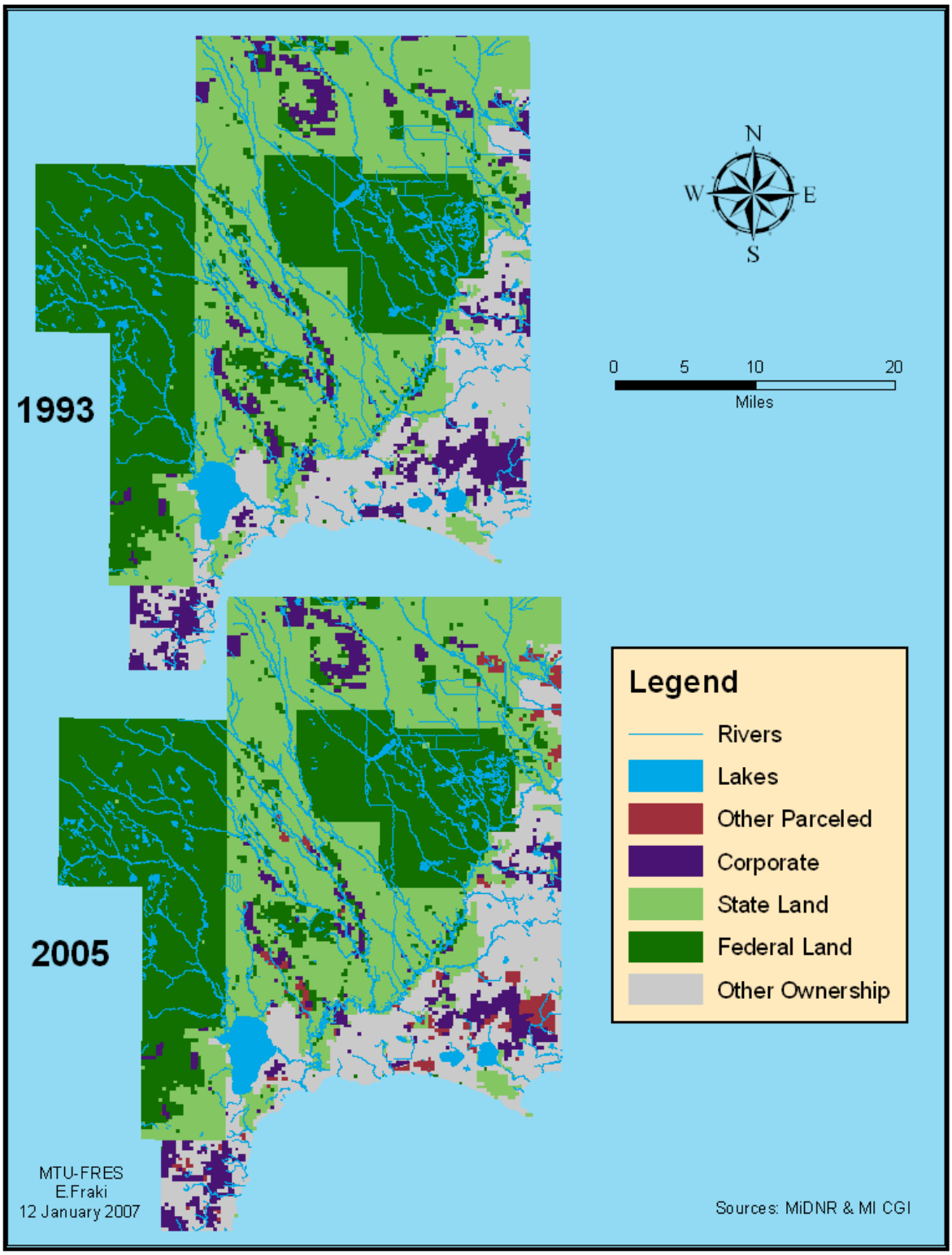


Figure A-15.1: Comparison of Corporate Lands (1993-2005) with Proximities to Lakes, Rivers, State and Federal Lands for Schoolcraft County.

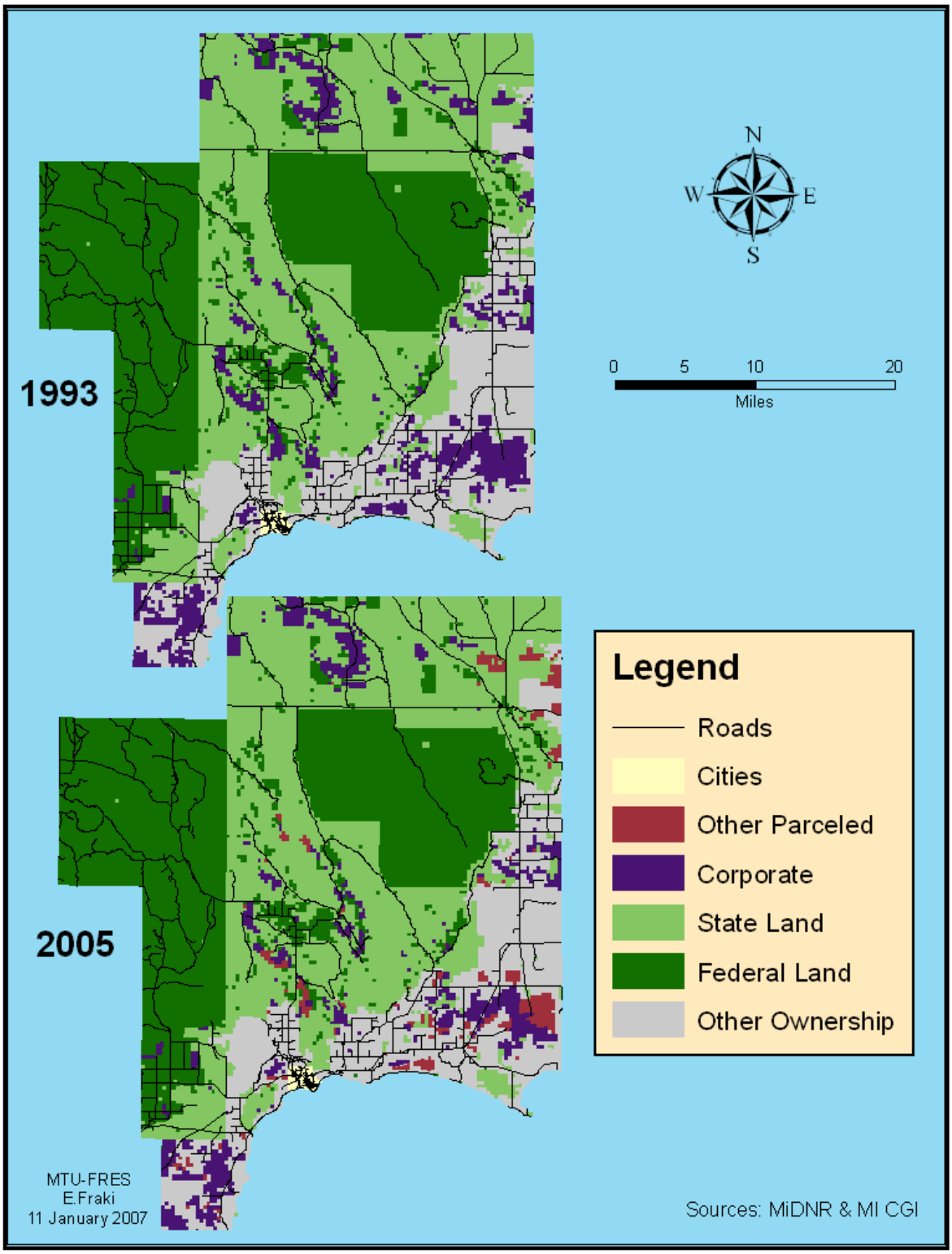


Figure A-15.2: Comparison of Corporate Lands (1993-2005) with Proximities to Roads, Urban Areas, State and Federal Lands for Schoolcraft County.

The contiguous nature of large-tract holdings in Schoolcraft County comparing the sampling dates 1993 and 2005 is detailed below in Table A-15.3.

Table A-15. 3: Contiguous Large-Tract Holdings (acres) for Schoolcraft County.

Year	#Parcels	#Parcels <40 acres	Area (acres)			Perimeter (miles)		
			Min	Max	Mean	Min	Max	Mean
1993	157	21	20	12,293	491	1	50	4
2005	132	19	28	8,408	486	1	46	4

This data indicates that the number of isolated parcels less than 40 acres in area slightly declined approximately 10% while the maximum area of contiguous large-tract holdings decreased 3,885 acres or 32% over the sample period.

Of the total large-tract 2005 holdings of 64,141 acres, approximately 50% or 31,853 acres fall within the buffered areas of potential alternate land use including parcels of less than 40 acres in area. This represents a decrease of 8,344 acres (21%) in these types of lands during the time interval studied for this county. A spatial depiction of these lands is shown in Figure A-15.3.

Frontages to the identified features of lakes, rivers, Great Lake shoreline, roads and urban areas are shown for the two sample dates in Table A-15.4 with the associated gain (loss) of area during the time interval studied.

Table A-15. 4: Feature Adjacencies (acres) for Schoolcraft County.

Feature	1993	2005	Gain (Loss)
Lake	5,027	4,269	(758)
River	14,604	10,727	(3,877)
Shoreline	146	145	(1)
Roads	11,107	9,451	(1,656)
Urban	0	0	0

Great Lake shoreline adjacent lands remained unchanged over the sample period. River feature adjacent lands of large-tract holdings decreased 27% while lake and road features declined by approximately 15% each.

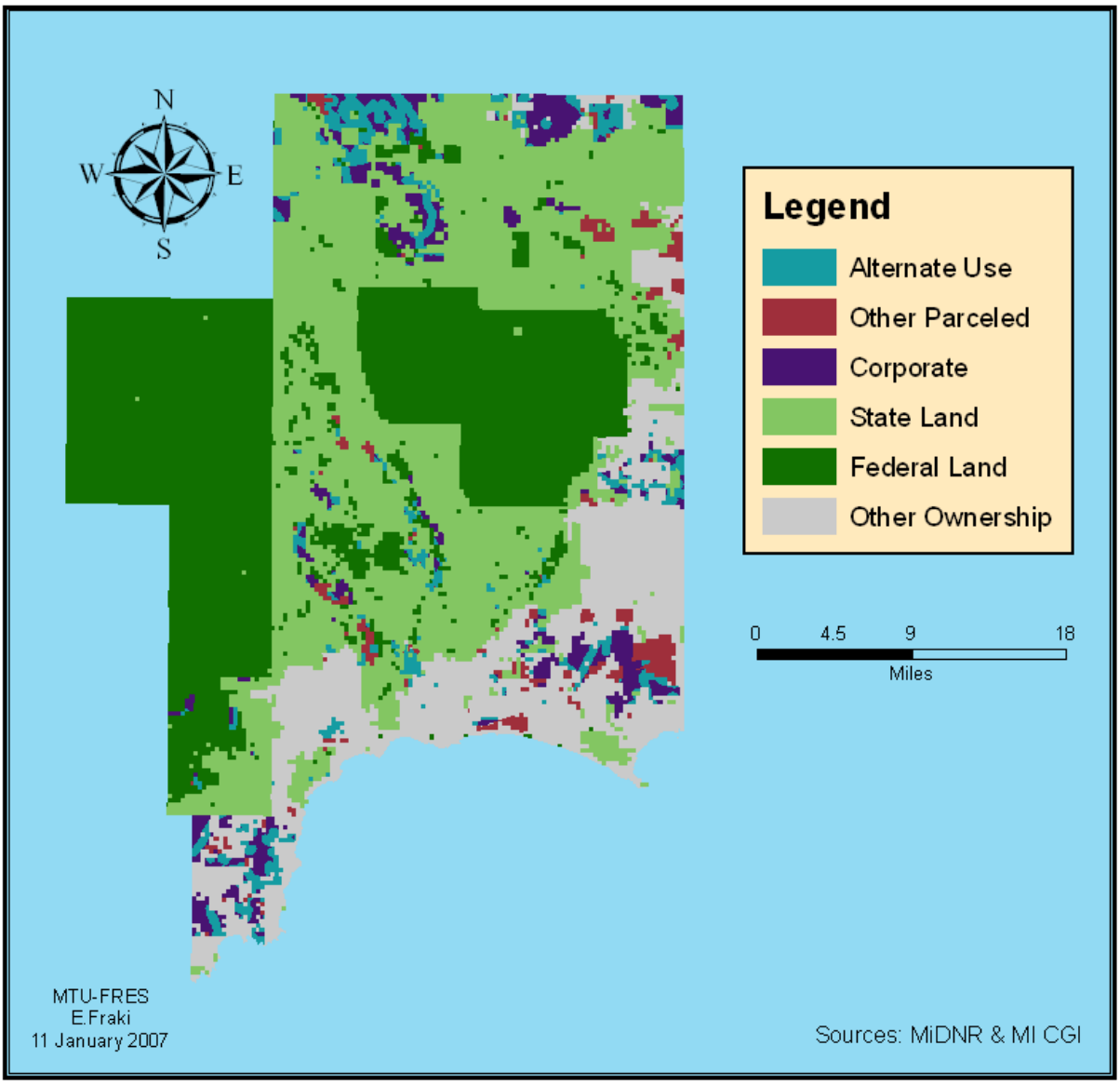


Figure A-15. 3: Corporate Lands Showing Areas of Possible Higher Value Alternate Use for Schoolcraft County.