Buffalo, MN

a transect-based land use strategy

"Cities have to move to a new system. They should look at the streets they like and the public places they like and then write the rules to get more of what they like and less of what they don't. Conventional zoning doesn't do that. It just gives a use and a density and then you hope for the best."

(SmartCode v8.0
- Peter Katz 2006)

"there is a growing belief that community in Minnesota is on the decline, as fewer people know their neighbors, the quality of public schools appears to erode, transportation infrastructure fails to keep up with need, and taxes seem persistently high."

(The Changing Shape
of Minnesota 2004)

THESIS TITLE

A design thesis submitted to the

Department of Landscape Architecture of
North Dakota State University

By:

LUKE A. GRANDLUND

In partial fulfillment of the requirements for the degree of

Bachelor of Landscape Architecture

_____
Primary Thesis Critic

_____
Thesis Committee Chair

April, 2006
Fargo, North Dakota

Abstract

The objectives of this thesis are to explore the social, economic, and environmental dynamics of land use regulations and examine design strategies to increase the community identity and the preservation of natural resources within the city of Buffalo, Minnesota. Transect Mapping (Criterion 2005) is used to create alternative land use proposals for the city and adjacent areas. The use of *SmartCode v8.0* (Placemakers 2006) principles assists in the implementation of new land use proposals.

Cities were originally *an invention to maximize the exchange of goods, services, cultures, friendships, ideas, and knowledge while minimizing travel.* (Engwicht 1993) Until the decades following WWII most communities in the United States were built to satisfy these needs. With new loan programs, federal and local subsidies for road improvements, and the convenience and affordability of automotive commuting following WWII, housing types gradually moved from historic traditional neighborhoods to sprawling suburban developments along the periphery of established cities.

The purpose of the thesis is to provide a media for the exploration of real alternatives to current land use plans and zoning regulations for Buffalo city officials and residents. The new alternative is one that increases social interactions, economic vitality, and creates a greater sense of community for the city of Buffalo. These improvements establish a community 'Identity' for both visitors and residents of Buffalo. A build-out analysis illustrates the benefits these proposals offer for development patterns and densities, economic growth, and the preservation of natural resources.

It appears from my analyzes that there are compact, pedestrian friendly options for continued development within the city of Buffalo and adjacent land areas. By restructuring the way land use plans and regulations are designed, more viable economic, social, and environmental land use alternatives are possible.

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THESIS PROPOSAL:

'The Changing Face of Exurban Minnesota'

Narrative:
Exurbia is a relatively new word to our vocabulary. Exurbia is defined by Wikipedia as "an area between rural and suburban, an increasingly popular area to live in the United States". Minnesota is no exception. The once rural communities in Minnesota are feeling the effects of so called "Suburban Sprawl". Inexpensive farmland available for commercial and residential developments, the willingness for employees to commute longer distances to work, and historically low interest rates are all influencing this dynamic shift beyond the suburbs (Why People are Moving to Suburbia: and Beyond). The rapid growth of these exurban communities is resulting in issues that were not present for traditional planners. Until recently, many of these communities had little or no planning principles in place and most growth was unmanaged. Miles of four lane highways, thousands of low density homes, and hundreds of commercial and industrial buildings have now replaced the agricultural plots that once labeled these communities as rural. This new migration shift is leaving these small towns searching for ways to restore the economic vitality and once vibrant rural identity that makes these communities desirable to live in.

The course of this research will analyze the growth tendencies and current land use plans of the community of Buffalo in central Minnesota. The goal is to identify the factors that are creating a sprawling exurban community and propose an alternative land use plan that will allow for the reclamation of community character, new growth parameters to create a balance between natural preservation and development, as well as plans to assist in the economic vitality of the community. Fellow exurban residents and planning departments have presented the following as stepping stones for creating stronger communities:

- Encouraging fellowship and sharing among residents
- Enhancing the neighborhood image and appeal
- Preserving and celebrating our rich heritage
- An environment to discuss issues impacting our community

(St. Michael Land Use Plan 2004)

The compiled research will allow me to apply my design methodologies in a design to help create an identity for the city of Buffalo. The final design proposal will be a thorough presentation of the skills and knowledge obtained as a result of four years of undergraduate studies at NDSU.

A User/Client Description:
This project is ultimately created for the purpose of proposing alternative land use scenarios for the citizens of Buffalo. The comprehensive plan will be used in conjunction with the land use plans of surrounding communities as well as the comprehensive land use plan for Wright County. Future developments will be consistent with the current community mission statement: "*to improve the vitality of our community making Buffalo, Minnesota a better place to live and do business*."

THESIS PROPOSAL (CONTINUED):

Major Project Issues:
The form of the plan will be determined by the needs of the citizens of Buffalo. It is anticipated that the plan will address:

- Vision for the future
- Areas for future residential, commercial and industrial growth
- Redevelopment needs and opportunities
- Protection of wetlands, trees and other natural resources
- Types and densities of residential land uses
- Land consumption based on the pace and form of development
- Preservation and use of historic structures
- Location of other public facilities
- Transportation corridors

Site Information: Macro to Micro Scale:
The city of Buffalo is located about 40 miles northwest of downtown Minneapolis, Minnesota. Although the majority of the site will include the incorporated city limits of Buffalo, there will be no exact parameters for the study site. The boundaries will vary depending on the information obtained during the research phase of the project.

Due to the city's location it is very susceptible to many suburban sprawl problems. This rapid and uncontrolled growth is resulting in a loss of 'Identity' for the community. The city of Buffalo has grown by over 40% during the last census, and is among one of the fastest growing counties in Minnesota (2000 Census Bureau). Other relevant information such as demographics, housing, and economic status is also available through the 2000 Census. The city is near major transportation routes I-94, US highway 10, I-494, and the proposed Northstar Commuter Rail.

There are a number of environmental/ecological issues currently being addressed by the city of Buffalo. These factors which will directly influence the land use plan includes the habitat and lake level issues of lakes Buffalo and Pulaski, the rapid loss of agricultural land, and also the scenic traffic corridors of highway 55 and Interstate 94. The use of Geographical Information Systems or (GIS) will be used to present solutions for these problems. A land conversion analysis will be created using GIS applications to show the current trends in development within and around the city of Buffalo. GIS programs will also be important in addressing issues involving the vegetation, geology, and soils throughout the study area.

Project Emphasis:
The primary area of interest for this thesis is to develop an 'Identity' for the city of Buffalo. The new land use plan will be instituted to reduce the negative effects of suburban sprawl within the community. The new land use plan will be used to facilitate future developments for Buffalo.

Thesis Proposal (continued):

A Plan for Proceeding:

Definition of a Research Direction:

The research for this strategy will be guided by the forces behind the dynamic population growth that is diminishing 'Identity' of the community of Buffalo. The research will be addressing both the quantitative and qualitative data of the community of Buffalo. Data to be analyzed includes, but is not limited to: industrial uses, streets, schools, rural economy, neighborhoods, recreation areas, community services, and historical data. Quantitative data for the site will be obtained from a number of available sources. The 2000 Census, the Minnesota Department of Transportation GIS data deli, and the City of Buffalo engineering department will all be used during the research of quantitative data. Qualitative data will be collected during site visits and community interviews with city council persons and citizens. Site visits will consist of embracing the community by interacting with citizens and personally experiencing the community of Buffalo at a human scale. Analyzing, interpreting, and reporting the qualitative results will occur throughout the research process.

Design Methodology:

The graphic analysis of data will be explored with computer aids such as Arcmap GIS, Autocad 2005, and Sketch-up 4.0. The use of computer software will be critical in the presentation of the research for the thesis. The language based methodology will be one of deduction. The research will examine the existing and proposed uses within the community and conclude a solution from a set of premises.

Documentation of the Design Process:

The design process will be documented thoroughly for use during later stages. A journal will be kept of important meetings, interviews, and analysis conclusions. A photographic diary will also be created during the design process. This diary will include photos, scanned images, sketches, and digital drawings.

Schedule of Work:

The following is a weekly schedule for the research, design, and completion of the thesis project. My primary critic for the thesis will be Joshua Walter. Other professors that have a strong background relating to my design thesis include Rebecca Pinkston and Angela Hansen. Although I will meet with my primary critic during the weekly scheduled times, I also plan to review my progress with the other professors as well. The office hours for the aforementioned professors are as follows:

Joshua Walter: Monday, Wednesday, Friday	11:00-1:00
Angela Hansen: Monday, Wednesday, Friday	12:00-2:00
Rebecca Pinkston: Tuesday, Thursday	1:00-4:30

The thesis schedule will be consistent with the suggested outline given forth in the 2005 thesis manual. There will be four critical meetings during the fall semester. The first meeting on October 14th will cover relevant case studies that may be reviewed. The second meeting on October 19th will review the inventory information that has been obtained during the first two weeks of research. During the next two weeks this information will be analyzed and later reviewed in the third meeting on November 2nd. The final meeting on November 16th will include presenting an outline and layout for the completion of the program. The program will be due December 8th.

Previous Studio Experience:

Fall 2002- Matthew Chambers:
- '9/11 Memorial Project'
- 'NDSU Downtown Plaza'

Spring 2003- Dennis Colliton:
- 'NDSU Fountain Plaza'
- 'NDSU Technology Park'
- 'Main Avenue Bridge'

Fall 2003- Matthew Chambers:
- 'Alternative Use Car Park'
- 'Chicago - Riverfront Development'
- 'Moorhead 4th St.- Visual Corridor'

Spring 2004- Tim Kennedy:
- 'Backyard Perspective- and Rendering'
- 'Rocking Horse- Community Development'

Fall 2004- Rebecca Pinkston:
- 'St. Paul Bluffs' - Neighborhood Development

Spring 2005- Catherine Wiley:
- 'Rodeo Grounds' - Brownfield Redevelopment
- 'Echrono Park'- Mining Reclamation

Fall 2005- Joshua Walter:
- 'Red River Wildlife Corridor'

Introduction

Theoretical Premise:

The thesis examines the interfaces between social, economic, and environmental forces and land use regulations and planning. Successful design strategies increase social interactions, preserve natural resources, and contribute to sustainable development concepts. The solution is one that promotes a "Community Identity" for the city of Buffalo, Minnesota. Design metaphors, analogies, and or tectonics will be developed from the examination.

Theoretical Premise Research Summary:

An understanding of the theoretical premise is realized through the study of the following research. The comprehension of these theories is the basis of design proposals for a new comprehensive land use plan for Buffalo, Minnesota. The research emphases were chosen based upon their relevance to the theoretical premise.

I. Social Interaction:

Human beings, as a species, have an inherent desire to interact with others. According to modern theories in sociology, symbolic interactionism is one of the most common interactions of our species. Symbolic interactionism can be defined as "continuous dialogues, when people watch, and think through intentions of one another and react to them. It is during these dialogues when social meanings are created." (http://www.sociumas.lt). This theory of symbolic interactionism attempts to explain the nature of human behavior. The role of the city planner, or landscape architect, is to design for this defined human behavior. In relation to social theory, the communities created for living should promote the aforementioned human dialogue, instead of inducing social isolation.

- Symbolic interactionism is dialogue, during which individuals are watching each other, trying to understand their intentions, and reacting to them.

- People are acting in respect to objects, based on the meaning that those objects have for them. These meanings are modified and examined through the process of the interpretation.

- We are influenced by culture and social processes, such as social norms (Schaefer 1989).

The process of social interaction includes images of self, others, group, and society. This search for meaning is social and personal at the same time (Schaefer 1989). It has been noted that "Human Interaction provides most of the joys in our lives" (Hylton 2000). People need to interact with others. This is the basis for social theories related to the theoretical premise.

Social Theory - In relation to social theory, the communities created for living should promote human dialogue, instead of inducing social isolation.

Social Interaction -

"Human interaction provides most of the joys in out lives." - (Hylton 2000)

II. Social Psychology:

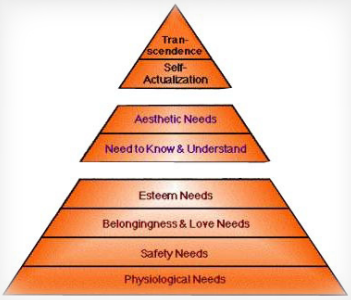
One of the basic human needs that is satisfied through communities is the need of belongingness. Social psychology is the study of the nature and causes of human social behavior, with an emphasis on how people think towards each other and how they relate to each other. Social Psychology aims to understand how we make sense of social situations. The basis for these social interactions is credited to Abraham Maslow's theory of the *hierarchy of needs*. His theory contends that as humans meet 'basic needs', they seek to satisfy successively 'higher needs' that occupy a set hierarchy (*See insert A*).

Maslow's hierarchy of needs is often depicted as a pyramid consisting of five levels: the four lower levels are grouped together as deficiency needs, while the top level is termed being needs. While our deficiency needs must be met, our being needs are continually shaping our behavior. The basic concept is that the higher needs in this hierarchy only come into focus once all the needs that are lower down in the pyramid are mainly or entirely satisfied. Growth forces create upward movement in the hierarchy, whereas regressive forces push needs further down the hierarchy.

A related area of human psychology is that of Community psychology, which examines psychological issues on the level of the community rather than only on the level of the individual. "Sense of community" has become its conceptual center. McMillan & Chavis (1986) define Sense of Community as "*a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together.*" McMillan & Chavis employ the word "needs" here to mean more than survival, but to include also that which is desired and valued. This Sense of Community is composed of four elements: *membership, influence, integration and fulfillment of needs, shared emotional connection.* Members of groups are seen as being rewarded in various ways for their participation.

Conclusions from this research suggest ways in which a well-defined, empirical understanding of Sense of Community helps planners identify the positive impacts of high-quality community on processes. The hope is that a context will be created where basic human needs are met, instead of a one-on-one context or in a context where the community dimension is largely ignored. The examination of this theory shows relevance to the theoretical premise by defining psychological elements attributed to communities.

One of the basic human needs that is satisfied through communities is the need of belongingness.



(insert A)
Maslow's 'Hierarchy of Needs'

Shared emotional connection - "it seems to be the definitive element for true community" (McMillan & Chavis 1986, p. 14).

III. Economics & Free Markets:

New development and an increasing population are both the cause and effect of economic markets. An understanding of these economic markets is important in realizing the role of community planning. Development is needed to help the economy grow, but with this new growth comes an increase in demands for resources. Planners are asked to weigh the benefits of higher tax bases with the loss of resources, mainly land. However, some argue that intense government regulations are providing the framework for unwanted sprawling development (Bookman 2005).

The debate as to what causes sprawling developments is a hot-button issue with both economists and planners alike. Each side possesses valor in their argument for, or against, current development patterns. Some economists argue that private ownership and free markets, without zoning and government regulations, would result in more efficient land use patterns (Holcombe 1998). These theorists argue that sprawl follows the path of least resistance when confronted with the land-use regulatory system, causing current development trends. However, planners insist that controls and regulations are needed to prevent 'sprawling' development patterns and 'non-conforming' land uses. This thesis examines a balance between free market land use decisions (areas where zoning regulations are not implemented) and current zoning and land use regulations.

IV. Rational Economics:

The theory of rational economics examines the philosophy of achieving economic progress and growth at the expense of social and psychological well-being. At what point will people opt for life substance over lifestyle? This theory offers a philosophical framework reflecting that, in order to be happy, people want and need more than the individualistic struggle for material wealth. Psychologists have proven that people are showing a realm of dissatisfaction with the current imbalance between material growth and personal and social wellbeing. Australian psychologists Shaun Saunders and Don Munro have found a positive correlation between consumerist, materialistic values and depression, anxiety and anger. Richard Eckersley, the author of the book titled Well and Good, presents international evidence demonstrating that reducing socio-economic inequality would "do more to improve population happiness than maximizing economic growth to raise average income." (Eckersley 2005) Housing and lifestyle preferences in the current market will be affected by this pursuit of personal happiness. The theory of rational economics shows that regardless of the amount of economic growth or cash in the pocketbook, human beings will find meaning in the social arena and in relation to each other. This social arena becomes the main stage of the theoretical premise.

V. Sustainable Development:

The theory of sustainability is definitely not a new ideology to human societies. The seventh generation philosophy of the Native American Iroquois Confederacy mandated that chiefs always consider the effects of their actions on their descendants through the seventh generation in the future. Newer definitions of the word tend to preach similar ways of thinking. Wikipedia defines Sustainability as *'a means of configuring civilization and human activity so that society, its members and its economies are able to meet their needs and express their greatest potential in the present, while preserving biodiversity and natural ecosystems, and planning and acting for the ability to maintain these ideals indefinitely.'* In other words, no actions taken in the present should promote harm on future generations. This concept has been further defined by Swedish Scientists in 1988 with the creation of 'The Natural Step' network. 'The Natural Step' *is a science and systems-based approach to organizational planning for sustainability. It provides a practical set of design criteria that can be used to direct social, environmental, and economic actions.* (http://www.naturalstep.ca/framework.html). This thesis is concerned with the interface between the idea of 'sustainable development' and a set of institutions regulating land use, 'zoning and land use plans'. The thesis is proposed as a media for education to encourage planning to become a forum for debate about 'how we wish to live' (Owens and Cowell 2002), as well as promoting nature conservation, reducing the need for travel, and mitigating the impacts of new developments. All of which are rooted as sustainable development principles.

VI. Immersive Environments:

The term immersive environment is borrowed from the notion of virtual reality. Virtual reality is a field of modern computer sciences in which computer graphics are constructed to simulate actual movement within or through a particular environment. A successful immersive environment is created when the participant of a virtual environment has the illusion of actually being in the original space because all elements within the space are performing as expected. This illusion is created by both the selection and arrangement of all the components that together comprise a particular environment. When land use plans and regulations are designed to create these types of immersive environments instead of dimensional standards, much different spaces and neighborhoods can be constructed.

The Natural Step Framework holds that in a sustainable society, nature won't be subject to systematically increasing:

1…Concentrations of substances extracted from the earth's crust;

2…Concentrations of substances produced by society;

3…Degradation by physical means;
And, in that society,

4…human needs are met worldwide.

(Source: Natural Step US, 2002 www.naturalstep.org)

VII. Urban Theory:

Urban theories examine the problems within the physical fabric of cities, and the lives of people living in them. Historically, Hippodamos of Miletus is given credit for being the first person to practice city planning, and in effect, urban theory. Hippodamos helped to design the new harbor town of Piraeus, which served as a commercial port in Ancient Greece. Hippodamos is credited for understanding the benefits of an orthogonal layout of a city such as proportional size of squares, ease of travel and communication, and the harmony and scenographic effects provided by this type of community design. Urban theory continued to evolve shifting to need for cities that were more defensible and more dependent on the topography of the land. Urban theories have continued to change throughout all of history.

Of particular focus to the modern urban theorist is the demise of the late 20th century city and inadequacies of decision making related to urban places. One of the most popular modern theories in city planning is that of New Urbanism. New Urbanism may often be referred to as neo-traditional design, transit-oriented development, smart-growth, or traditional neighborhood development. New urbanist neighborhoods are walkable, and are designed to contain a diverse range of housing and jobs. Some key features of New Urbanism include:

-a discernible city center
-neighborhoods within a 5 minute walk of community parks and city centers
-mixed-use building types
-schools and health care centers within walking distance of residents
-variety of transportation methods (pedestrian, bicycle, mass-transit, vehicular)
-narrow, pedestrian-friendly streets
-parking to the rear of buildings/clean public image
-accommodating zoning laws to encourage mixed-use developments

New urbanists support regional planning for open space, appropriate architecture and planning, and the balanced development of jobs and housing. They believe these strategies are the best way to reduce the time people spend in traffic, to increase the supply of affordable housing, and to rein in urban sprawl. The new urbanism is a reaction to sprawl. A growing movement of architects, planners, and developers, new urbanism is based on principles of planning and architecture that work together to create human-scale, walkable communities. New Urbanism praises the power and ability of traditional neighborhoods to restore functional, sustainable communities, but questions modern zoning procedures, arguing that single-use zoning separates human activities, requires inordinate amounts of driving, and offers endless supplies of free parking. The conventional suburban development retail model, particularly the strip mall format, presents a formidable challenge to the new urbanist ideal. This challenge simulates that of the one presented in the theoretical premise.

Peter Calthorpe has been named one of twenty five "innovators on the cutting edge" by Newsweek Magazine for his work redefining the models of urban and suburban growth in America

IIX. Population Shifts and Projections:

This thesis project will address the question, 'How can a community best accommodate a growing population?'. According to the US Census Bureau, the United States population is projected to increase at roughly 22 percent from about 300 million in 2005, to nearly 365 million in 2030. Regionally, both the state of Minnesota and Wright county have been projected to increase by 22 percent and 25 percent respectfully. This information informs planners that there is a need to support a larger number of people. However, what this information does not inform us is that the population in Minnesota is also shifting demographically. The demographics to be analyzed include:

* Aging
* Concentration in Metropolitan Regions
* Slower Growth
* Rising Dependency Ration

Aging- During the next 30 years, the population born between 1947 and 1964 (often referred to as the Baby Boomer Generation) will age to be 61 - 78 years of age by 2030. This will result in a substantial increase in the population over 65 years of age as well as a decline in the population under the age of 45. The very old population, those age 85 and older, will rise rapidly until 2010, after which its growth will slow, reflecting the low birth rates during the Depression of the 1930's. The households that will grow the most will be married-couple families without children, mostly "empty nest

Concentration in Metropolitan Regions- The fastest population growth is projected for the Twin Cities region, particularly suburban and semirural exurban areas beyond the suburbs but still within the Twin Cities commuting area. By 2020, 68 percent of Minnesota's population will live in one of these three metropolitan areas, including their suburban and exurban areas. (US Census Bureau)

Slower Growth- Minnesota's population will not grow as fast in the future as it has in the past. For the decades 2000-2010, and 2010-2020, growth is projected to be 4.6 percent, and 4 percent, respectively. Similarly, the labor force will expand much more slowly than in previous decades. It is projected to increase 8 percent from 2000 to 2010, and 2 percent from 2010 to 2020. The modest growth after 2010 will come solely from higher rates of participation. The number of working-age people ages 15 to 64 will rise until about 2010, when it will begin to fall. (US Census Bureau)

Rising Dependency Ration- Elderly people not only will increase in number rapidly after 2010, but they also will account for a larger proportion of the total population. By 2020, 18 percent of Minnesotans are projected to be more than age 65. As this rise in elderly people occurs, the dependency ratio - the ratio of the number of children and elderly to the number of working-age people - also will begin to go up. A relatively small number of workers will have to support a large number of retirees and children, increasing the potential for intergenerational conflict. (US Census Bureau)

These are the key demographic forces that will be explored in the thesis.

Population Projections

"How can a community best accomodate a growing population?"

Case Study Series and Typological Summary:

The case study series looks at a number of design influence opportunities for the thesis. The case study series examines the similarities and differences of both the case study typologies as well as the complementing theories. Typologies included in the series are land use plans, new urbanism ideals, and economic growth initiatives. Within these typologies there are also community development and planning theories. The typologies and theories strengthen the theoretical premise by giving precedence for the continued economic vitality and community identity of cities experiencing rapid population growth.

The analysis of the case studies as a series brings with it a connection to the previously examined theoretical research. Each case study was an attempt to facilitate at least one of the theories researched early. One of those theories was social interaction. These human interactions were most visible in the design for Savannah. The setting of the study was at a time when basic human needs, such as food and survival, necessitate a community to perform functional to meet these needs. As the case study series progress, the design principles tend to shift from meeting human needs, to fulfilling personal desires. Such is the case in the analysis of Riverside, IL. In my own analysis, the latter of the individual case studies examined new strategies for renewing and rehabilitating decades of poor planning principles. The 'Downtown 2000' project for Peterborough is an example of a community defining a problem and proposing a solution. This type of analysis is an important element for the examination of the theoretical premise. The one case study that stands out as a very 'Proactive' approach to planning, is that of the Manheim Township Land Use Plan. This is a very progressive approach that may become a model for rural landscape planning. The final case study relates the theoretical research on rational economics. The New Urbanism design of the NC 73 Small Area Plan examines the effects of lifestyles on human emotions and physiological needs. The case reflects the planning principles of new urban ideals such as mixed-use building types, walkable neighborhoods, and non-dependent vehicular communities.

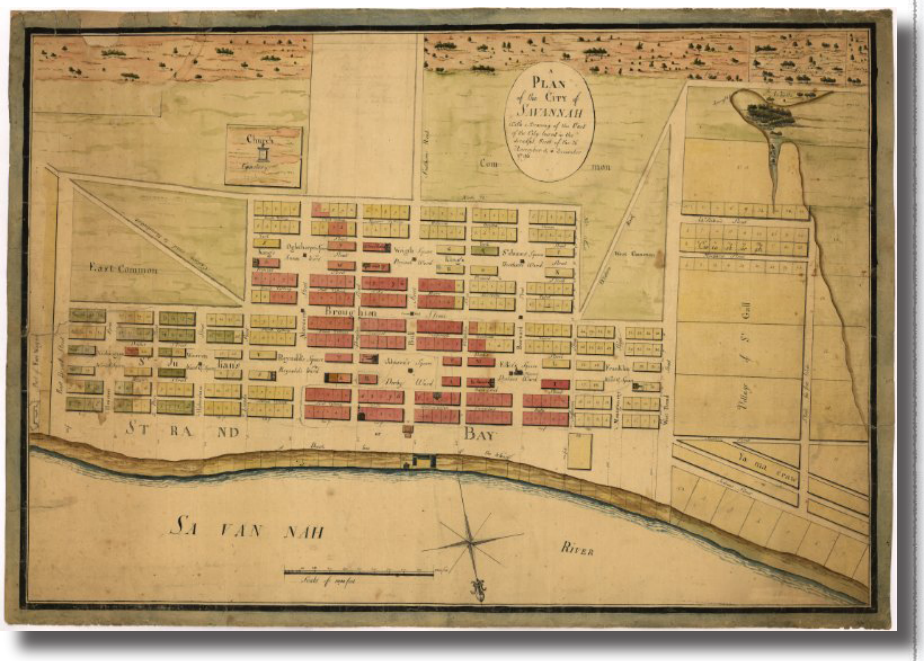
Conclusions:

After reviewing the individual case studies as a whole, it is evident that a suitable theoretical premise will be created when, and only when, it is able to accommodate the theories examined during the theoretical research. These theories help predict how the human species will act in the future. It only makes sense to plan communities using these theories as a guide. The review of the case study series resulted in a modification of the original theoretical premise.

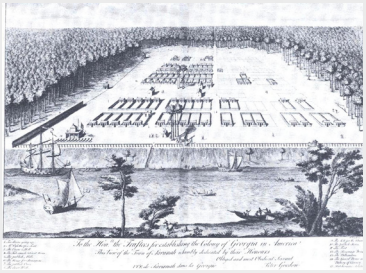
Case Studies:

Original Plan for Savannah, GA:

Savannah is situated on a forty-foot-high bluff overlooking the Savannah River. Laid out by General James Edward Oglethorpe in 1734. Savannah's remarkable city plan is distinguished from those of previous colonial towns by its repeated pattern of connected neighborhoods, multiple squares, streets, and designed expansion into lands which were held by the city. The basic plan unit is a ward, 600 feet to a side in the north-south direction, and 540 feet to 600 feet in the east-west direction. Streets and building lots are organized around a central open space or square. Wards were originally organized as urban neighborhoods with direct correlation to garden and farm lots in Oglethorpe's expanded regional plan system.



Plan-view of the original layout for Savannah, GA in 1734.

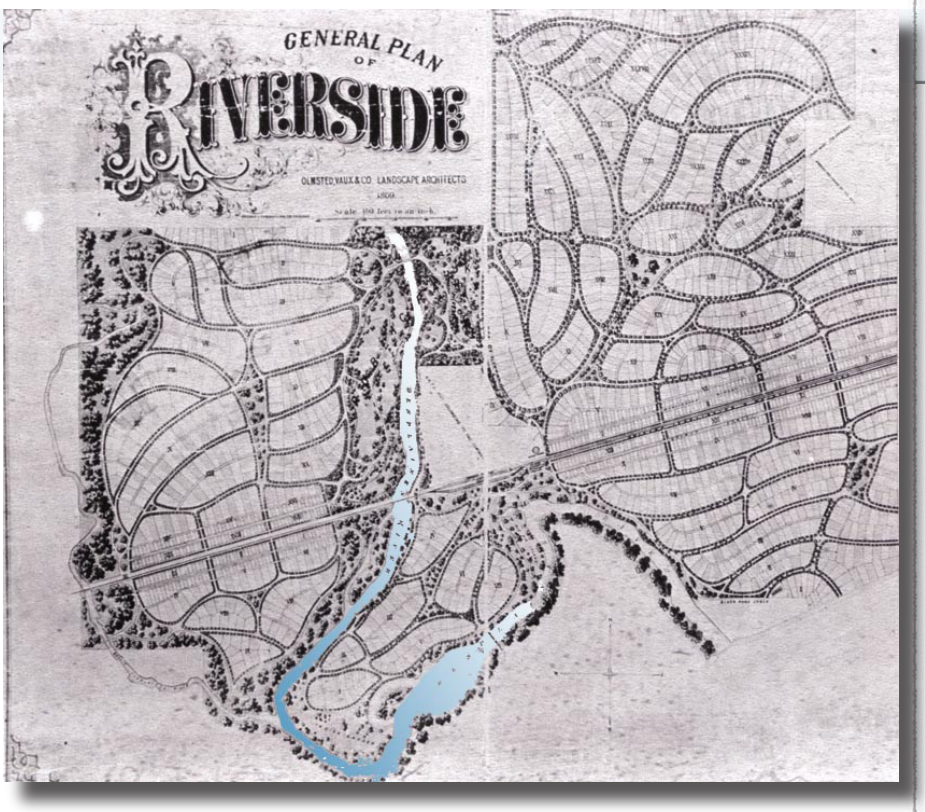


A sketch showing the elevated development of Savannah.

Conclusions:

Savannah's plan reflects political and organizational influences at that time in history. Some of features of this layout have become timeless for designing functional communities. The streets bounding the wards allow uninterrupted movement of traffic. Internal streets are interrupted by the squares to create a pedestrian-friendly scale. Also, the cluster design of the wards allowed for shared duties and uses among residents.

This case study is valuable to the theoretical premise because it is reflective of the utopian ideals of the colony. This utopian approach allowed for a focus on human interaction and community functions. The surrounding undeveloped tracts were owned by the city, which controlled the size and rhythm of development to create a visually diverse and humanly scaled city.



The original masterplan for Riverside by Fredrick Law Olmstead and Calvert Vaux.

Riverside, IL:

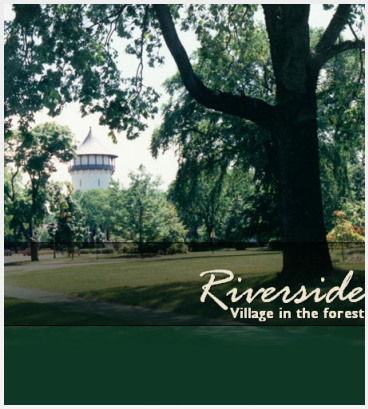
Riverside, Illinois is a 1600 acre planned community of 8700 residents along the Des Plaines River west of Chicago. The goal for Riverside was to create a community that combined rural with urban advantages. It is internationally recognized as one of the first planned suburban communities in the country, designed from 1868-1870 by Fredrick Law Olmstead. Riverside was development around a series of Olmstead's design principles:

-the choreography of views

- Roads and walks designed with curving alignment
- Absence of sharp corners and perpendicular intersections
- Irregular masses of trees and shrubs
- Use of plantings to frame, block, or terminate views
- Use of plantings to create rooms
- Alternating light and shade patterns
- Visual access to and across public open spaces
- Variation in vegetative texture and color

-the fostering of improved health and convenience

- Reserve the "best" of the site for public use
- Choice of plant materials
- Preference for native plants
- Non-natives used with discretion
- Avoidance of showy and formal floral displays
- Arrange plants in naturalistic groupings
- River used as an organizing element

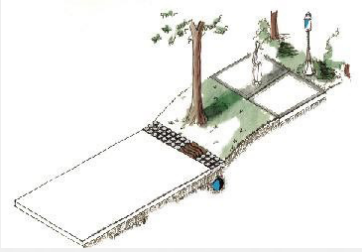


"the ordinary directness of line in town streets, with its resultant regularity of plan, would suggest eagerness to press forward, with out looking to the right hand or left, we should recommend… gracefully curved lines, generous spaces, and the absence of sharp corners, the idea being to suggest and imply leisure, contemplativeness, and happy tranquility"
-Fredrick Law Olmstead
(Beveridge 1977).

Riverside, IL (continued):

-provisions for open space
- 100′ Lot frontage
- 30′ Minimum setback
- Visual and physical access to public open spaces
- Organization and placement of triangle parks
- Sunken roads
- Roads and walks designed with curving alignment
- Absence of sharp corners and perpendicular intersections

-the preservation and enhancement of natural features.
- Walks and roads designed for positive drainage
- Public utilities and infrastructure (water and gas lighting)
- 600′ to public open space from any residence
- Transportation to urban centers via parkway and railroad
- Generous lot sizes
- Separation of uses
- Walking paths from driving
- Active from passive recreation spaces
- Living from working environments



Detail showing Olmstead's design for street gutters and the transition space from public to private .

Conclusions:

Although Riverside had a settlement pattern that emphasized low density and open space, as well as introducing the concepts of the business commute and the separation of workplace and dwelling, it still offered convenience, access to shopping, a civic character, aesthetic appeal, and a sense of place through design. The latter should are positive community features that should be contained in any good design.

I find this case study useful in pointing out the underlying themes still prevalent in suburban developments. It is important to know where suburban design is coming from in order to understand where it is to go in the future. It seems that Olmstead was able to accomplish his goal of creating a rural character within an urban setting. Although simply copying elements from Riverside into another community will not guarantee rural character, the principles used by Olmstead and Vaux will be useful for the development of the theoretical premise.

Comprehensive Land Use Plan, Manheim Township, PA:

Manheim Township is situated in the central portion of Lancaster County in south-central Pennsylvania. Manheim Township contains a total land area of 22.6 square miles. The Township's east and west boundaries are generally determined by natural features, the Conestoga River and Little Conestoga Creek respectfully. Manheim Township provides a link for major transportation routes through the Lancaster metropolitan area. Two Federal and seven State roads connect the Township with other parts of the County. The proximity of Lancaster, in reference to many larger eastern cities, provides Manheim Township residents with convenient access to Philadelphia, Baltimore, and Wilmington, and reasonable access to New York, Pittsburgh and Washington, D.C. The new comprehensive plan is a document which provides the primary framework for the management of future growth and development. The Plan is designed to identify the Township's aspirations and expectations heading into the 21st century to preserve the unique character of the Township which has made the area such a desirable location for residences and businesses.

During the last decade, residential developments within Manheim Township have been designed and built lacking a distinctive character and physical presence that provide a sense of neighborhood and identification. These new developments do not provide a mix of dwelling types at a variety of prices; nor the ability to walk on sidewalks or designated paths to recreational, educational or commercial areas; nor residential densities sufficient to support mass transit service.

This Comprehensive Plan addresses the return to neighborhoods which would be resident-friendly, with opportunities for social interaction, recreational activities and a sense of community. Specific goals, policies and implementation strategies are outlined so that in the future individual neighborhoods would be defined by parks, open spaces and greenways, providing non-vehicular travel between neighborhoods and residential and nonresidential areas. Interconnections between neighborhoods would allow for local travel through the community without the need to utilize major thoroughfares.

The natural resources of the Township are dwindling assets which need be protected. Future neighborhood designs will protect natural streams, floodplains, wetlands and the limited remaining woodlands. Although the majority of the Township's prime agricultural production area has been zoned to protect against the conversion to nonagricultural uses, continued efforts to preserve this resource would result in permanent protection through various landowner initiated development restrictions.

The Manheim Township plan is a framework for the preservation of rural landscapes, such as this one.

Natural Resources, like Lake Marburg shown here, have been given top priority for preservation with the implementation of the new comprehensive plan.

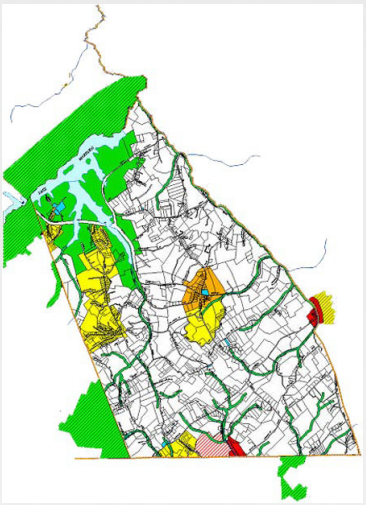
Comprehensive Land Use Plan, Manheim Township, PA (continued):

Major program elements of the comprehensive plan include:

Introduction
- Purpose of the Plan
- Plan's Vision
- Regional Context

Township Characteristics
- History/Cultural Resources
- Natural Resources
- Demographic/Economic Studies
- Housing Analysis
- Existing Land Use
- Transportation
- Community Services and Facilities
- Community Utilities
- Adjacent and Regional Planning

Future Land Use Plan
- Community Goals and Objective
- Future Land Use
- Implementation



The green areas on the map have been set aside for natural preservation/wildlife. The white areas signify agricultural uses, while yellow and orange represent residential uses. Notice how much of the county has been preserved for natural preservation.

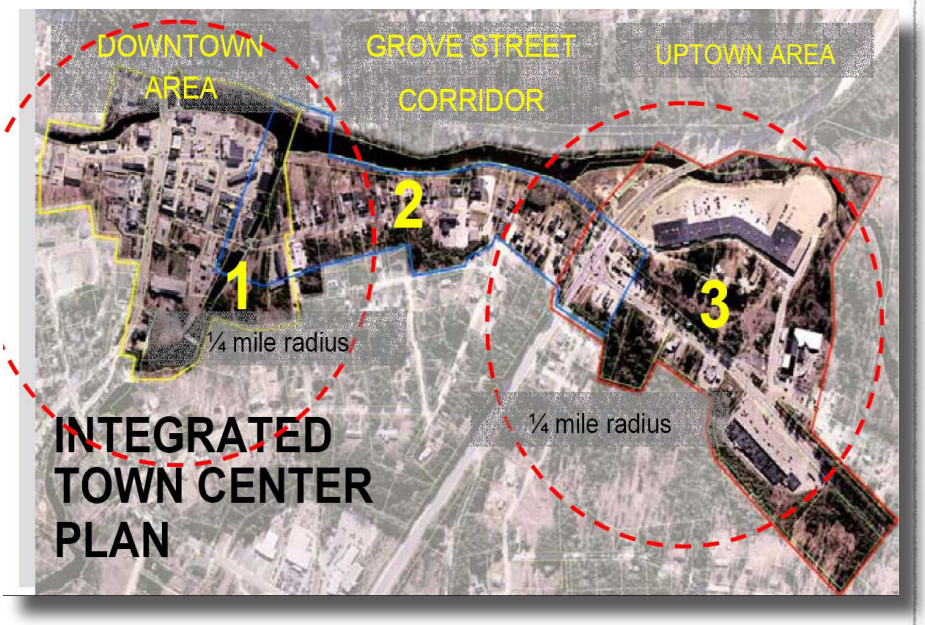
Conclusions:

This case study shows a very proactive approach to planning. A land use map for the township is being created before population increases force a dynamic, uncontrolled change to the character of the rural landscape. The case study has direct relevance to the theoretical premise through visioning processes and a natural resource based future land use map. Priorities have been given to the preservation of natural resources and the development of neighborhoods with new urbanism principles. These two priorities will drive development when design decisions need to be made in the future. Manheim Township has shown that it is crucial to have a vision for the future as well as a means to implement that vision. The means is the new land use plan.

Downtown 2000 Project, Peterborough, NH:

Peterborough is a small community of about 6,000 people and is located at the southwest corner of New Hampshire, about 3 miles from the Vermont border and 15 miles from the Massachusetts border. The total land area of the city takes up about 4.7 square miles. The city Land Use Plan promotes a strong desire to promote 'Smart Growth' strategies within the community. Some of these strategies include: *Vibrant commercial activity within cities and towns, Strong sense of community identity, Adherence to traditional settlement patterns when siting municipal and public buildings and services, Ample alternate transportation modes, Uncongested roads, Decreased water and air pollution, Clean aquifer recharge areas, Viable wildlife habitat, Attractive views of the landscape, and Preservation of historic village centers.*

The downtown area of the community is located near the convergence of two rivers. These rivers and the green space adjacent to them, combined with numerous historical buildings, set the foundation for a smart-growth initiative named 'Downtown 2000'. This initiative was developed as a reaction to a loss in downtown businesses and the new development of large chain stores and malls during the 1980's. The Downtown 2000 project was created in order to promote downtown development. Although this project is not defined in the Land Use Plan, objectives of the plan include the integration of three town centers (see Fig.1). The Downtown 2000 project is imperative to the completion of this integration.

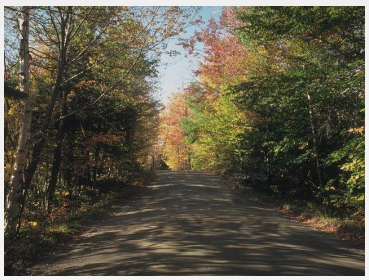


(Fig. 1) This plan shows the three nieghborhoods that are connected with the development of the new riverwalk and 'Downtown 2000' project.

Conclusions:

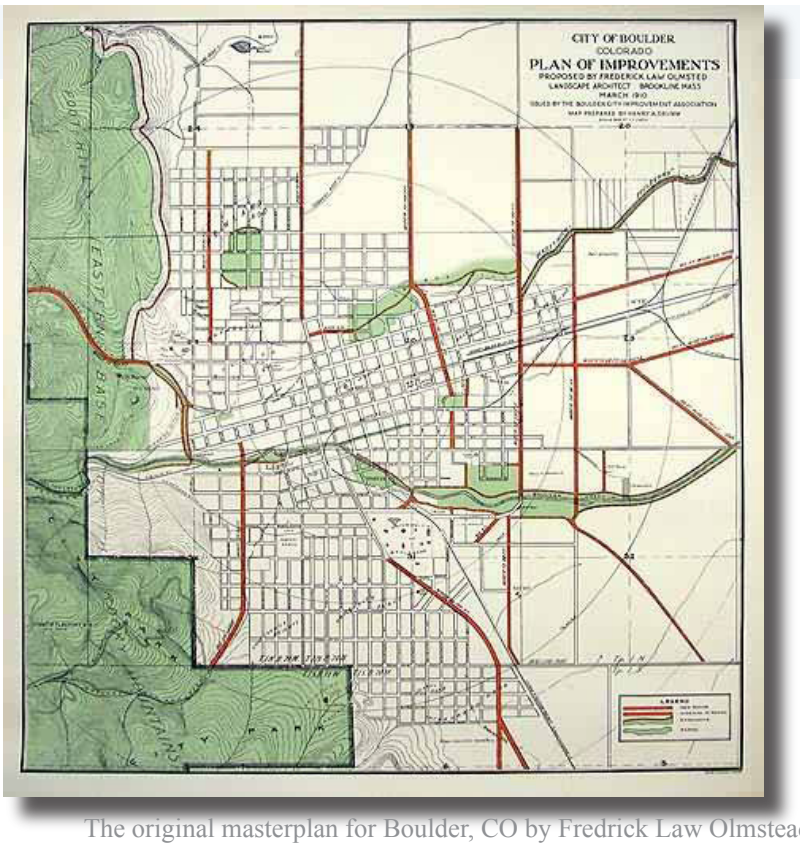
The examination this case study relates to the theoretical premise as an example of a successful renewal project within a growing community. The neglect for sound planning in the past was countered with a creative vision by the community and its planners. The Downtown 2000 project helped to promote economic vitality in the downtown area as well as served the function of promoting the walk-ability of Peterborough.

This photo shows the rural character of Peterborogh. This image of farms, horses, and rolling hills helps to define an 'Identity' for the community.



Rural roads such as this one in Peterborough, with minimal setbacks and development, further exemplify this rural character.

This is a photo of the pedestrian-friendly path that helps connect downtown Peterborough with surrounding neighborhoods and districts.



The original masterplan for Boulder, CO by Fredrick Law Olmstead.

The Service Area Concept, Boulder, CO:

Boulder is a city of approximately 96,000 people and is located about 27 miles northwest of Denver. The city has developed a 27,000-acre greenbelt, a system for controlling the rate of population growth by limiting building permits, and a defined urban growth boundary managed in cooperation with Boulder County. This approach to urban growth boundaries, called the service area concept, offers precedence for controlling sprawl, preserving rural land uses outside the city, and extending urban services in a rational manner.

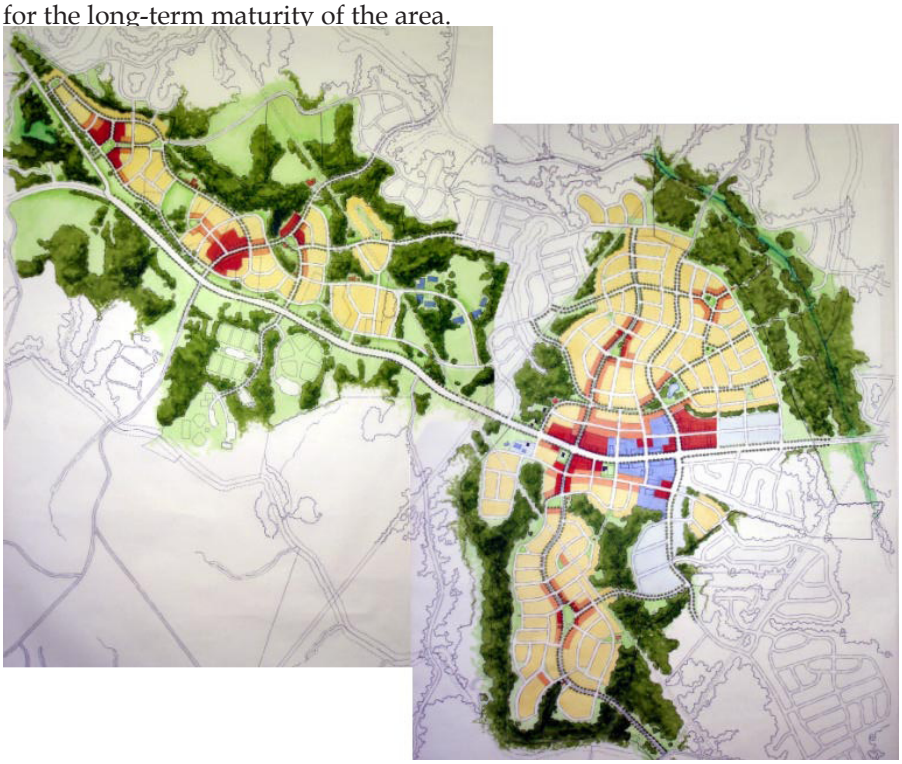
Colorado has no statewide, mandated planning program. The Denver Regional Council of Governments engages in general planning, clearinghouse, and federal funding allocation activities, but there is no real, effective regional planning effort. As a result, sprawling development, undifferentiated between cities and unincorporated areas of counties, is typical along most of Colorado's Front Range.

During the 1950s, Boulder's population grew from 25,000 to 37,000 and during the 1960s it grew from 29,000 to 66,000. Initial efforts to manage this growth included the "Blue Line," a citizen-initiated amendment to Boulder's charter in 1959 that restricted the extension of city water service above an elevation of 5,750 feet. The effect of this measure was to limit the city from extending water service to properties along the mountain backdrop. Property owners can still develop in the county, but at much lower densities than is typical in the city and only with individual water and septic systems.

An important growth management program began in 1967, when Boulder became the first city in the United States to pass a tax specifically dedicated to preserve open space. This open space system forms the outer extent of the Boulder Valley, a joint planning area between the city and county.

NC 73 East Davidson Small Area Plan, NC:

The NC 73 East Davidson Small Area Plan builds upon the NC 73 Transportation and Land Use Corridor Plan, completed in 2004. This Plan is a coordinated approach to land use, urban design and transportation. It is first a comprehensive approach to improving mobility by creating a network that provides multiple routes and more choices of mode of transportation via interconnected streets, walking and biking trails and transit. Second, this Plan creates centers that contain places to work with access to daily needs and services, thereby facilitating the potential result of less people moving fewer miles for daily activities. The intent is to provide direction for the immediate development projects and dynamics as well as provide guidance for the long-term maturity of the area.



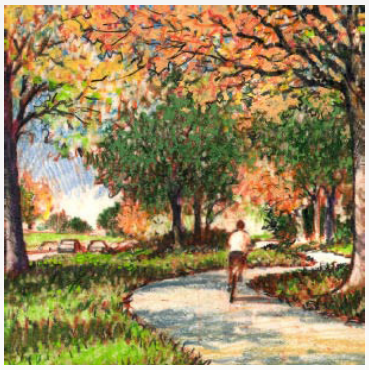
The study area for this case includes an approximate 3-½ mile stretch of NC 73 from Davidson-Concord Road to Poplar Tent in North Carolina. Market, economic, and development pressures occurring within the study area will require the widening of NC 73 at some point in time. As these changes occur, development pressure will only increase and the need to provide new housing, new jobs, services, schools, and road and infrastructure improvements will also increase.

Conclusions:

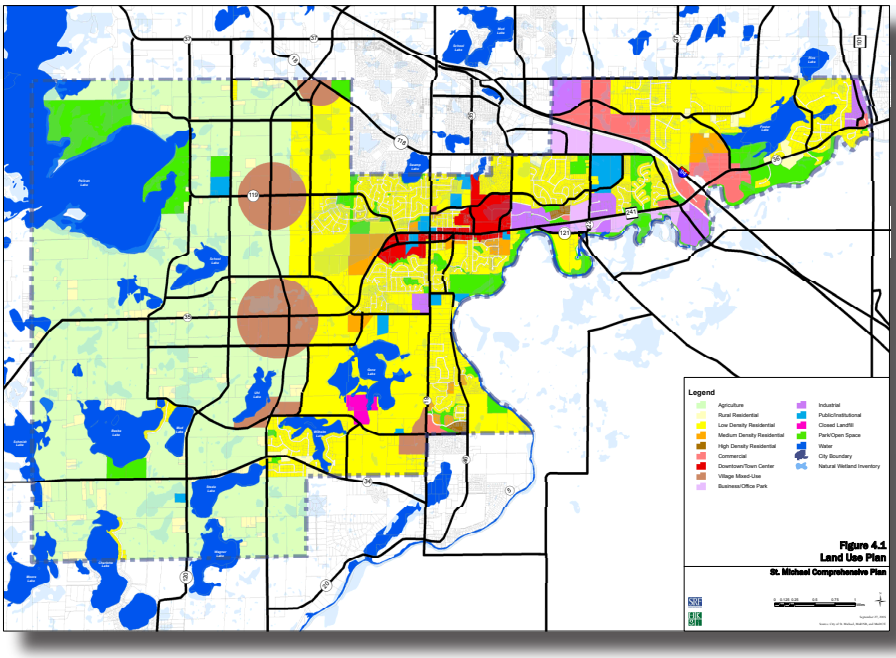
The plan recognizes the importance of balancing jobs with housing, services, and open space so that the corridor becomes a live-work-recreate environment and not an auto-dependent, single-use district. Many of these elements are new urbanism objectives. This plan prescribes a 30-year vision where jobs and housing are balanced, where compact development allows for an efficient use of land and resources, where mixed-use neighborhoods and centers encourage walking, biking, use of public transportation and a reduced reliance on the automobile.

An illustrator's sketch of what one of the new town centers may look like.

A sketch showing a village lifestyle within a proposed nieghborhood.



This sketch simulates what a proposed trail may look like.



The zoning plan for St. Michael shows low-density residential in yellow, agricultural in light green, preserved land in dark green, and commercial in red. The brown circles represent the location of new mixed-use 'Village' developments.

Land Use Plan, St. Michael, MN:

St. Michael is a rapidly growing community of over 9,000 people, growing over 263% since a 1990 population of 2,506. The city is located adjacent to I-94 about 30 miles northwest of the Twin Cities Metropolitan area in Minnesota. With an expansive population growth occurring, the new plan attempts to retain the small-town values and qualities of St. Michael. The plan was based upon a community vision that was developed by members of the community. Elements of this vision include: *small town feeling, involved community, planning for future generations, vibrant business community, quality schools, diversity of housing, environmental stewardship, recreational opportunities, and accessible community.* This vision helped to form the new land use plan. Program elements include:

Planning Framework
Community Context
Vision
Land Use Plan
Parks, Trails and Open Space System
Transportation
Sewer and Water Infrastructure
Strategic Initiatives

The basis for this plan is through the zoning of land uses. Every parcel within the city's limits is placed into a specific land use category. The Land Use Plan serves to reinforce desirable land use patterns.

This photo shows sprawling low-density housing being developed on hundreds of acres of what was once agricultural land in St. Michael, MN.

Land Use Plan

Land Use	Acres	Percent of City
Residential	6,978	30.1%
Rural Residential	683	3.0%
Low Density	5,972	25.8%
Medium Density	288	1.1%
High Density	35	0.2%
Commercial	521	2.3%
Downtown/Town Center	330	1.4%
Village Mixed-Use	1,122	4.9%
Business/Office Park	402	1.7%
Industrial	402	1.7%
Public/Semi-Public	280	1.2%
Parks/Open Space	1,494	6.5%
Closed Landfill	63	0.3%
Right-of-Way	801	3.5%
Vacant/Agricultural	7,793	33.7%
Water	2,931	12.7%
Total	23,117	100.0%

The acres and percentages of land zoned in the new plan are listed here. Notice the percentage of Low Density housing in relation to the total Residential land use.

Land Use Plan, St. Michael, MN (continued):

Conclusions:

The examination of the land use plan for St. Michael shows the negative effects of current development trends. Zoning within the city has separated all uses, making it necessary to drive from dwelling to work, shopping, and schools. The new plan shows that the community prepares to handle the population increase by increasing the amount of land allotted for single family low-density housing. This new low-density housing will most likely take the place of previously zoned agricultural lands. The natural preservation areas will retain some pristine land, but are much too small and isolated to be used for most wildlife habitat, pedestrian connections, or walkable public use areas.

This case study shows how an exurban Midwest community plans on dealing with the problems created from a rapid population growth. The similarities between St. Michael and the thesis community are numerous. The case study does not support the theoretical premise of retaining rural character or establishing a community identity. The case study further supports the premise that rapid land acquisition is not a sustainable way to accommodate rapid population growth.

Context Summary:

Historical

A historical context of the thesis is realized through the examination of the origins of the thesis typology, city planning and zoning. The historical context concludes with an analysis of the factors contributing to sprawling development. An understanding of these factors is needed for the continuation of the thesis.

City planning as a profession is credited to the Greek Hippodamus for his design of Miletus in the 5th century BC. It was he who introduced order and regularity into the planning of cities, in place of the previous intricacy and confusion. The first cities were originally an invention to maximize the exchange of goods, services, cultures, friendships, ideas, and knowledge while minimizing travel. (Engwicht 1993). Early European designs used orthogonal grids to create very geometrically shaped cities. This was the precedent for the United States Land surveys of 1784, which provided the framework for settlement throughout the country except for the original coastal states.

The National Land Grid organized large agriculture holdings, townships and provided a structure for planning cities. As these planned cities continued to expand, there became a need for planners to regulate uses to prevent new development from harming existing residents or businesses. This need employed what is most commonly referred to as the 'Euclidean' zoning methodology. New York City estalished the first zoning policy in 1916.

According to (DPZ 2006), Euclidean zoning is based on the Standard State Zoning Enabling Act (SZEA) that was promoted by the Hoover Administration in the 1920's. The primary purpose was to segregate uses that were thought to be incompatible. The SZEA-based statue results in different uses of land to be completely isolated from each other. The Buffalo planning legislation, as well as most other US cities, is patterned on the SZEA. It should be noted that these zoning patterns are nearly 100 years old, and were created at a time when vehicular operations were much different than today.

Euclidean Zoning

A look at Euclidean zoning will be the first of six categories that will examine the origins of sprawling developments. According to (DPZ 2006), Euclidean zoning is based on the Standard State Zoning Enabling Act (SZEA) that was promoted by the Hoover Administration in the 1920's. The primary purpose was to segregate uses that were thought to be incompatible. The SZEA-based statue results in different uses of land to be completely isolated from each other. The Buffalo planning legislation, as well as most other US cities, is patterned on the SZEA. It should be noted that these zoning patterns are nearly 100 years old, and were created at a time when vehicular operations were much different than today.

CONTEXT SUMMARY (CONTINUED):

Subdivision Requirements
Other contributors to sprawling development are subdivision requirements. Subdivision regulations - the division of tracts of land into smaller parcels for building. Subdivision requirements result in sprawl when excessive lot sizes and setbacks contribute to lower density developments that consume large amounts of land. Another contributing factor is the ability for these subdivisions to be walkable. Large gaps and single use developments discourage walking in these areas.

Traffic Engineering and Road Building Principles
A large majority of traffic engineering and public works manuals routinely prescribe wide thoroughfares and arterials to handle 'once-in-a-decade' fire/rescue contingencies (DPZ 2006). When referring to safety, tests have shown that drivers will actually proceed at slower speeds when encountered with narrower streets (Ronkin 2006). Traffic engineering often forces drivers onto collectors and arterials with a limited number of thoroughfares, limiting connectivity, dispersion, and flexibility of route choices. An alternative are traditional connective grids, which allow for slower traffic speeds and promote walking. The connective grid is also beneficial for emergency response teams allowing alternative routes to many destinations.

Federal Housing and Highway Projects
In the years following WWII, the Veterans Administration (VA) and the Federal Housing Administration (FHA) provided low mortgage rates for over 11 million new homeowners. Since the loans were only offered on new homes, existing housing and other urban construction was vacated for new suburban homes. This pushed the development of new single-family houses. Simultaneously, federal and local subsidies were provided for improved road and interstate developments, making automotive commuting affordable and convenient for suburban residents. With these projects providing a new economic framework, younger families looking to save money, migrated from urban-core neighborhoods into the suburban fringe.

Isolation of Professional Disciplines and Permitting
One factor that historically promoted suburban sprawl, according to (DPZ 2006), was the segregation of planners, traffic engineers, architects, landscape architects, and permitting authorities in the years following WWII. This noncohesiveness resulted in planning and zoning regulations that made sense from the perspective of one discipline, but failed to perform as well as one that used the integration of all disciplines.

Failure to Recognize Different Contexts
The final factor examined is the effects of universal design standards on the context of natural spaces. Conventional zoning and subdivision regulations fail to consider the character of the environments at which they are applied in. By failing to recognize unique site characteristics, the general use of the current zoning regulations results in poor human and natural environments.

Social

With few natural disasters, moderate summer climates, and high educational standards, central Minnesota is becoming a popular home for many families (www.cloudnet.com). The cities of Minneapolis and St. Paul combine to form the 13th largest Metropolitan Statistical Area (MSA) in the United States. The surrounding communities are growing rapidly outward, building beyond previous suburban limits. This region is among the fastest growing regions in Minnesota, and the United States. Six out of the top 85 fastest growing counties in the nation are located within central Minnesota. (U.S. Census Bureau 2000-20004) Most of these rapid growing counties are populated with suburban and exurban developments. This involves the conversion of open space (rural land) into developed land over the course of time. As reported by the U.S. Bureau of Census Data, social factors that are driving this sprawling migration are four-fold. These issues are broken down into the following outline:

Development

- Consumer preferences for size of housing and yards
- Developer preferences for constructing housing, offices and retail facilities
- Governmental subsidies that encourage land consumption, and fees and taxes that discourage consumption
- The quality of urban planning and zoning.

Transportation

- Governmental subsidies and programs for highways, streets and mass transit
- Consumer preferences
- The price of gasoline

Number of people per household

- Marriage rate and average age for marriage
- Divorce rate
- Recent fertility rate
- Level of independence of young adults
- Level of affluence enabling single people to live separately

Quality of existing communities and ability to hold their residents

- The quality of schools
- Perceptions about crime and safety
- Ethnic and cultural tensions or harmony
- The quality of government leadership
- Job opportunities
- Levels of pollution
- Quality of parks and infrastructure

The sprawling nature of this new development is affecting existing communities. New suburban development in central Minnesota tends to consume 15 times more land than traditional neighborhood developments (Cost of Sprawl 2005). Another result of this new growth is the amount of time Minnesotans are spending on the roads. The average commute time in 2000 was 21.9 minutes, which is a 15% increase from 1990 (US Census Bureau).

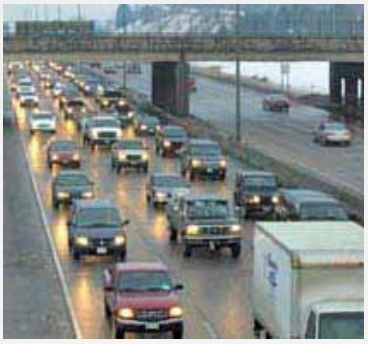
INTRODUCTION

(For the continuance of this thesis project, please keep in mind these definitions as applied by the U.S. Bureau of Census Data.)

Urban- *A Central City of a Metropolitan Statistical Area (MSA) which is published by the US Census Bureau.*

Suburban- *Any portion of an MSA county that is not in a Central City.*

Exurban- *(Not used for US Census Data), a semi-rural region beyond the suburbs of a Central City, characterized by low housing densities.*



The average commute time for Minnesotans was 21.9 min. in 2000. An increase of 15% since 1990.

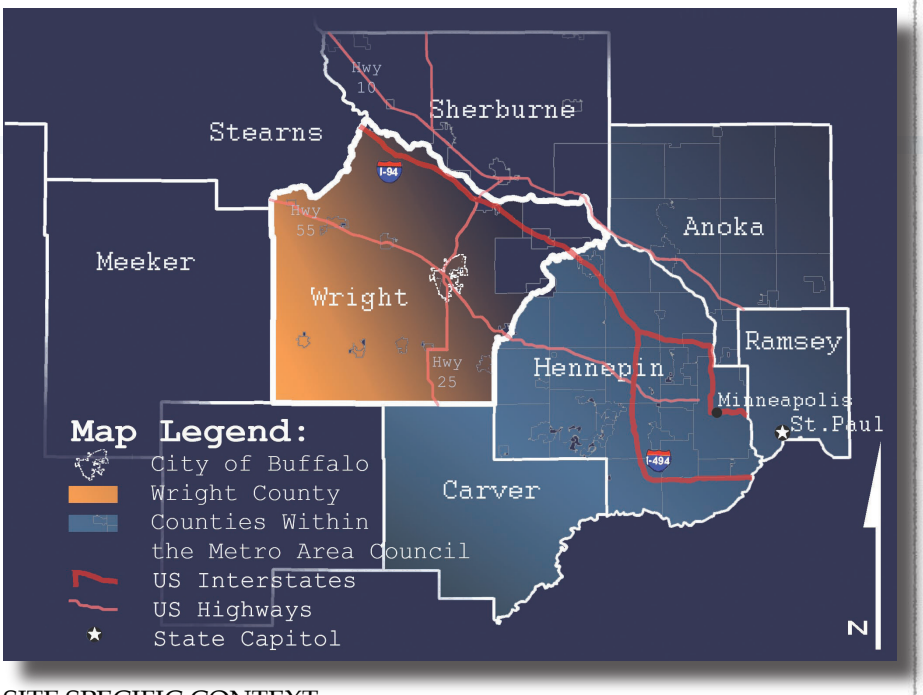
New suburban sprawl developments consume 15 times more land that traditional nieghborhood developments.

Lake Pulaski in Buffalo, MN

Physical

REGIONAL CONTEXT-

The city of Buffalo is located in Wright County, which is located in central Minnesota about 40 minutes northwest of Minneapolis. Central Minnesota is characterized by rolling hills, mixed forests, and hundreds of lakes. Early settlement in central Minnesota was historically influenced by potential access to the Mississippi River which flows south through the region. Current settlement patterns are attributed natural features such as lakes, as well as transportation corridors such as railroads, highways, and interstates.



SITE SPECIFIC CONTEXT-

The community of Buffalo inhabits approximately 14,000 people and lies just outside the suburban fringe of the Minneapolis/St. Paul metropolitan area. Buffalo lies 15 miles south of Interstate 94 at the intersection of US Highways 25 and 55. With a land area of approximately 5,350 acres, the city of Buffalo is nested on the fertile land between lakes Buffalo and Pulaski, to the southwest and northeast respectively.

Buffalo has done a good job in the past at controlling the growth of the city. Within the last two years Buffalo residents have seen the affects of a growing population. A country road has now become a major 4 lane highway. Small family owned retail and service stores have given way to large department and retail chains along transportation corridors, and the additions of over 20 low-density townhouse subdivisions have started to extend municipal infrastructures. Although Buffalo has historically performed well when it comes to planning, something has to be done soon to prevent the city from becoming another suburban ensemble of low-density, cookie-cutter housing.

Due to high economic values, it is often more profitable for farmers to sell land than farm on it.

The Regional context of the thesis lies in the Midwest Region of the United States.

The city of Buffalo, MN, has added over 4,000 residents since the 2000 census (estimates from city officials).

Goals for the Thesis Project:

Goals for the thesis project derive from an examination of the premise through both theoretical research and case study analyses.

The primary goal of this thesis is to provide a media for the education and clarity of real alternatives to the current zoning and land use plan for both residents and city officials of Buffalo.

The current zoning plan for Buffalo was adopted in 1996 and has been updated numerous times since then. There is a desire from community residents and city officials to adopt a new plan that addresses issues such as neighborhood connectivity, natural preservation, rapid population growth, downtown revitalization, and park connectivity.

Within the last decade, the city of Buffalo has experienced a rapid increase in both population and development. Local school districts have invested in the community with the construction of three new schools. The city has invested in a new civic center as well as improvements to over 86 miles of streets and highways within city limits. These investments are a commitment to future growth. Along with this growth comes a need for visioning and planning for the future of the community. The thesis provides the city of Buffalo a vision for the future. This vision will be one that strengthens the natural environment as well as increases in the quality and quantity of social interactions amongst community residents and visitors.

'there is a growing belief that community in Minnesota is on the decline, as fewer people know their neighbors, the quality of public schools appears to erode, transportation infrastructure fails to keep up with need, and taxes seem persistently high.'
(The Changing Shape of Minnesota 2004)

Inventory & Analysis

Qualitative Inventory:

The qualitative inventory is a narrative of personal impressions which are derived from visual and sensory analyses. The narratives are an attempt to describe the impressions which are valuable to an understanding of the theoretical premise.

Human History

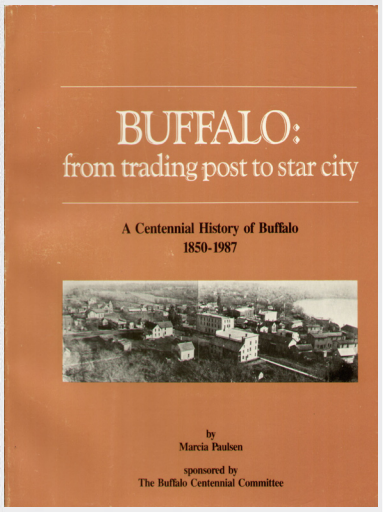
The first human influences on the site, much the same as the rest of the region, where those of Native Americans. Native Americans camped, hunted, and fished the area between the lakes Buffalo and Pulaski for more than 300 years. According to Paulsen (1987), what is now Buffalo

was once a favorite camping ground of the Dakota and was where some bands came in summer to fish and gather cranberries and in winter to hunt deer. After various treaties, Native Americans were forced to leave the area. This opened the path for Yankee settlers. With this, the history of the town of Buffalo begins. The settlement which began in 1855 was very small. The settlers had to clear a dense forest of large, mature trees. Since there was no market for the lumber, the trees were piled up and burned. The settlers constructed crude log shacks, which averaged about 12 by 20 feet in size. The early settlers were very poor. Although the land was cheap, the tools and other necessary articles were very expensive. The cost of shipping their produce to market was prohibitive and so profit was nearly nonexistent. Aside from a little pork and beef, most the meat was wild game which luckily was plentiful. Fish also was very abundant.

The village of Buffalo was platted on December 27, 1856. The village remained a small, struggling, isolated place for a number of years. Although the farming land was quickly settled between 1855 and 1857, the financial crash in the fall of 1857 left the settlers with no market for the few crops they could sell. Many claims were abandoned during 1858, 1859, and 1860. The next spur to growth was the arrival of the railroad late in 1886. With the advent of the railroad, people began to arrive, new buildings went up on every hand, new businesses were opened up, and there was life and energy everywhere. In July of that year, the village was incorporated, and its official history began.

Buffalo owes its existence to the two lakes, Buffalo and Pulaski. Resorts on both Pulaski and Buffalo Lakes once brought hundreds of people to our town each summer. From about 1890 through 1920 the summer population nearly doubled that found here in the winter. The summer trains would arrive filled with passengers and went on west from this point nearly empty. World War I travel restrictions and then a succession of cold and rainy summers gave a lethal blow to Buffalo's resort industry. When people were again ready to make summer plans in the mid-1920s, improved roads and train service to resort lakes farther west and north shifted the location of popular summer resorts, and Buffalo's resorts were forgotten.

Buffalo was awarded the 'Star City' designation in September, 1986. This award is given to cities with a level of "quality of life", and with a program of commercial and industiral incentives for growth..



'BUFFALO; from trading post to star city', was a key reference for the human history of Buffalo.

"Buffalo was awarded the 'Star City' designation in September, 1986. This award from the Minnesota Department of Energy and Economic Development is given to those Minnesota cities with an exceptional level of city services (water, sewer, electricity, etc.), with a high level of "quality of life", and with a program of commercial and industrial incentives for growth."

-Paulsen (1987)

QUALITATIVE INVENTORY (CONTINUED):

City of Buffalo Historic Expansion Inventory:

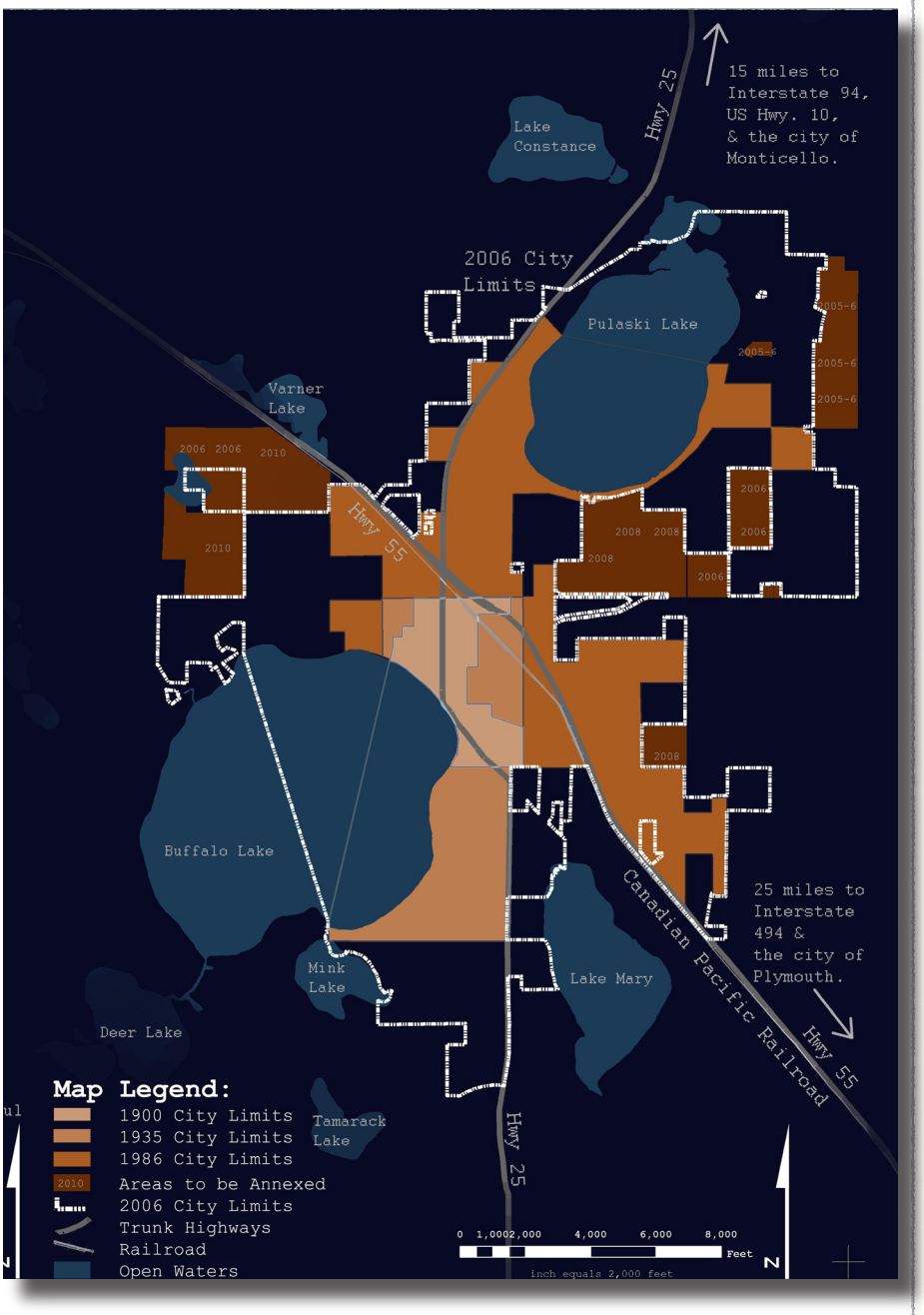


Figure 2

This shows the process of town's establishment in the late 1800's, to the proposed corporate limits of Buffalo in 2011.

Natural features have kept the growth from sprawling along highway corridors.

There has also been considerable growth to the north within the past 25 years.

QUALITATIVE INVENTORY (CONTINUED):

Built Features

Built features within the city of Buffalo consist of residential housing, hospitals, commercial and industrial developments, recreational parks, and public service features.

Residential and commercial features appear to exist in two very different styles. The first of these styles is one of a Traditional Neighborhood Development (TND). This style is found in most areas of town developed before WWII. Compact developments, efficient uses of land, and mixed use developments are all principles of this old style of small town development. There are a number of buildings within this area that preserve a Historical Heritage for the community. The Wright county courthouse, public services buildings, and the downtown shopping district all have characteristics of TND design. On the other hand, there are built features throughout Buffalo that induce isolation, necessitate vehicular usage, and require large amounts of land for development. These areas are referred to as Conventional Suburban Developments (CSD). These areas lie, for the most part, adjacent to and north of Highway 55, west of 4th Ave. NW, and southeast of Buffalo Lake. The developments in these areas are mostly low-density residential, schools, and or retail stores along transportation corridors. These areas are lacking connectivity to adjacent land parcels and the downtown area. The future projects map for the city of Buffalo shows 6 new developments scheduled to be completed within these CSD areas. (*See Figure 3*)

Parks- Cardinal Park, Prairie View Park, Greenbriar Park, Myhran Park, Pulaski Ponds Park, Eastland Estates Park, Buffalo Hills Park, Griffing Park, West Pulaski Park, Solbakken Park, Pine Meadows Park, Bentfield Mills/ Family Park, Curly Park, Shonhaugen Park, Sturges Park, Lion's Park, Mills-Stuges Park, Methodist Church Park, Trapper's Pond Park, Serentiy Hills Park, Gary Mattson Park, Willow Ridge Park, and Buffalo Heights Golf Course. (*See Figure 5*)

Schools- Buffalo High School, St. Francis Catholic Schools, Wright Technical Center, Phoenix Learning Center, Buffalo Community Middle School, Parkside Elementary, and Discovery Elementary schools - with 2 new schools under construction (Northwinds Elementary, and St. Francis schools). (*See Figure 7*)

Public Services- Wright County Public Health Services, Buffalo Public Library, City of Buffalo Fire Dept., Buffalo Police Dept., Buffalo City Hall, Wright County Sheriff, and Buffalo Civic Center. (*See Figure 8*)

Healthcare Services/Assisted Living Facilities- Buffalo Allina Hospital, Ebenezer Covenant Home Health Care, Sunrise Assisted Living, Sunrise Cottages of Buffalo, and Park View Care Center. (*See Figure 7*)

QUALITATIVE INVENTORY (CONTINUED):

Buffalo Community Inventory:

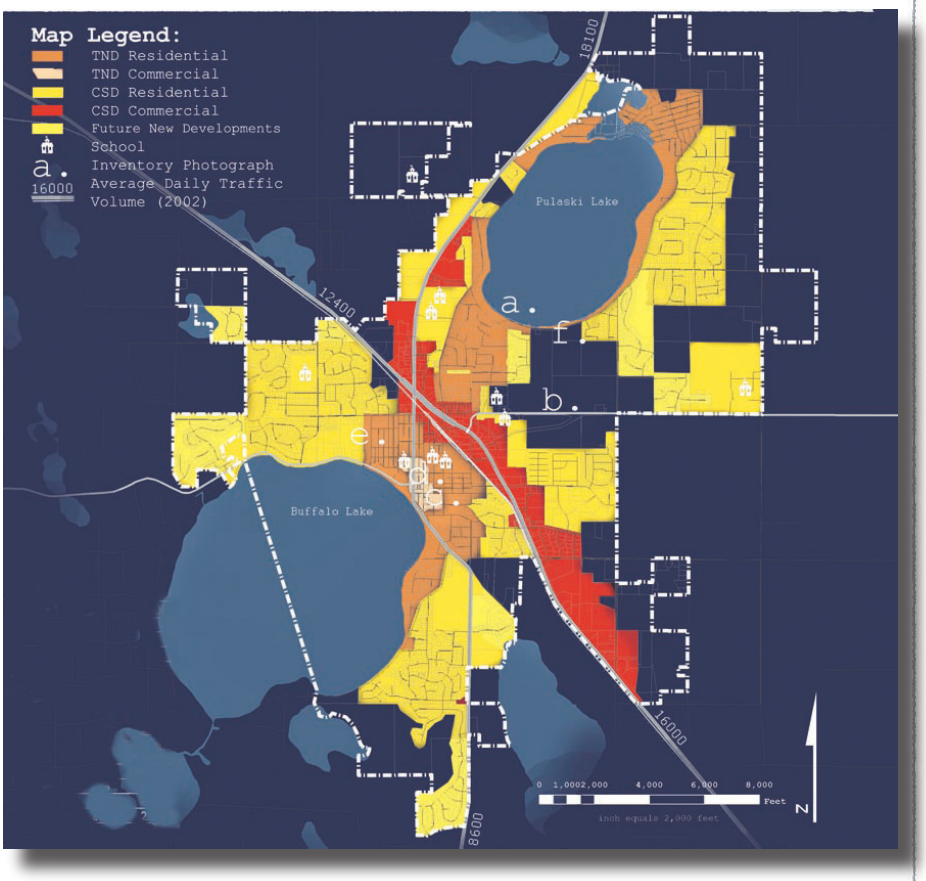


Figure 3

QUALITATIVE INVENTORY (CONTINUED):

Existing Zoning Map:

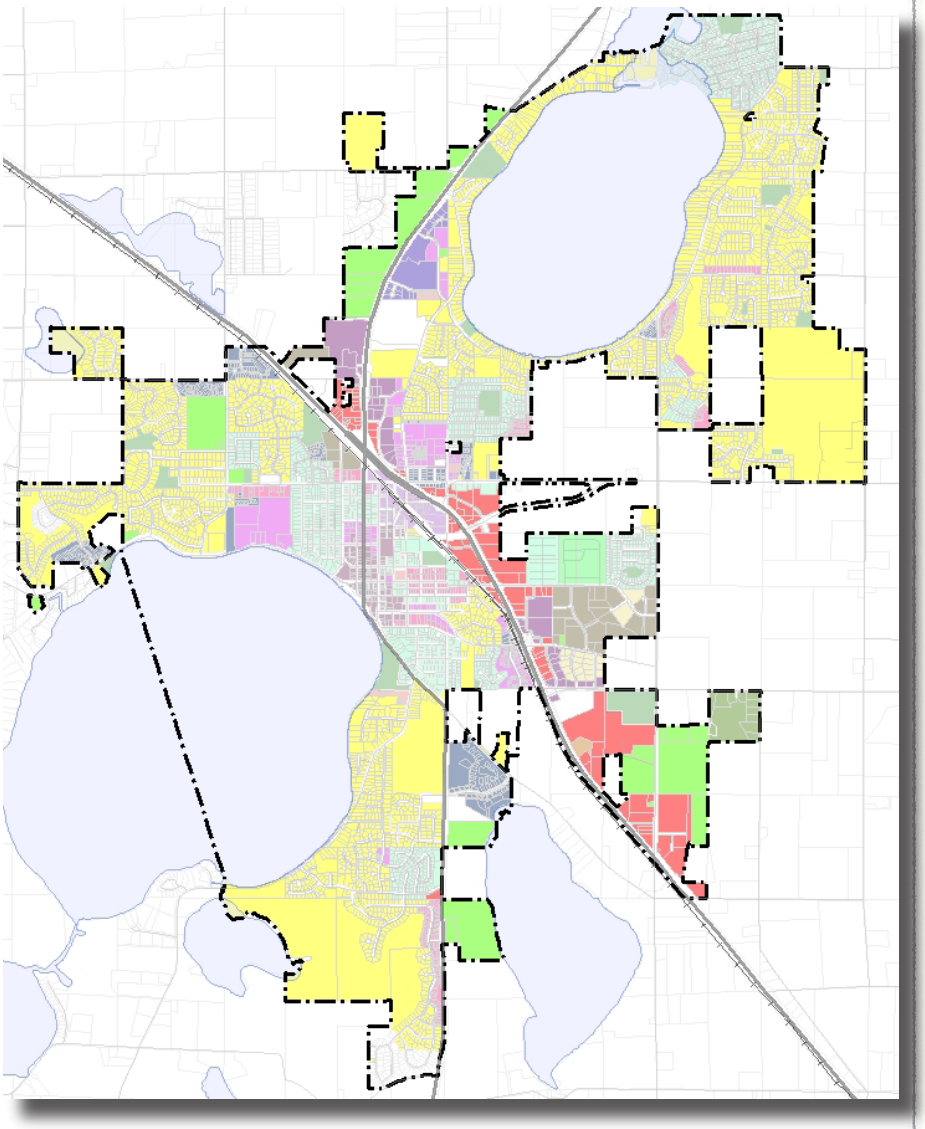


Figure 4

Qualitative Inventory (continued):

Open Space Inventory:

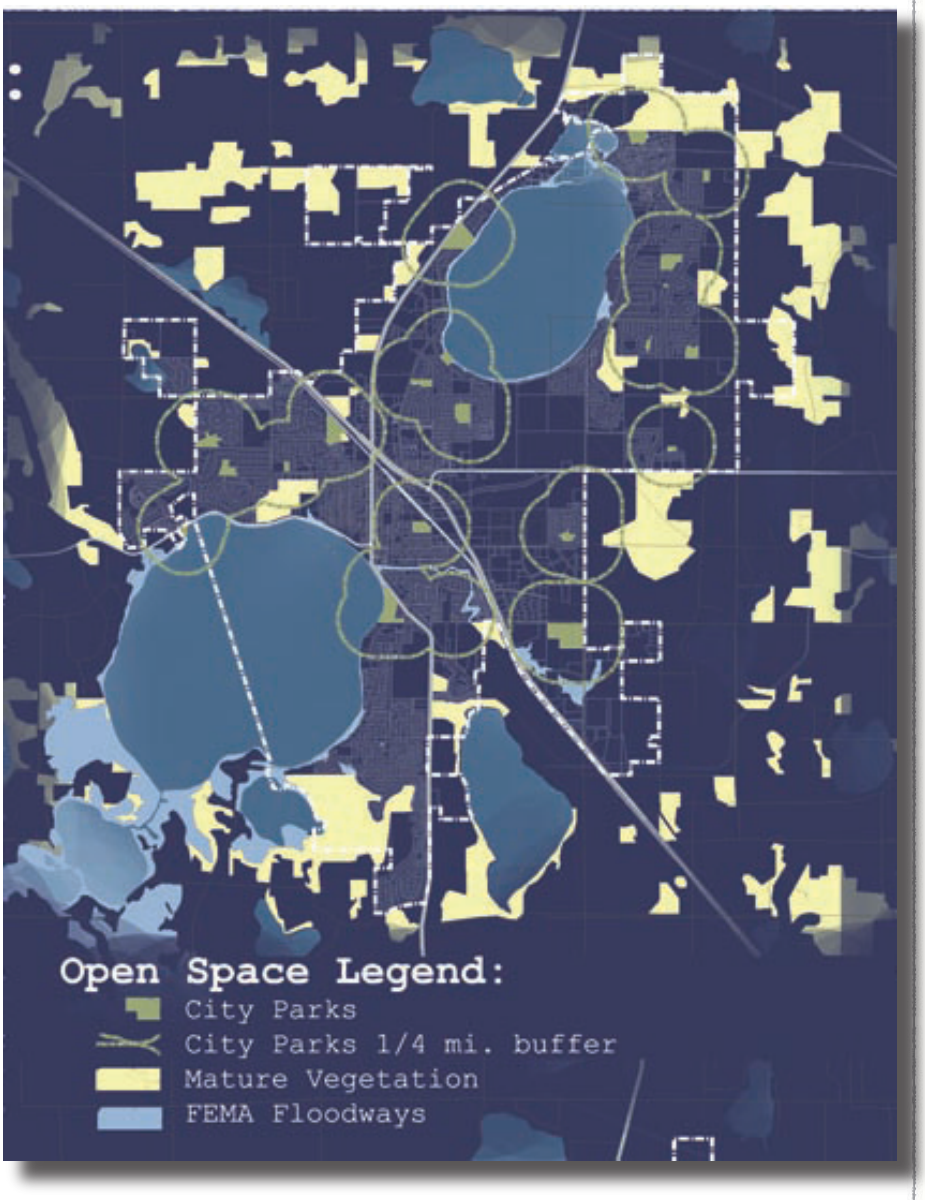


Figure 5

QUALITATIVE INVENTORY (CONTINUED):

Commercial Business Inventory:

Figure 6

QUALITATIVE INVENTORY (CONTINUED):

Healthcare/Assisted Living Facilities and Schools Inventory:

Figure 7

QUALITATIVE INVENTORY (CONTINUED):

Street Network Inventroy:

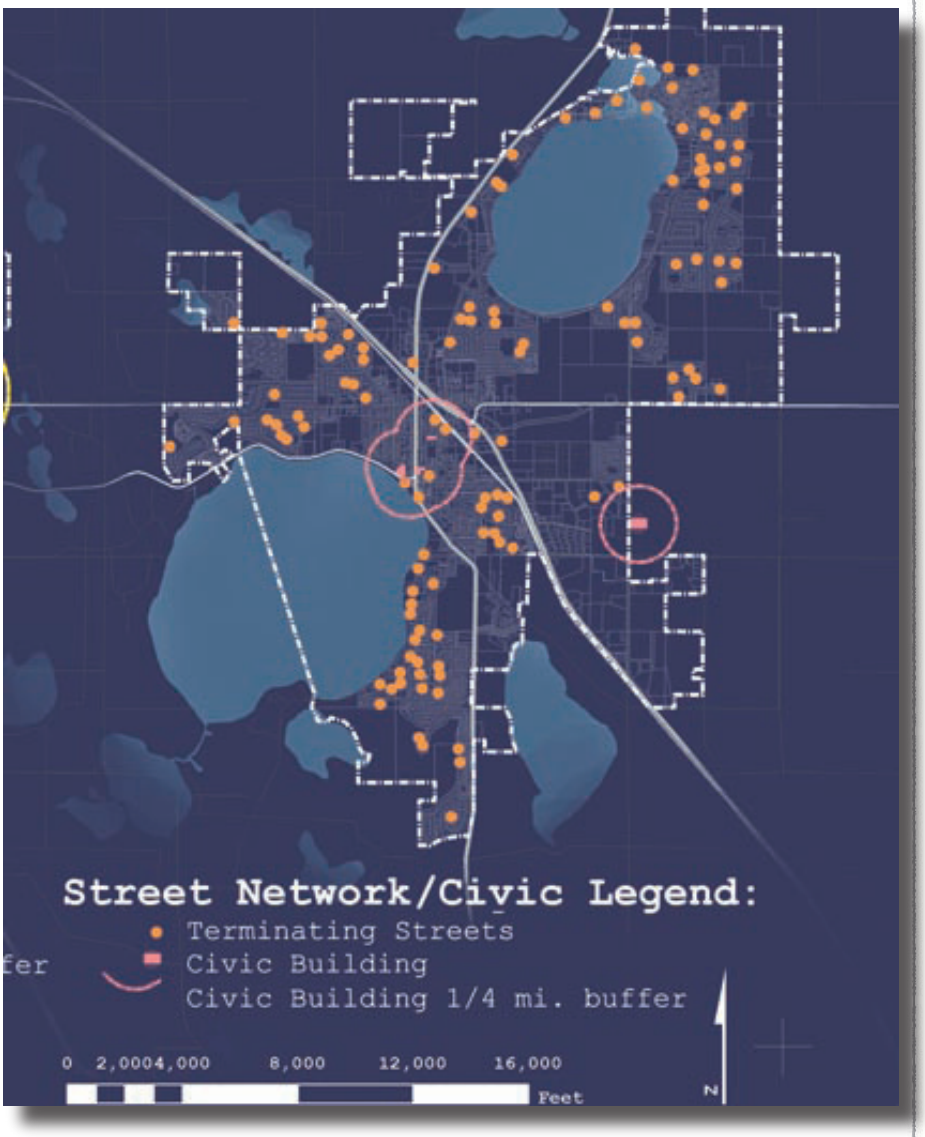


Figure 8

QUALITATIVE INVENTORY (CONTINUED):

Built Features (continued)

Vehicular Traffic-
The city of Buffalo lies at the intersection of two major transportations corridors, MN Highway 25 running north and south, and MN Highway 55 going east and west. Highway 25 is the main outlet for traffic heading to Interstate 94, which lies about 12 miles north of Buffalo. Highway 55, which was converted into a four-lane in 2004, is popular for commuters heading to and from the Twin Cities metro area. This corridor has been under recent monitoring due to traffic congestion issues related to heavy summer weekend use. It is not uncommon to experience 'stop and go' traffic on highway 55 on Thursday and Friday evenings, and again on Sunday evenings during the summer months.

Pedestrian Traffic-
The city of Buffalo has limited sidewalk and trail usage from its residents. This may be a result of isolated parks and a lack of connectivity of sidewalks. However, the city has future plans to link all parks with either sidewalks or trails. The downtown area shows the most promise for pedestrian usage, exhibiting humanly scaled spaces and compact commercial businesses.

Other Traffic-
The new Northstar Commuter Rail is under construction, and will be located 15 miles north of the city of Buffalo. The rail is scheduled to be operational by 2006 (www.northstartrain.org). The rail will have the ability to transport over 5,600 people daily to and from the Twin Cities metro area. It should be noted the condition and location of the Canadian Pacific Railroad line. This line in located adjacent to MN Highway 55 and runs east and west through the city. The line continues east into the Twin Cities metro area.

Personal Observations & Experiences

The personal impressions of the community of Buffalo are based off of three visits to the area, June 5, 2005, September 30, 2005, November 6, 2005, January 9, 2006. On all visits, a log was kept noting exceptional experiences, emotions, and information obtained during the visit. These literary and graphical logs represent the sources for the impressions of personal observations and experiences.

Quantitative Inventory:

Residential Demographics

All data for residential demographics of Buffalo were obtained from the US Census Bureau. When examining demographics for the city of Buffalo, only the information relative to the theoretical premise is presented. More information can be obtained from (U.S. Bureau of the Census, Census 2000).

From the years 2003-2004, Wright county Minnesota was the 85th fastest growing county in the nation, growing from 102, 829 to 106,889, a change of 4%. The size of the community is also growing in acres. Total land within the city limits in 1986 was approximately 3,263 acres. The total city limits in 2004 consumes approximately 5,980 acres. The following is a table of demographic data relative to the theoretical premise. (*See Appendix B*)

Geology

The geology is important to the premise in three ways. First, there are two large gravel pits located near the city of Buffalo. In this case, the geological subsurface is providing a resource for the community. Secondly, information of geological formations will be useful for determining the availability of groundwater. This groundwater is also a resource for the community and must be protected from contamination. Finally, the individual soil associations' exhibit engineering properties may influence land use decisions.

The geological formations present near Buffalo occur in four stages. The lower-most being Precambrian rocks, followed by Paleozoic Sedimentary rocks, next is a layer of Cretaceous sedimentary rocks, and finally limy glacial till. This glacial till consists of formations from the Des Moines Lobe, Superior Lobe, and the Holocene (*See Fig. 12*). Figure one shows aggregate potential as it relates to glacial formations in the area. More information on the geology of central Minnesota is available through the University of Minnesota website /www.geo.umn.edu/mgs/centrlmn.html.

Soil Type-
The soil associations that are prominent in the area are Lester-Hayden peat, Lester-Le Sueur-Cordova, and Hayden-Lester peat. All associations are characterized by deep, medium textured and moderately fine textured soils on rolling uplands. According to the Wright County Soil Survey of Minnesota (1968), engineering properties of these associations include: Topsoil: good to a depth of 10", Agricultural Drainage: not needed, Terraces and Diversions: well suited, Waterways: erosion hazard. These groups are rated moderate for building sites. This is attributed to moderate slopes of 2 – 6 percent, moderately well drained soils, and moderate shrink swell potential. These soils are classified as very good for crops and agriculture.

Contours-
Elevations near the city of Buffalo range from 920 – 1060' above sea level, with lakes ranging in depths of 5' - 80'.

QUANTITATIVE INVENTORY (CONTINUED):

Hydrology

The city of Buffalo is located in the North Fork Crow River watershed. This watershed is a part of the Upper Mississippi River Basin. Locally, water drains primarily into lakes and low-lying wetlands surrounding the community. The stabilization of lakes Buffalo and Pulaski has been a point of public concern for a number of years. 'In 1944 and 1945 the water level at Buffalo Lake was so high that all the beaches were under water, and the water reached the edge of the highways around the lake and did extensive damage to the highways (Paulsen 1987)'. This concern leads to the establishment of the Lake Pulaski Stabilization Project in the fall of 1986. The project called for pumping water from Pulaski, if the lake level was above 966 feet above sea level and if Buffalo Lake is 915.5 feet or lower, through the city sewer system to Buffalo Lake, which naturally overflows to the Crow River. Pumping began in February, 1987. The pumps are located at Griffing Park on Pulaski and can pump 8000 gallons per minute; and the sewers empty into Buffalo Lake just west of the Court House.

The availability of groundwater for Buffalo comes from four wells ranging from 302 to 361 feet deep, which draw water from the Quaternary Buried Artesian Aquifer and the Hinckley Sandstone Aquifer. Natural ground-water quality is good, but is susceptible to contamination from the effects of urbanization (MN Pollution Control Agency). During a 2004 water quality study, no contaminants were detected at levels that exceeded the federal standards. However, some contaminants were detected in trace amounts that were below legal limits. Contaminants found included Barium, Nitrate, Lead, Copper, and Fluoride (*See Appendix A*).

Climate

Both the regional and local climates for the study area are variable, with average monthly temperatures ranging from 70 F in July to 9 F in January (www.weather.com). Although the region typically experiences cold temperature in winter and moderate to warm temperature in summer, drastic temperature changes of 50 – 75 F have been known to occur within a span of 24 hours. June and August have the highest average monthly precipitation totals with 4.39" and 4.24" respectively. Prevailing Winds in the area are strongest in the winter coming from the NW and weakest on the summer coming from the SE.

QUANTITATIVE INVENTORY (CONTINUED):

Native Vegetation

According to results of J. Marschner's original analysis of Public Land Survey notes and landscape patterns, the native pre-settlement vegetation of the city of Buffalo was dense forests of hardwoods; oaks, hickory, maple, and basswoods (*See Fig.13*). This area was then known as 'The Big Woods'. 'The settlers had to clear the dense forest. They had no saws and so had to use axes to chop down the large trees. It would take two men nearly a year to clear two acres of forest.' (Paulsen 1987) Other pre-settlement vegetation included river-bottom forests, conifer bogs and swamps, aspen-oak lands, and wet prairies. After clearing the forests for settlement around 1855, much of the surrounding land near buffalo was converted into agricultural land.

The current state of land cover is analyzed using a computer classification of combined two-season pairs of early-1990s Landsat 4/5 Thematic Mapper (TM) satellite imagery, as part of the Upper Midwest Gap Analysis Program (UMGAP) of the U.S. Geological Survey (MN Data Deli). This analysis shows prominent vegetation in the area as cropland and grasslands. Other vegetation, although found in small isolated tracts, include oak, ash, cottonwood, maples, and aspen (*See Fig.11*).

Animal Life & Habitat

Wildlife and habitat for the study site will be examined in both indigenous and domestic species. Local vegetation and landforms offer potential habitat for the following species: ringed-neck pheasants, various waterfowl, white-tailed deer, rabbits, foxes, gophers, chipmunks, raccoons, squirrels, porcupines, mice, bats, beavers, fish, loons, eagles, mosquitoes, frogs, hawks, turtles, and snakes. Domestic animals in the area are mostly cattle. Much of the land near the perimeter of the city limits is used as pasture land for these animals. Due to it's proximity to the twin cities area, Buffalo is also susceptible to exotic species such as Eurasian milfoil and zebra mussels.

Quantitative Inventory (continued):

Hydrological Inventory:

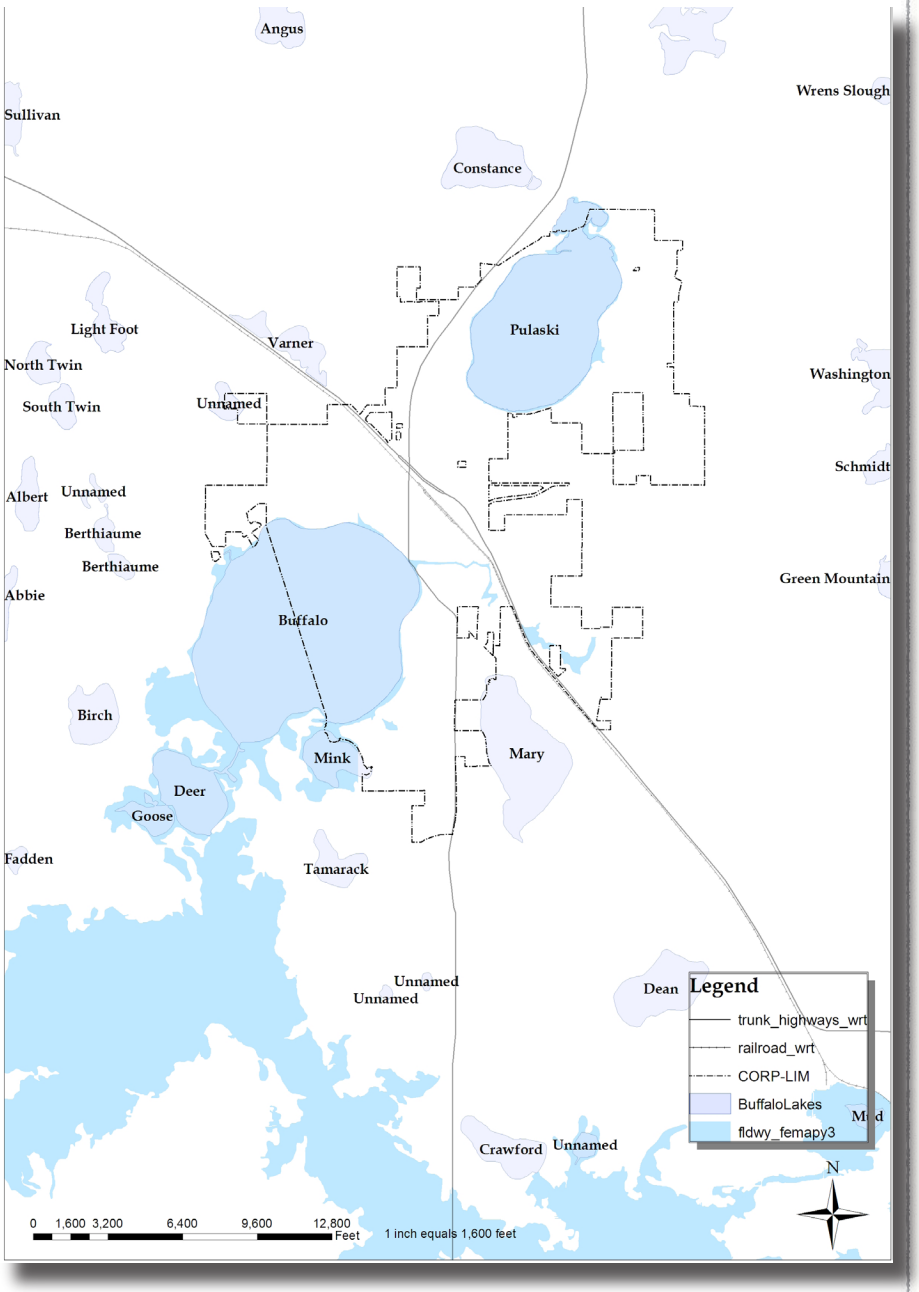


Figure 9

The FIRM is the basis for floodplain management, mitigation, and insurance activities for the National Flood Insurance Program (NFIP). Insurance applications include enforcement of the mandatory purchase requirement of the Flood Disaster Protection Act which "... requires the purchase of flood insurance by property owners who are being assisted by Federal programs or by Federally supervised, regulated or insured agencies or institutions in the acquisition or improvement of land facilities located or to be located in identified areas having special flood hazards"

Quantitative Inventory (continued):

Aggregate Potential Inventory:

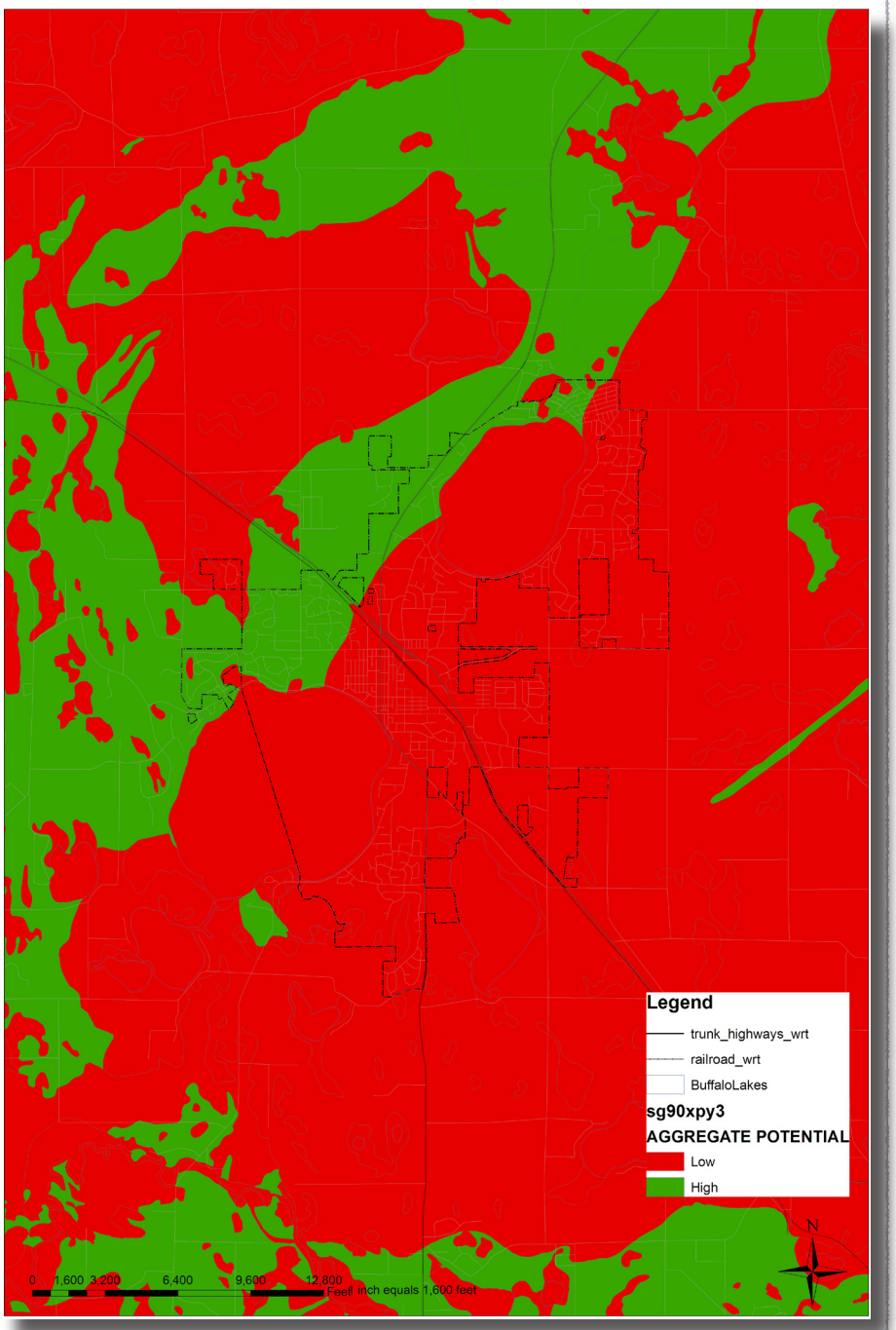


Figure 10

Quantitative Inventory (continued):

Ecological Landtype Associations:

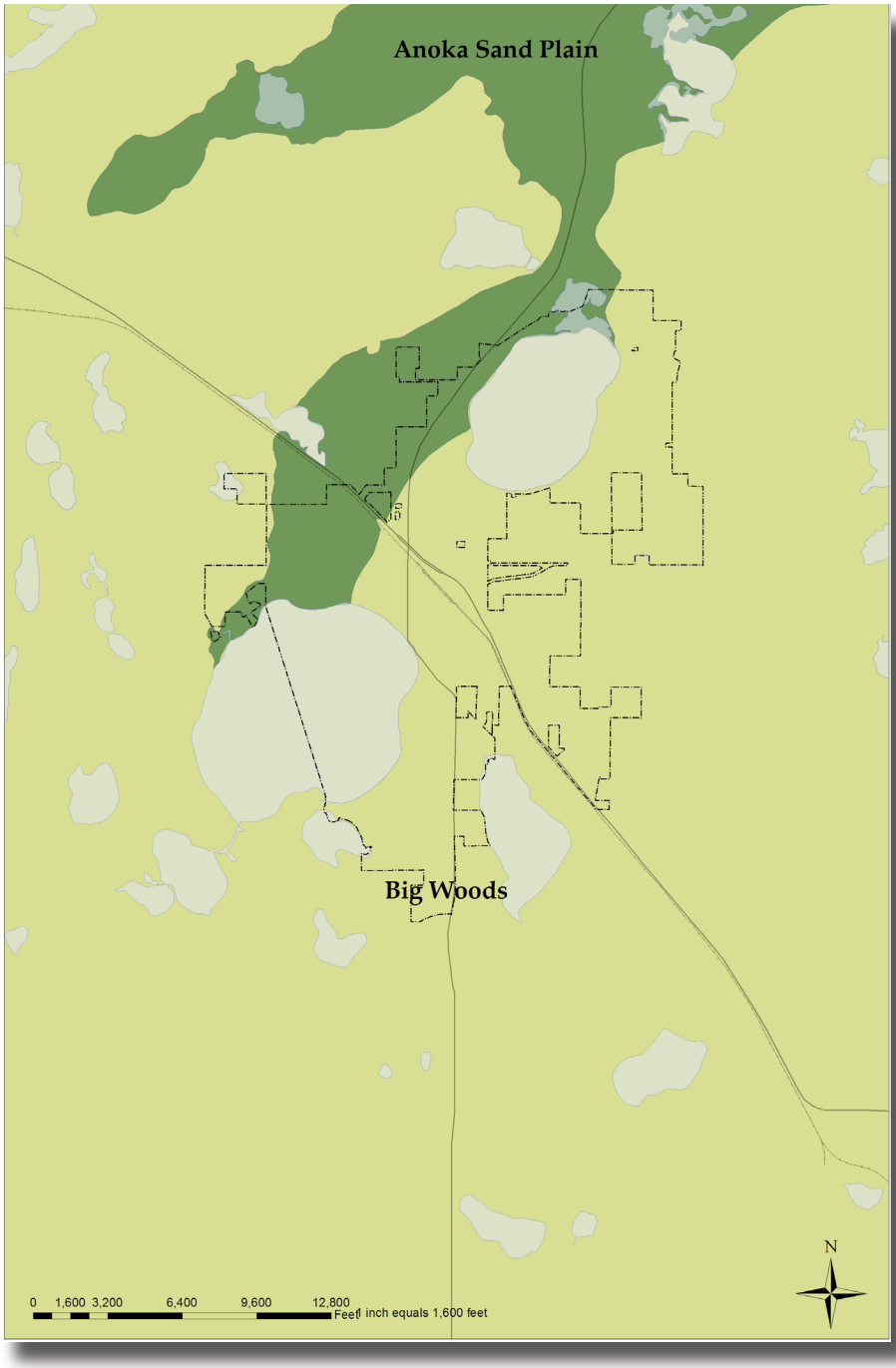


Figure 11
This coverage provides information for the fourth level of the Ecological Classification System. Polygon boundaries were delineated at a scale of 1:100,000 with a visual/interpretative process using a variety of biological and physical land surface features. Polygon labels follow the National Hierarchical Framework of Ecological Units protocol. **(MN Data Deli)**

Quantitative Inventory (continued):

Geological Landform Associations:

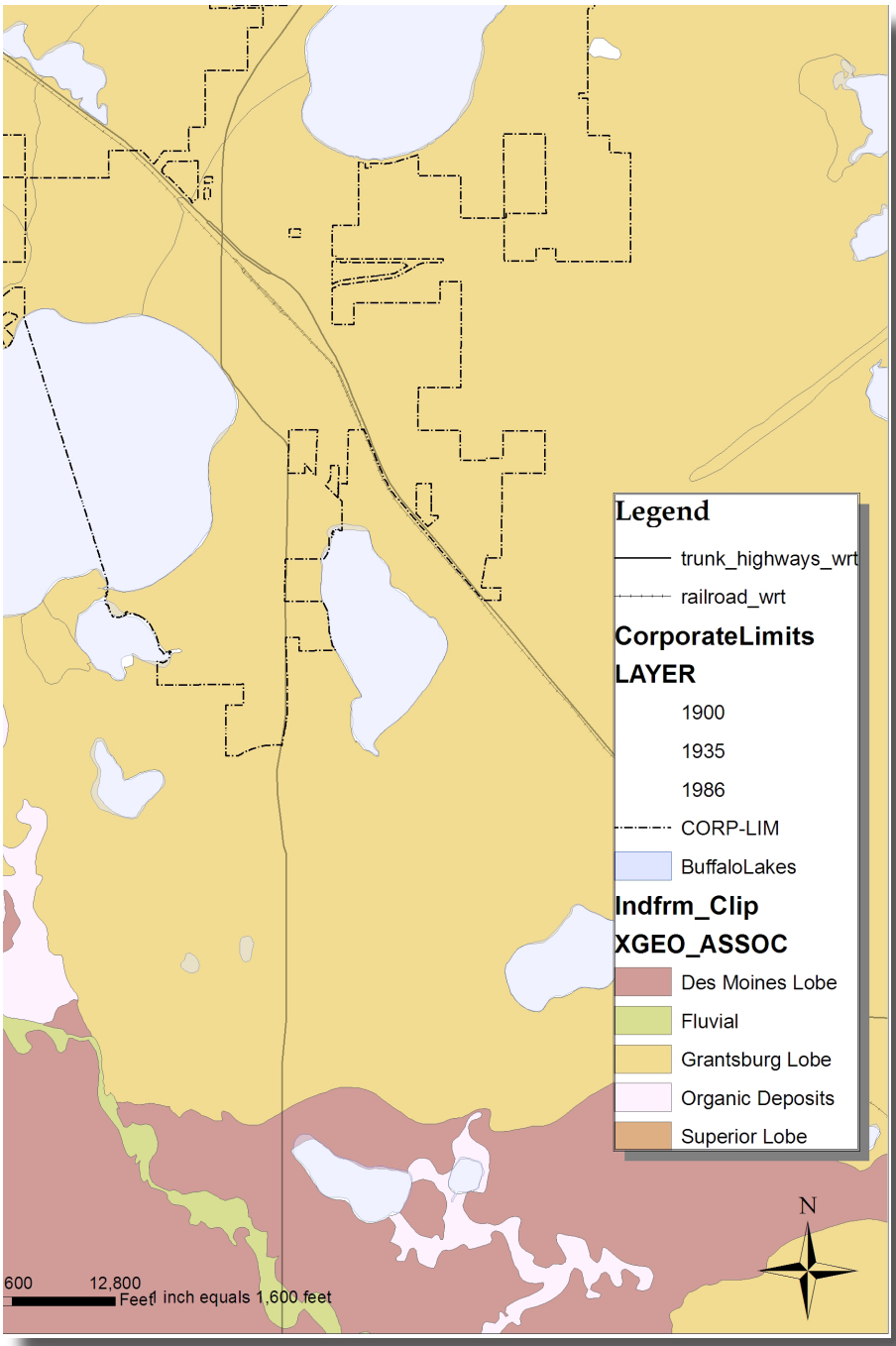


Figure 12
1:100,000 scale geomorphology data describing a wide variety of conditions related to surficial geology within a hierarchical classification scheme that was devised for use within Minnesota.. **(MN Data Deli)**

Quantitative Inventory (continued):

Presettlement Vegetation:

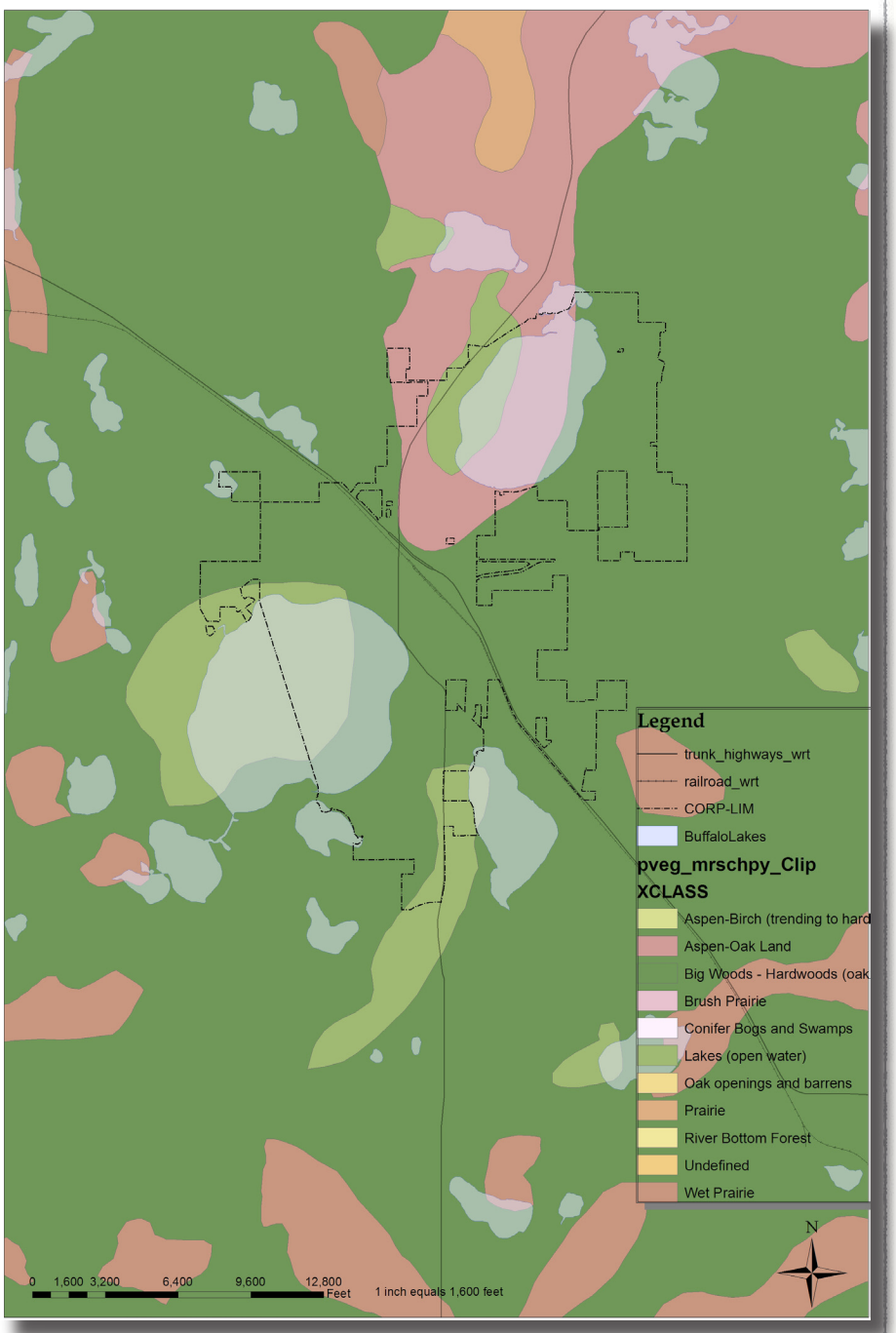


Figure 13
Presettlement vegetation of Minnesota based on Marschner's original analysis of Public Land Survey notes and landscape patterns. Marschner compiled his results in map format, which was subsequently captured in digital format. **(MN Data Deli)**

Opportunities & Constraints:

The formed opportunities and constraints will help to direct the development of a design solution.

Opportunities

History-
The land Buffalo sits upon was first seen as a valuable to Native Americans for its abundance of wild game and natural vegetation. With the addition of the railroad in 1886, Buffalo became a thriving incorporated city with many new downtown businesses. During the early 1900's Buffalo was a thriving resort community during the summer months. The opportunities related to history arise from what was once available in the area, and may be available again in the future. Through preservation and restoration processes, these historically bright moments in Buffalo can be renewed in future developments.

Location-
The current popularity of Buffalo can be credited to its location. The city is only 30 minutes from both the Twin Cities metro area and the regional hub of the St. Cloud area. Both of these areas offer large amounts of entertainment, employment, recreational, and shopping opportunities.

Natural Resources-
Buffalo offers a variety of natural resources to its residents. Natural resources that present opportunities to the city are its scenic beauty, and adequate water supplies. Although beauty is subjective, many residents and tourists are attracted to Buffalo for its natural scenic beauty. The city overlooks a large body of water and undeveloped vegetative areas. These are opportunities that other cities in the area cannot offer. The current water supplies available to the city offer the possibility for a continuation in population growth.

New Developments-
Also perceived as a constraint on design, new developments within Buffalo are contributing to economic vitality. An increase in population and commercial developments is resulting in an increase in tax base for the community. If used properly, these taxes can be a great opportunity for future development.

OPPORTUNITIES & CONSTRAINTS (CONTINUED):

Constraints

Constraints on new designs within the city of Buffalo include a wealth of low-density housing developments, rapid regional population growth, and a dependence on vehicular usage.

New Developments-
The majority of new developments within the city of Buffalo are viewed as a constraint on design because they have consumed large amounts of valuable land and have been placed in the landscape in seemingly random arrangement, which is going to present a challenge for the development and implementation of new designs.

Rapid Regional Growth-
New growth within a community is usually a positive attribute. However, when growth occurs so rapidly that it is unable to be controlled, it is then viewed a constraint on future designs. Although not directly stated, there seems to be competition for the annexation of adjacent properties amongst surrounding communities. This competition is creating a rapid acquisition of large amounts of rural land by several incorporated cities.

Vehicular Traffic-
The most formidable constraint upon new planning designs is the presence of vehicular traffic and traffic issues within the city of Buffalo. The desire to live in a community that is within 'proximity' to 'everything' is ultimately leading to its demise. Proximity, as it is used here, refers to anything that is within a 30 minute drive. This requires large amounts of vehicular usage. This public image of 'proximity' is a constraint on new designs solutions.

Design Methods

Design Methods:

The Natural Step (1989, Dr. Karl-Henrik Rob)

The use of the Natural Step during this project is found primarily during the early stages of the design process. The Natural Step Framework is used to ensure that a truly sustainable and ecologically sound comprehensive plan would be created.

Design Guidelines - for the City of Fargo (May 2003)

There are a number of communities that have initiated Design Guidelines, The Design Guidelines for Fargo, ND were used because of my familiarity with Fargo's Land Development Codes, Land use regulations, and comprehensive plan. The guidelines are used as further evidence to support theories relating to compact, pedestrian-friendly developments located near major transportation intersections. The Design Guidelines for Fargo are especially designed to address new developments within growth areas and extra-territorial areas of the city of Fargo. The reasons for the guideline developments were to direct the rapid annexation and development that is happening in these areas, similar to the objectives formed during the Buffalo plan analysis. Much like the proposed comprehensive plan for Buffalo, the Design Guidelines for Fargo establish a framework for development that frames broad patterns of land uses. The guidelines considers corridors for movement, amenities for growth areas, as well as focal points that offer positive impressions of the community and land use transitions between areas of potentially conflicting uses.

Coinciding with the proposed land use strategy created in this thesis, the Design Guidelines for Fargo direct development efforts toward the creation of a 'Livable Community'. This 'Livable Community' is based on:

- A mix of land uses
- Increased safety
- Reduction in auto use
- Support for those who work at home
- A variety of housing choices
- Human-scaled design

Design Methods (continued):

Transect Mapping - Criterion Planners (December 2005)

Although Transect Mapping is a relatively new concept for planners, the ideology of the transect has been explored by the Scottish biologist Patrick Geddes and landscape planner Ian Mcharg as early as 1915 (Geddes, 1915, p.xviii). Transect Mapping is further supported by the application of ecological principles. Transect planning begins with the idea that planning must be based on finding the proper balance between human-made and natural environments. The interconnection of urban and natural environments which can exist coherently is a departure from the usual view that cities and nature are in virtual opposition (Duany, Talen 2002).

The precise method of Transect Mapping used for the thesis is calibrated from 'A Transect Calibration & Delineation Method' (Criterion, 2005). Within this system, the transect is viewed as a system of land-uses and travel networks arranged on a rural to urban continuum, (similar to the SmartCode view of the transect). The goal of this thesis is to use the regulatory transect scheme articulated in the SmartCode to be adopted by the Buffalo planning jurisdiction for implementation in coexistence, or as an overlay of current zoning regulations.

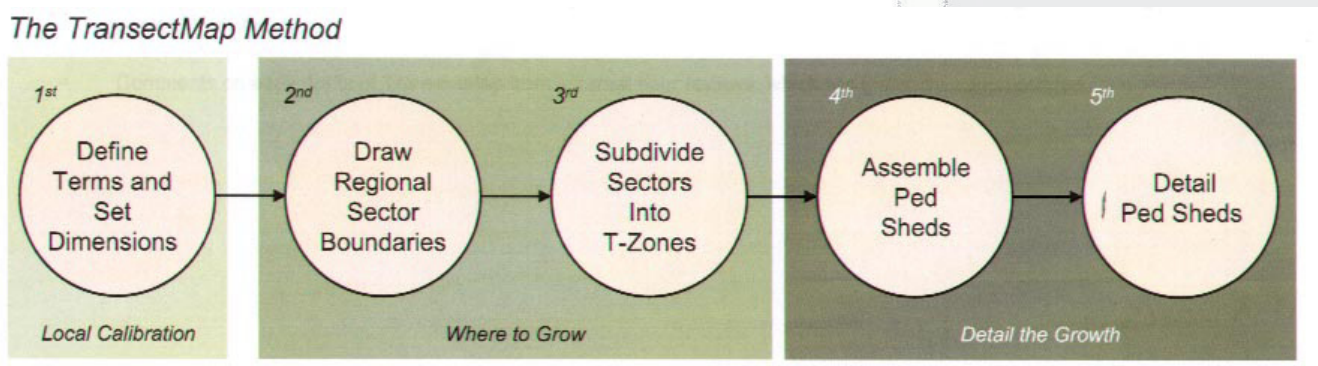
The SmartCode *v8.0* - Duany, Plater-Zyberk **(January 2006)**

The SmartCode v8.0 is a comprehensive from-based planning ordinance first developed by Andres Duany and Elizabeth Plater-Zyberk. The ordinance battles the existing conventional codes in an attempt to provide states, counties, and cities with a planning tool that promotes a sustainable urban pattern. Duany argues that "the current pattern of sprawling growth in America is preventable through the use of prescriptive codes, such as the SmartCode." (SmartCode 6.5 2005). For the use of this thesis, the SmartCode is the vehicle with which delineated transects will be implemented and later, regulated. Due to the from-based framework of the SmartCode, the resulting urban patterns promote neighborhoods, mixed use districts, and pedestrian-friendly streets and boulevards.

Process

The process for the creation of the proposed Comprehensive Plan consited of three basic steps:

a)Local Calibration (*the sector*):
b)Where to Grow *(the transect zone*):
c)Detail the Growth (*the detailed site plan*):



(Image from Criterion Planners 'Transect Mapping' 2005)

a)Local Calibration (the sector):
The first step in the transect-based land use strategy is to define the terms and set parameters for the delineation of local sectors. This includes the G4, G3, G2, G1, and O1-O2 sectors. The focus of the sector plan is to ensure an ecologically sustainable framework composed of protected resources, in which varying urban intensities of a community can be interspersed. (Smartcode v 8.0) (*See Figure x*)

b)Where to Grow (the transect zone):
The second step is to create a comprehensive plan to direct future growth into intended land use patterns. This involves subdividing sectors into transect zones. A transect is a geographical cross-section of a region uesd to reveal a sequence of environments. For human environments, this cross-section can be used to identify a set of habitats that vary by their level and intensity of urban character, a continuum that ranges from rural to urban. (Smartcode v 8.0) (*See Figure x*)

c)Detail the Growth (the detailed site plan):
Once transect locations have been established at a community scale, the last step is to assemble detailed site plans for pedestrian sheds (the identification of major natural and/or built barriers to pedestrian travel). These plans focus on site specific standards at the pedestrian scale. An example of a detailed plan employing the full spectrum of transect zones (less the rural transect) is shown to the right. (*See Figure x*)

Design Process (continued):

Regional Sector Boundaries:

a)Local Calibration (*the sector*):

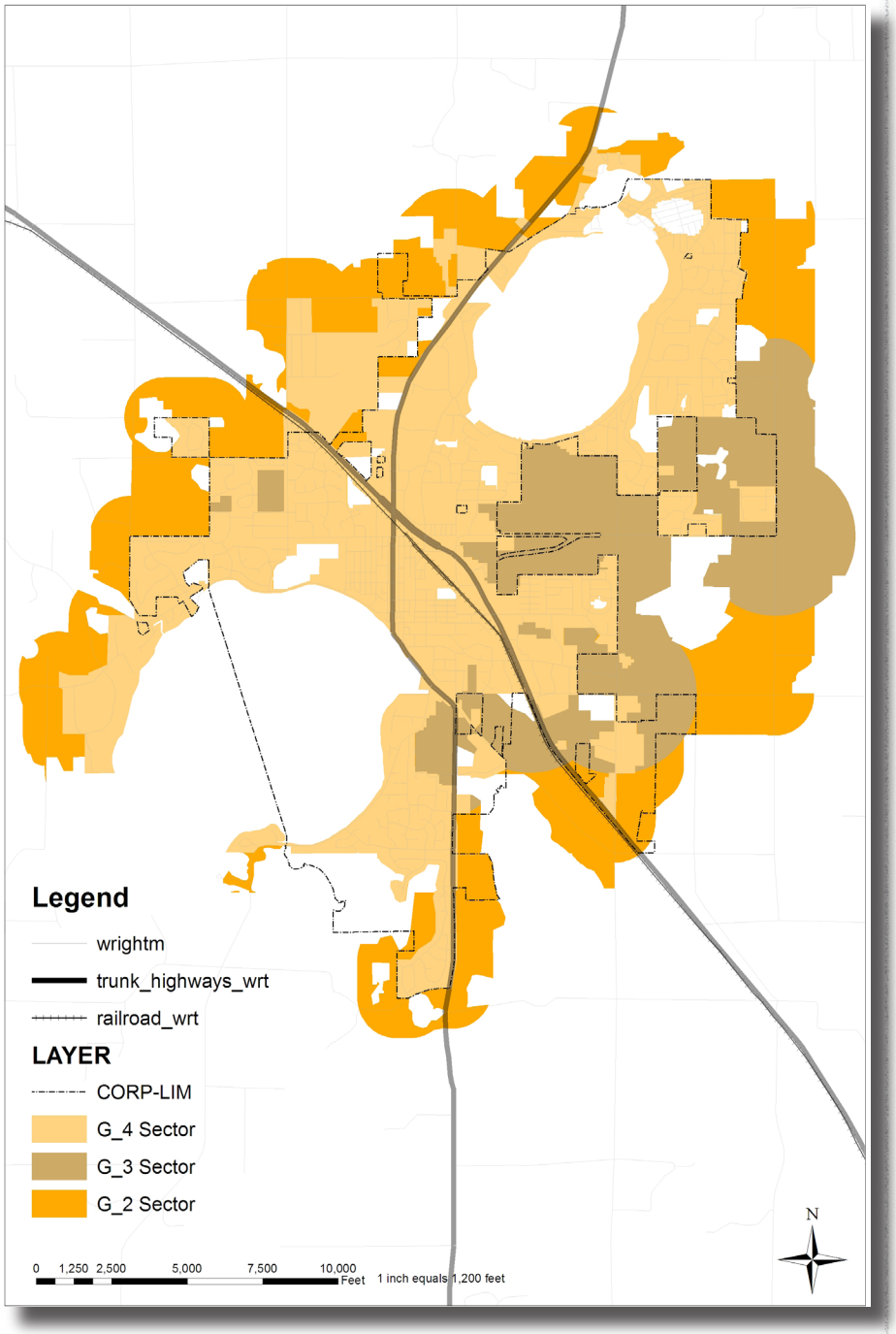


Figure 14

G4- Urban Infill (Light Peach)
G3- Intended Growth (Brown)
G2- Controlled Growth (Orange)

Sector Parameters:

G4 - Urban Infill
All land that is currently developed to an urban level.

*This was achieved through the analysis of an aerial photo from 2003, as well as the current zoning plan from 2005.

G3 – Intended Growth
Land within .5 mi. of major transportation intersection nodes as well as .25 mi. along these transportation corridors.

G2 – Controlled Growth
All land within .25 mi. of the G4 sector as well as land within .25 mi. of secondary node intersections of transportation routes.

*considering also within .125 mi. along these transportation routes.

G1 – Restricted Growth
All other land in the study area that is not already defined by a sector.

DESIGN PROCESS (CONTINUED):

Transect Delineation:

b)Where to Grow *(the transect zone)*:

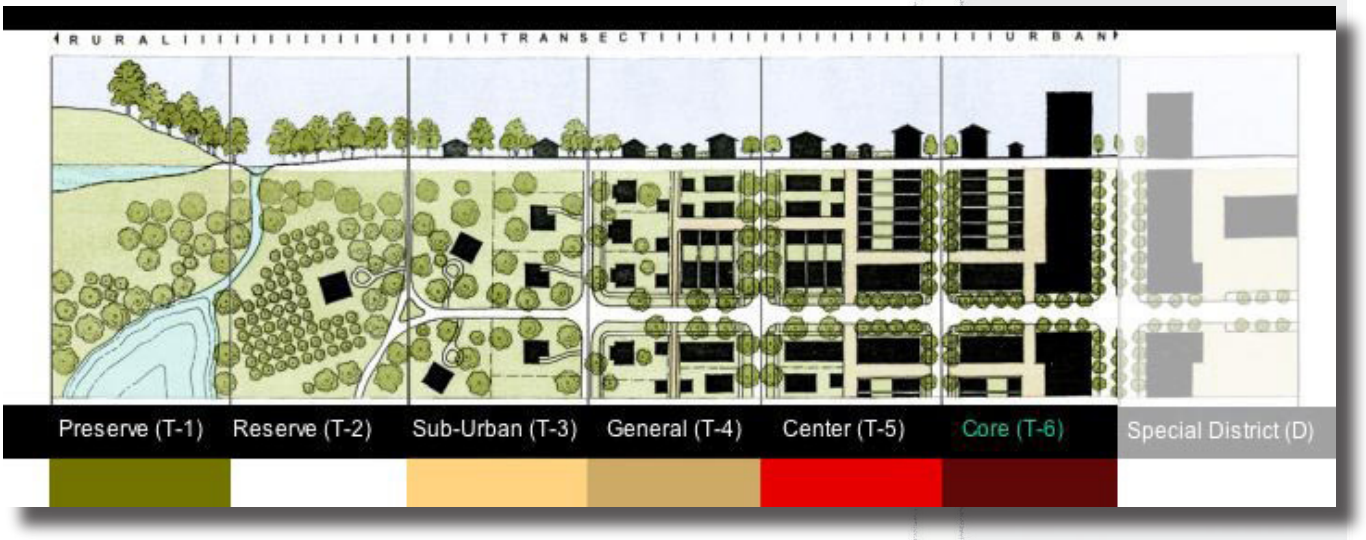


Figure 15

G sectors are further defined by T-zones (Transect Zones). These transects attempt to define the character of the zone by looking at vegetation, building densities, vegetation, housing patterns, street patterns, etc. The T-zones further relate to the SmartCode principles defined by DP&Z. These principles layout the guidelines for design standards in each T-zone.

* *Image from SmartCode v8.0 by DPZ*

Design Process (continued):

Transect Boundaries: G4 - *Urban Infill*

b)Where to Grow *(the transect zone)*:

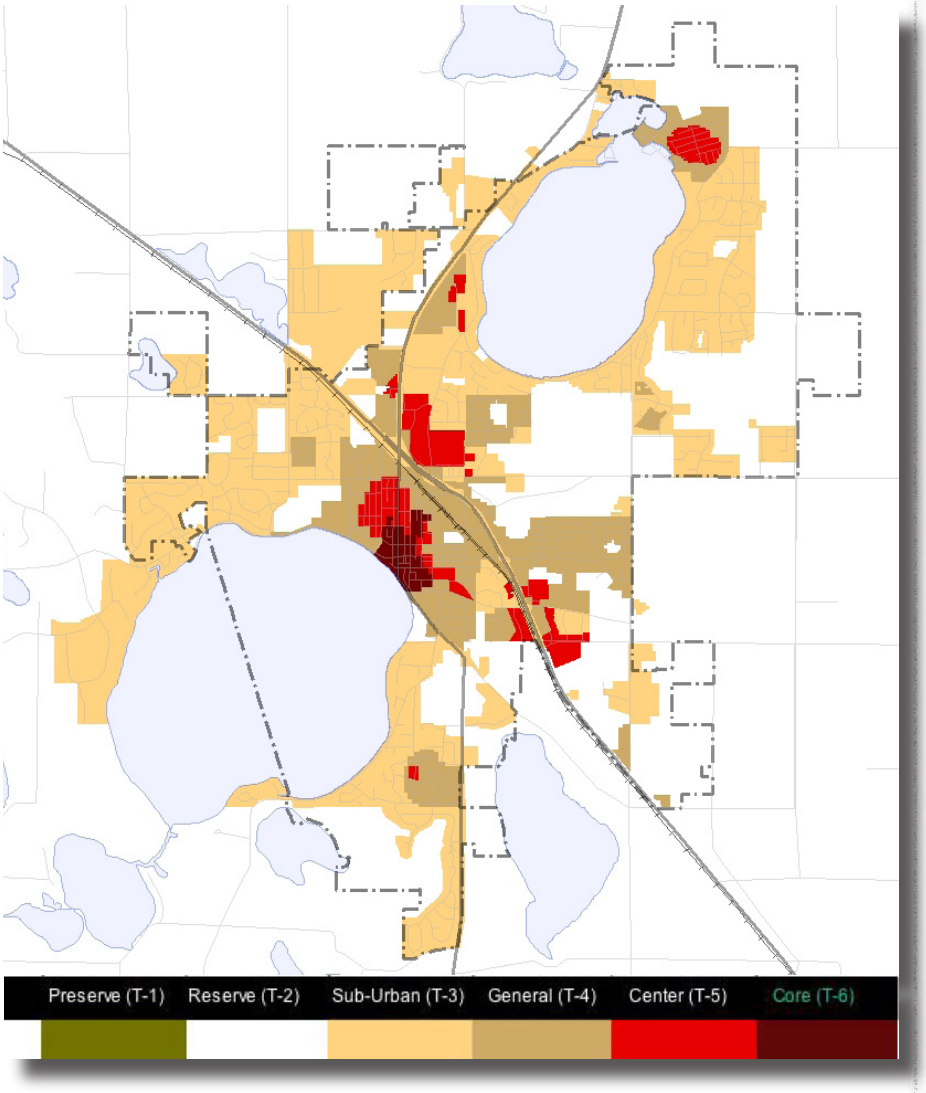


Figure 16

Transect Parameters:

Transect Criteria:

Current Zoning 60%
R7- 2
PUD- 2
B5- 8
R2- 4
R6- 6
R3- 2
R1 2
R4- 2
B3- 4
I3- 4
B4- 6
B6- 4
I1- 4
RA- 2
BW- 4
R-MH- 4
ND- 1

Street Centerline Density 40%
0-15mi/sq.mi – 2
15-20mi/sq.mi – 4
20-25mi/sq.mi – 6
25mi/sq.mi+ - 8

12+ T6_Urban Core
10-12 T5_Urban Center
7-9 T4_General Urban
1-6 T3_Sub-urban

DESIGN PROCESS (CONTINUED):

Transect Boundaries: G3 - *Intended Growth*

b)Where to Grow *(the transect zone)*:

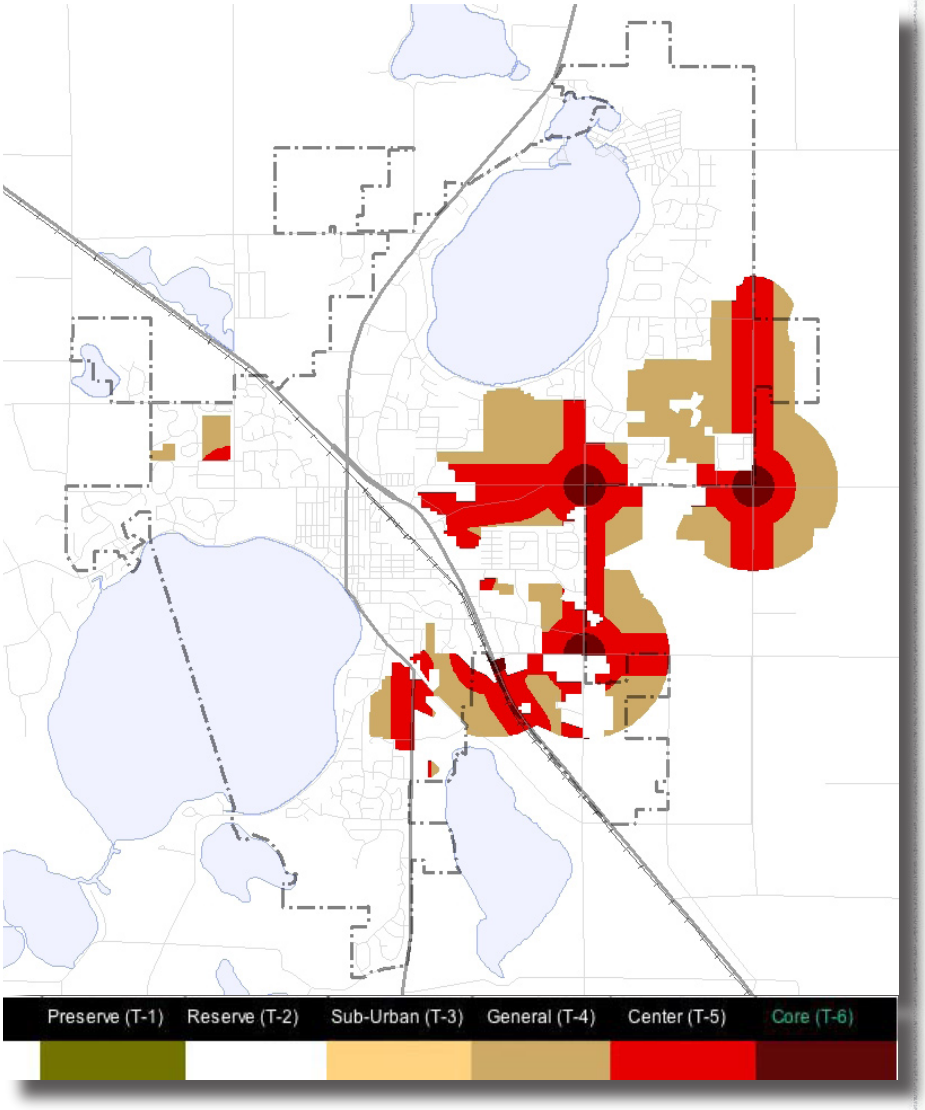


Figure 17

TRANSECT PARAMETERS:

Transect Criteria:

T6 – Urban Core
Land within .125 mi. of major transportation intersections.

T5 – Urban Center
Land within .25 mi. of major transportation intersection nodes as well as .125 mi. along these transportation corridors.

T4 – General Urban
All other land in this sector was defined General Urban

Design Process (continued):

Transect Boundaries: G2 - *Controlled Growth*

b)Where to Grow *(the transect zone)*:

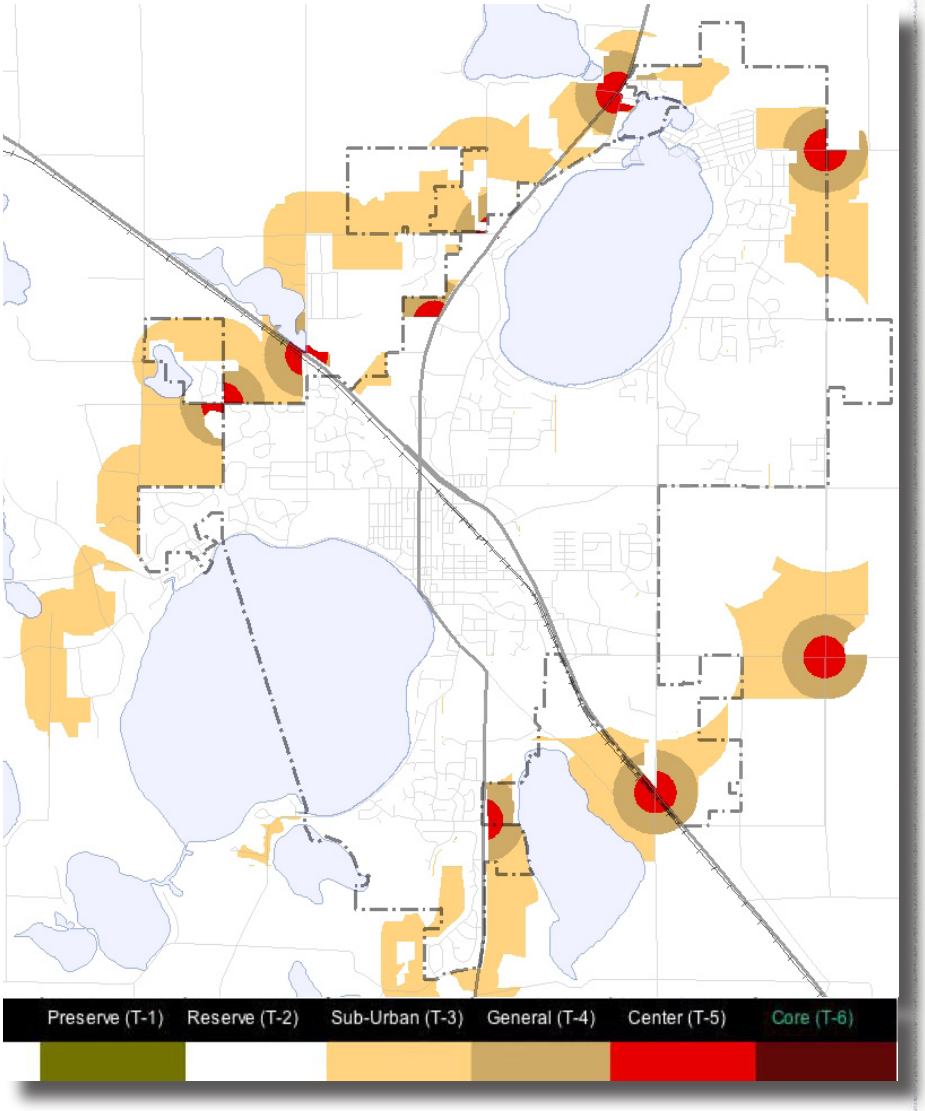


Figure 18

Transect Parameters:

Transect Criteria:

T5 – Urban Center
Land within .125 mi. of secondary transportation intersections.

T4 – General Urban
Land within .25 mi. of major transportation intersections.

T3 – Sub-urban
All other land in this sector was defined Sub-urban.

Design Process (continued):

Transect Boundaries: O1 - O2 - *Open Space Preserve*

b)Where to Grow *(the transect zone)*:

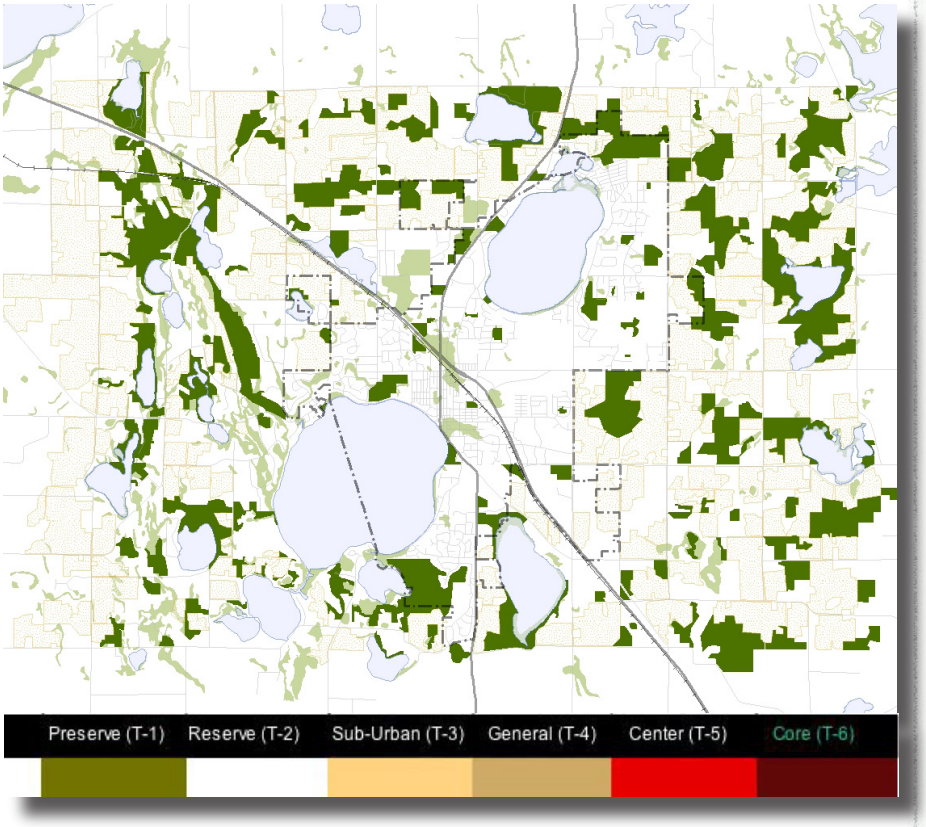


Figure 19

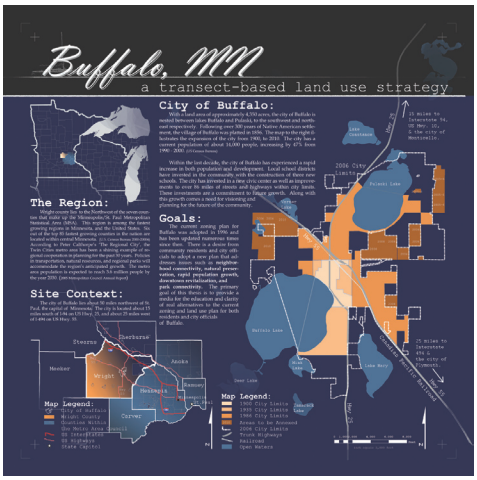
Transect Parameters:

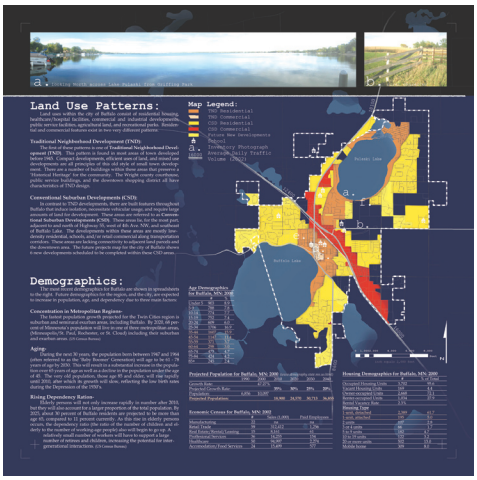
Transect Criteria:

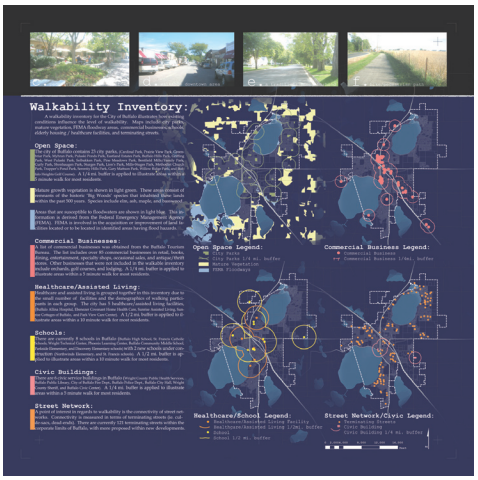
0_1 & 0_2 Sectors T_zones:

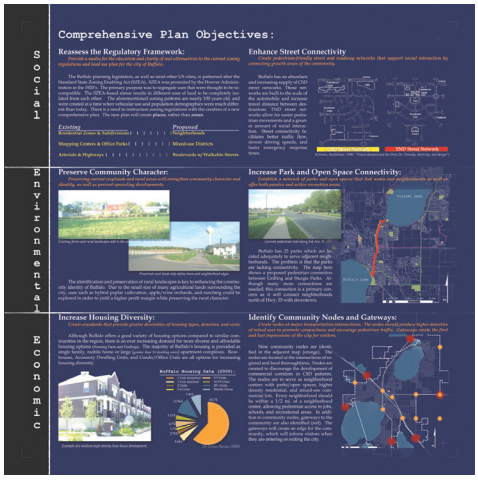
The 01 and 02 sectors include both natural (T1) and rural (T2) transects. All areas within the 01 (preserve) sector will be labeled at T1.

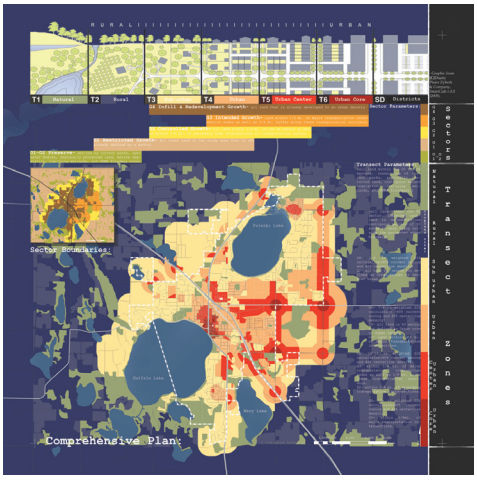
Final Boards

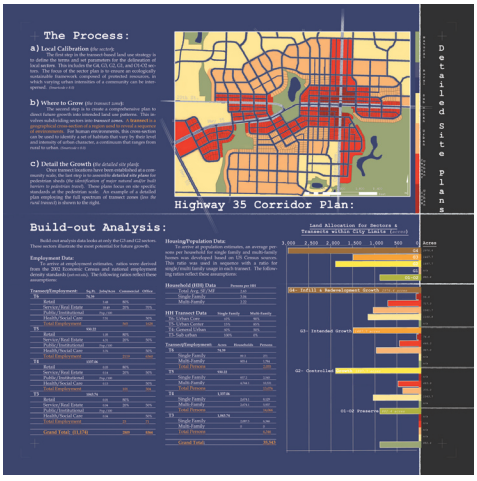


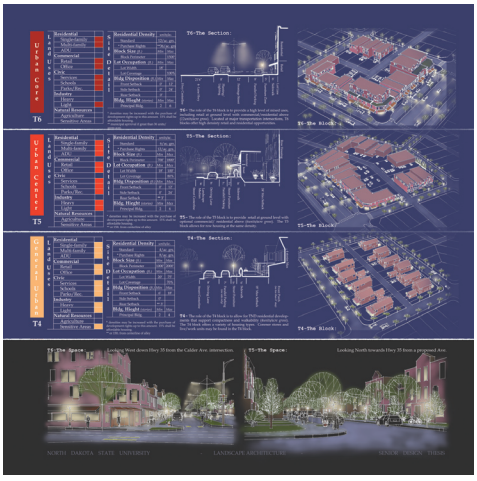


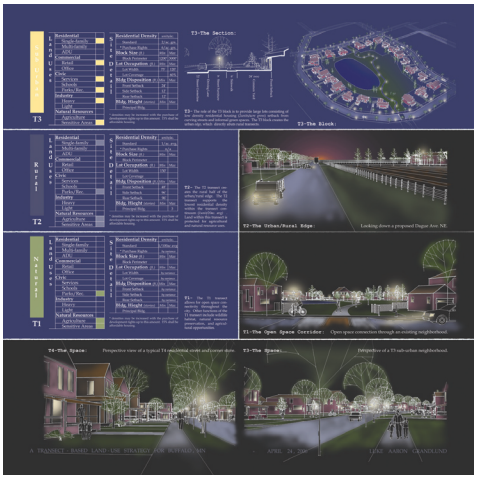




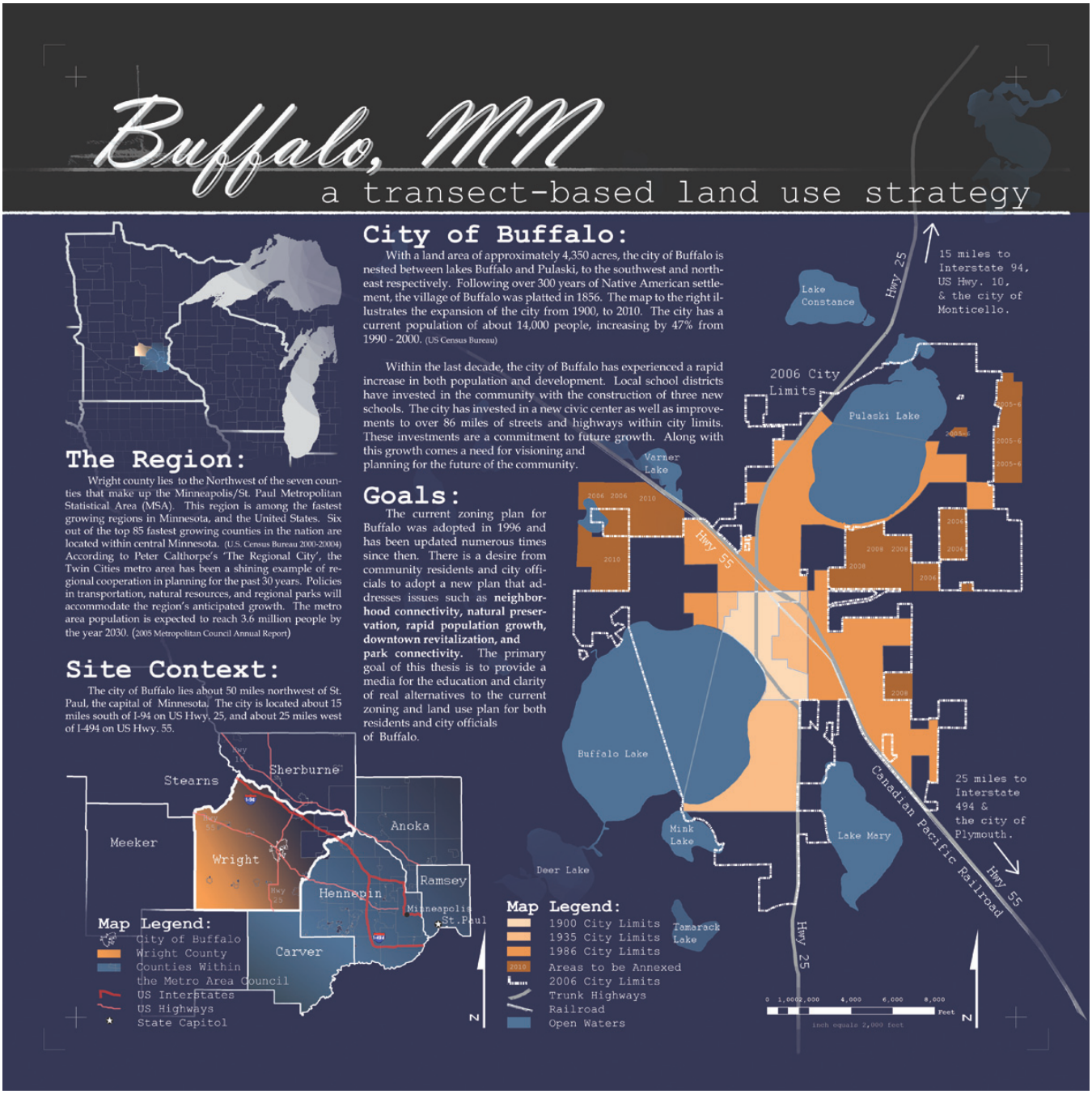








FINAL BOARD LAYOUT: **Presentation View**



Final Board #1 - Site Context:

Land Use Patterns:

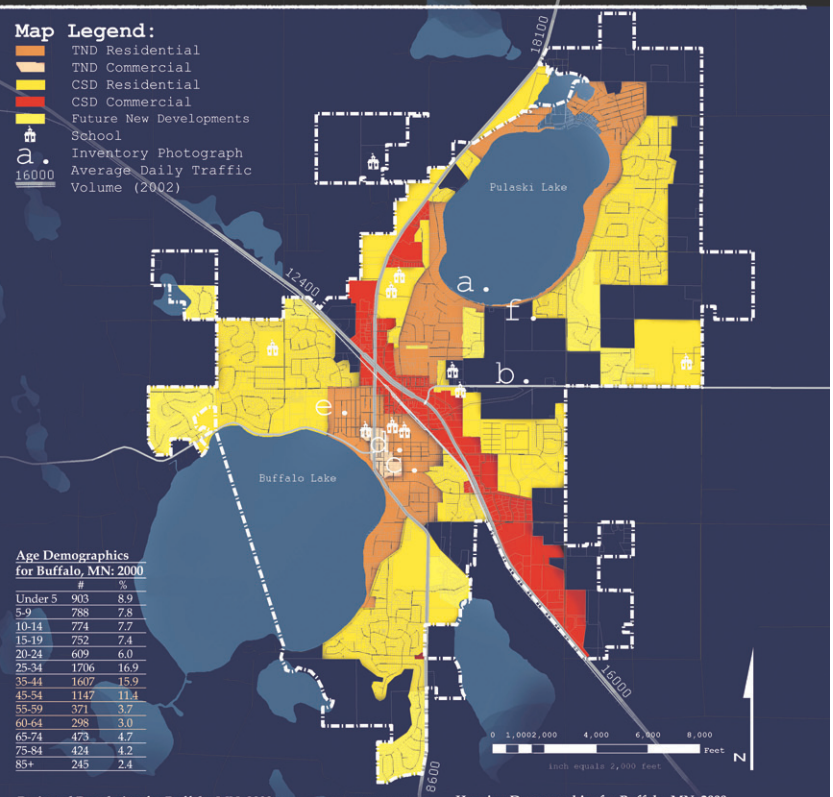
Land uses within the city of Buffalo consist of residential housing, healthcare/hospital facilities, commercial and industrial developments, public service facilities, agricultural land, and recreational parks. Residential and commercial features exist in two very different patterns.

Traditional Neighborhood Development (TND):

The first of these patterns is one of **Traditional Neighborhood Development (TND)**. This pattern is found in most areas of town developed before 1945. Compact developments, efficient uses of land, and mixed use developments are all principles of this old style of small town development. There are a number of buildings within these areas that preserve a 'Historical Heritage' for the community. The Wright county courthouse, public service buildings, and the downtown shopping district all have characteristics of TND design.

Conventional Suburban Developments (CSD):

In contrast to TND developments, there are built features throughout Buffalo that induce isolation, necessitate vehicular usage, and require large amounts of land for development. These areas are referred to as **Conventional Suburban Developments (CSD)**. These areas lie, for the most part, adjacent to and north of Highway 55, west of 4th Ave. NW, and southeast of Buffalo Lake. The developments within these areas are mostly low-density residential, schools, and/or retail commercial along transportation corridors. These areas are lacking connectivity to adjacent land parcels and the downtown area. The future projects map for the city of Buffalo shows 6 new developments scheduled to be completed within these CSD areas.



Demographics:

The most recent demographics for Buffalo are shown in spreadsheets to the right. Future demographics for the region, and the city, are expected to increase in population, age, and dependency due to three main factors:

Concentration in Metropolitan Regions-

The fastest population growth projected for the Twin Cities region is suburban and semirural exurban areas, including Buffalo. By 2020, 68 percent of Minnesota's population will live in one of three metropolitan areas, (Minneapolis/St. Paul, Rochester, or St. Cloud) including their suburban and exurban areas. (US Census Bureau)

Aging-

During the next 30 years, the population born between 1947 and 1964 (often referred to as the 'Baby Boomer' Generation) will age to be 61 - 78 years of age by 2030. This will result in a substantial increase in the population over 65 years of age as well as a decline in the population under the age of 45. The very old population, those age 85 and older, will rise rapidly until 2010, after which its growth will slow, reflecting the low birth rates during the Depression of the 1930's.

Rising Dependency Ration-

Elderly persons will not only increase rapidly in number after 2010, but they will also account for a larger proportion of the total population. By 2025, about 30 percent of Buffalo residents are projected to be more than age 65, compared to 11 percent currently. As this rise in elderly persons occurs, the dependency ratio (the ratio of the number of children and elderly to the number of working-age people) also will begin to go up. A relatively small number of workers will have to support a large number of retirees and children, increasing the potential for intergenerational interactions. (US Census Bureau)

Age Demographics for Buffalo, MN: 2000

	#	%
Under 5	903	8.9
5-9	788	7.8
10-14	774	7.7
15-19	752	7.4
20-24	609	6.0
25-34	1706	16.9
35-44	1607	15.9
45-54	1147	11.4
55-59	371	3.7
60-64	298	3.0
65-74	473	4.7
75-84	424	4.2
85+	245	2.4

Projected Population for Buffalo, MN: 2000 *(www.demography.state.mn.us.html)*

	1990	2000	2010	2020	2030	2040
Growth Rate:		47.27%				
Projected Growth Rate:			35%	30%	25%	20%
Population:	6,856	10,097				
Projected Population:			18,900	24,570	30,713	36,855

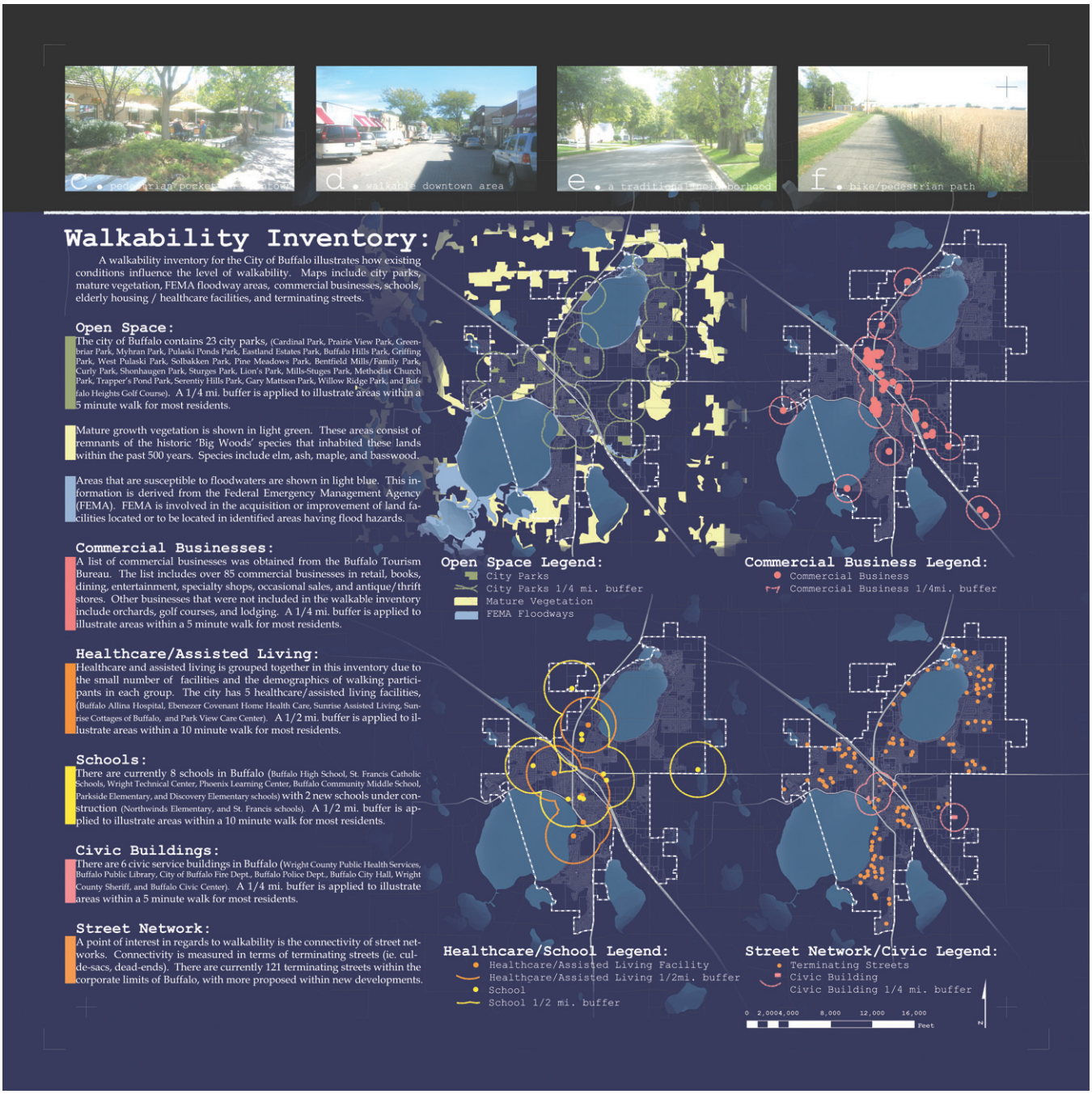
Economic Census for Buffalo, MN: 2002

	#	Sales (1,000)	Paid Employees
Manufacturing	22	na	na
Retail Trade	59	312,412	1,256
Real Estate/Rental/Leasing	15	8,161	61
Proffesional Services	36	14,255	154
Healthcare	50	94,997	2,274
Accomodation/Food Services	24	15,499	577

Housing Demographics for Buffalo, MN: 2000

	#	% of Total
Occupied Housing Units	3,702	95.6
Vacant Housing Units	169	4.4
Owner-occupied Units	2,668	72.1
Renter-occupied Units	1,034	27.9
Rental Vacancy Rate	2.3%	
Housing Type		
1-unit, detached	2,389	61.7
1-unit, attached	195	5.0
2 units	107	2.8
3 or 4 units	66	1.7
5 to 9 units	182	4.7
10 to 19 units	122	3.2
20 or more units	502	13.0
Mobile home	309	8.0

Final Board #2 - Site Specific Inventory:



Final Board #3 - Walkability Inventory:

Social

Environmental

Economic

Comprehensive Plan Objectives:

Reassess the Regulatory Framework:

Provide a media for the education and clarity of real alternatives to the current zoning regulations and land use plan for the city of Buffalo.

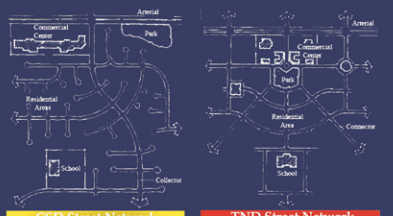
The Buffalo planning legislation, as well as most other US cities, is patterned after the Standard State Zoning Enabling Act (SZEA). SZEA was promoted by the Hoover Administration in the 1920's. The primary purpose was to segregate uses that were thought to be incompatible. The SZEA-based statue results in different uses of land to be completely isolated from each other. The aforementioned zoning patterns are nearly 100 years old, and were created at a time when vehicular use and population demographics were much different than today. There is a need to restructure zoning regulations with the creation of a new comprehensive plan. The new plan will create **places**, rather than **zones**.

Existing	*Proposed*
Residential Zones & Subdivisions	Neighborhoods
Shopping Centers & Office Parks	Mixed-use Districts
Arterials & Highways	Boulevards w/ Walkable Streets

Enhance Street Connectivity

Create pedestrian-friendly street and roadway networks that support social interaction by connecting growth areas of the community.

Buffalo has an abundant and increasing supply of CSD street networks. These networks are built to the scale of the automobile and increase travel distance between destinations. TND street networks allow for easier pedestrian movements and a greater amount of social interaction. Street connectivity facilitates better traffic flow, slower driving speeds, and faster emergency response times.



CSD Street Network | TND Street Network

(Cervero, Kockelman. 1996. "Travel demand and the three Ds: Density, diversity, and design")

Preserve Community Character:

Preserving current croplands and rural areas will strengthen community character and identity, as well as prevent sprawling developments.

Existing farms and rural landscapes add to the community character of Buffalo.

Preserved rural lands help define town and neighborhood edges.

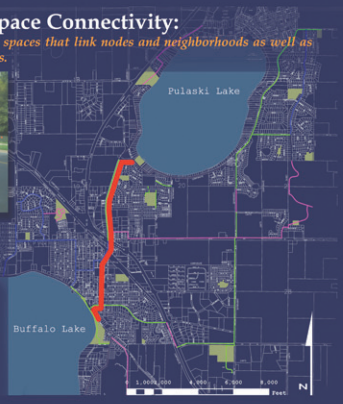
The identification and preservation of rural landscapes is key to enhancing the community identity of Buffalo. Due to the small size of many agricultural lands surrounding the city, uses such as hybrid poplar cultivation, apple/wine orchards, and ranching could be explored in order to yield a higher profit margin while preserving the rural character.

Increase Park and Open Space Connectivity:

Establish a network of parks and open spaces that link nodes and neighborhoods as well as offer both passive and active recreation areas.

Current pedestrian trail along 3rd Ave. N.

Buffalo has 23 parks which are located adequately to serve adjacent neighborhoods. The problem is that the parks are lacking connectivity. The map here shows a proposed pedestrian connection between Griffing and Sturgis Parks. Although many more connections are needed, this connection is a primary concern as it will connect neighborhoods north of Hwy. 55 with downtown.

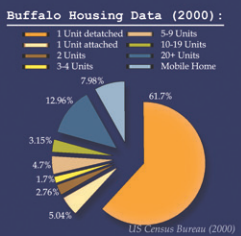


Increase Housing Diversity:

Create standards that provide greater diversities of housing types, densities, and costs.

Although Buffalo offers a good variety of housing options compared to similar communities in the region, there is an ever increasing demand for more diverse and affordable housing options (Housing Facts and Findings). The majority of Buffalo's housing is provided as single family, mobile home or large (*greater than 10 dwelling units*) apartment complexes. Rowhouses, Accessory Dwelling Units, and Condo/Office Units are all options for increasing housing diversity.

Example of a medium-high density Row-house development.



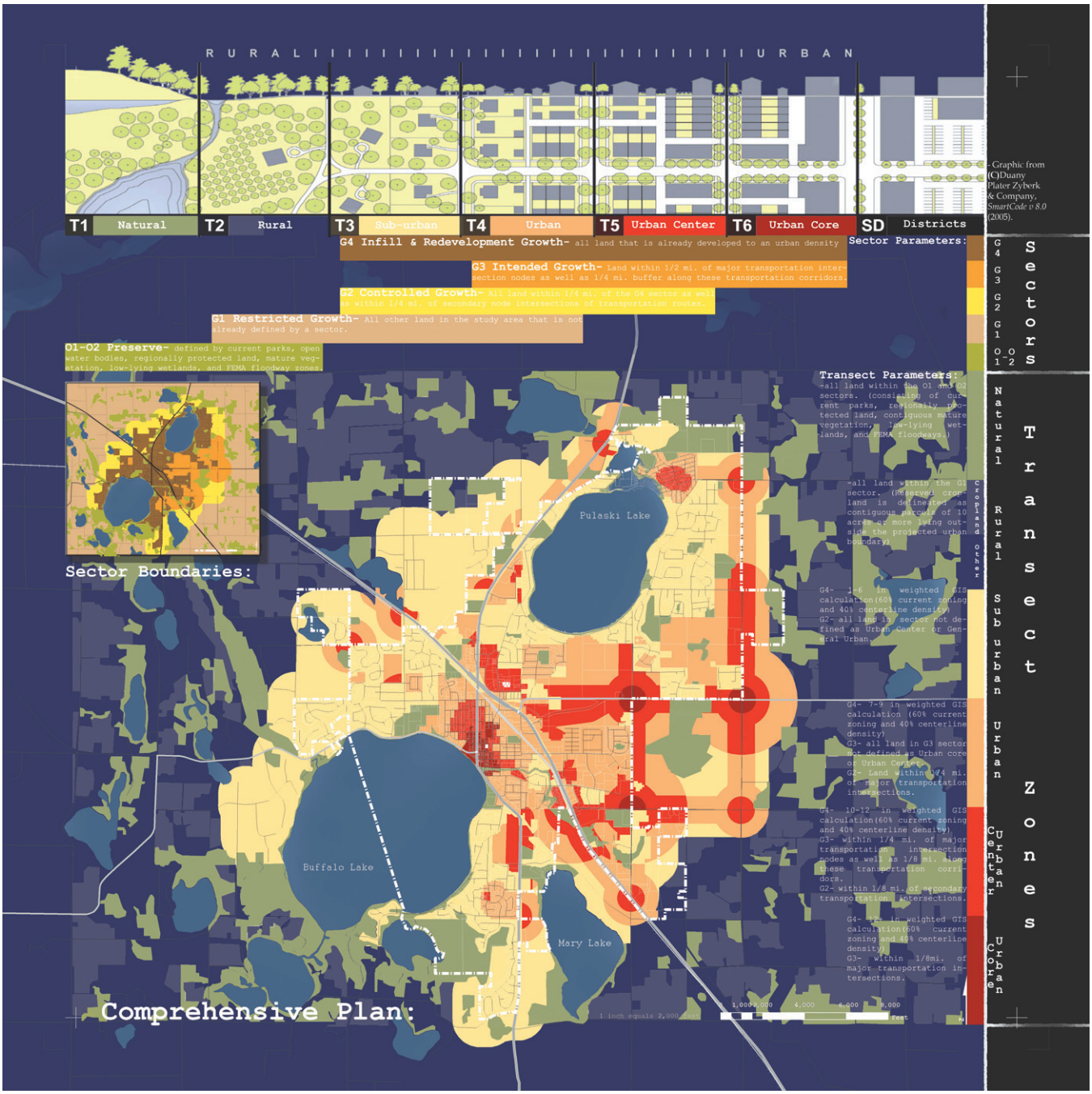
US Census Bureau (2000)

Identify Community Nodes and Gateways:

Create nodes at major transportation intersections. The nodes should produce higher densities of mixed uses to promote compactness and encourage pedestrian traffic. Gateways create the first and last impressions of the city for visitors.

Nine community nodes are identified in the adjacent map (orange). The nodes are located at the intersections of regional and local thoroughfares. Nodes are created to discourage the development of commercial corridors in CSD patterns. The nodes are to serve as neighborhood centers with parks/open spaces, higher density residential, and mixed-use commercial lots. Every neighborhood should be within a 1/2 mi. of a neighborhood center, allowing pedestrian access to jobs, schools, and recreational areas. In addition to community nodes, gateways to the community are also identified (red). The gateways will create an edge for the community, which will inform visitors when they are entering or exiting the city.

Final Board #4 - Comprehensive Plan Objectives:



Final Board #5 - Comprehensive Plan:

The Process:

a) Local Calibration (*the sector*):

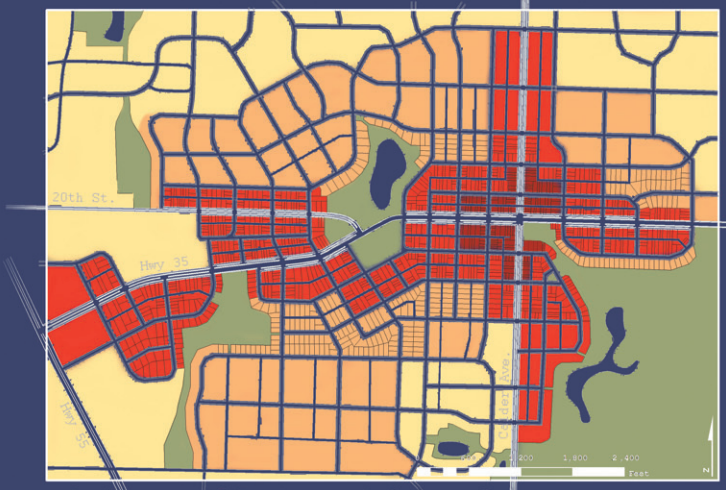
The first step in the transect-based land use strategy is to define the terms and set parameters for the delineation of local ***sectors***. This includes the G4, G3, G2, G1, and O1-O2 sectors. The focus of the sector plan is to ensure an ecologically sustainable framework composed of protected resources, in which varying urban intensities of a community can be interspersed. *(Smartcode v 8.0)*

b) Where to Grow (*the transect zone*):

The second step is to create a comprehensive plan to direct future growth into intended land use patterns. This involves subdividing sectors into ***transect zones.*** A **transect** is a geographical cross-section of a region uesd to reveal a sequence of environments. For human environments, this cross-section can be used to identify a set of habitats that vary by their level and intensity of urban character, a continuum that ranges from rural to urban. *(Smartcode v 8.0)*

c) Detail the Growth (*the detailed site plan*):

Once transect locations have been established at a community scale, the last step is to assemble ***detailed site plans*** for pedestrian sheds (*the identification of major natural and/or built barriers to pedestrian travel*). These plans focus on site specific standards at the pedestrian scale. An example of a detailed plan employing the full spectrum of transect zones (*less the rural transect*) is shown to the right.



Highway 35 Corridor Plan:

Natural
Rural
Sub Urban
Urban
General Urban
Urban Core

Detailed Site Plans

Build-out Analysis:

Build-out analysis data looks at only the G3 and G2 sectors. These sectors illustrate the most potential for future growth.

Employment Data:

To arrive at employment estimates, ratios were derived from the 2002 Economic Census and national employment density standards (*web.mit.edu*). The following ratios reflect these assumptions:

Transect/Employment:	Sq.Ft.	Jobs/Acre	Commercial	Office
T6	74.39			
Retail		3.48	80%	
Service/Real Estate		18.49	20%	70%
Public/Institutional		Pop./100		
Health/Social Care		7.51		30%
Total Employment			565	1628
T5	930.22			
Retail		1.05	80%	
Service/Real Estate		4.31	20%	50%
Public/Institutional		Pop./100		
Health/Social Care		3.76		50%
Total Employment			2119	6360
T4	1337.06			
Retail		0.03	80%	
Service/Real Estate		0.14	20%	50%
Public/Institutional		Pop./100		
Health/Social Care		0.13		50%
Total Employment			101	304
T3	1043.74			
Retail		0.01	80%	
Service/Real Estate		0.04	20%	50%
Public/Institutional		Pop./100		
Health/Social Care		0.04		50%
Total Employment			23	71
Grand Total: (11,174)			2809	8364

Housing/Population Data:

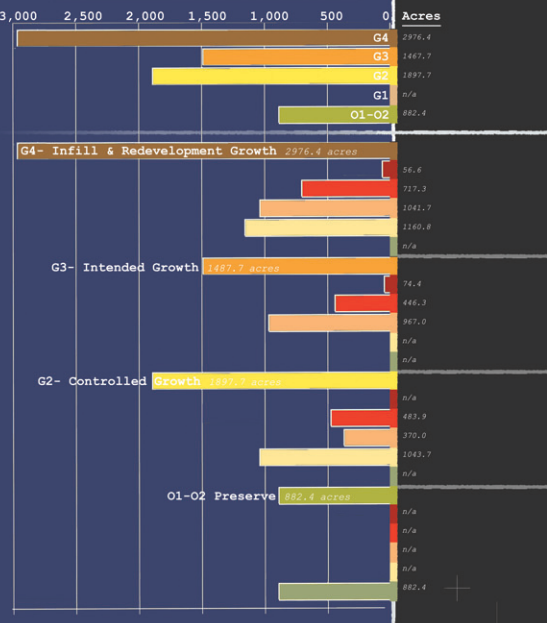
To arrive at population estimates, an average persons per household for single family and multi-family homes was developed based on US Census sources. This ratio was used in sequence with a ratio for single/multi family usage in each transect. The following ratios reflect these assumptions:

Household (HH) Data	Persons per HH
Total Avg. SF/MF	2.63
Single Family	3.04
Multi-Family	2.22

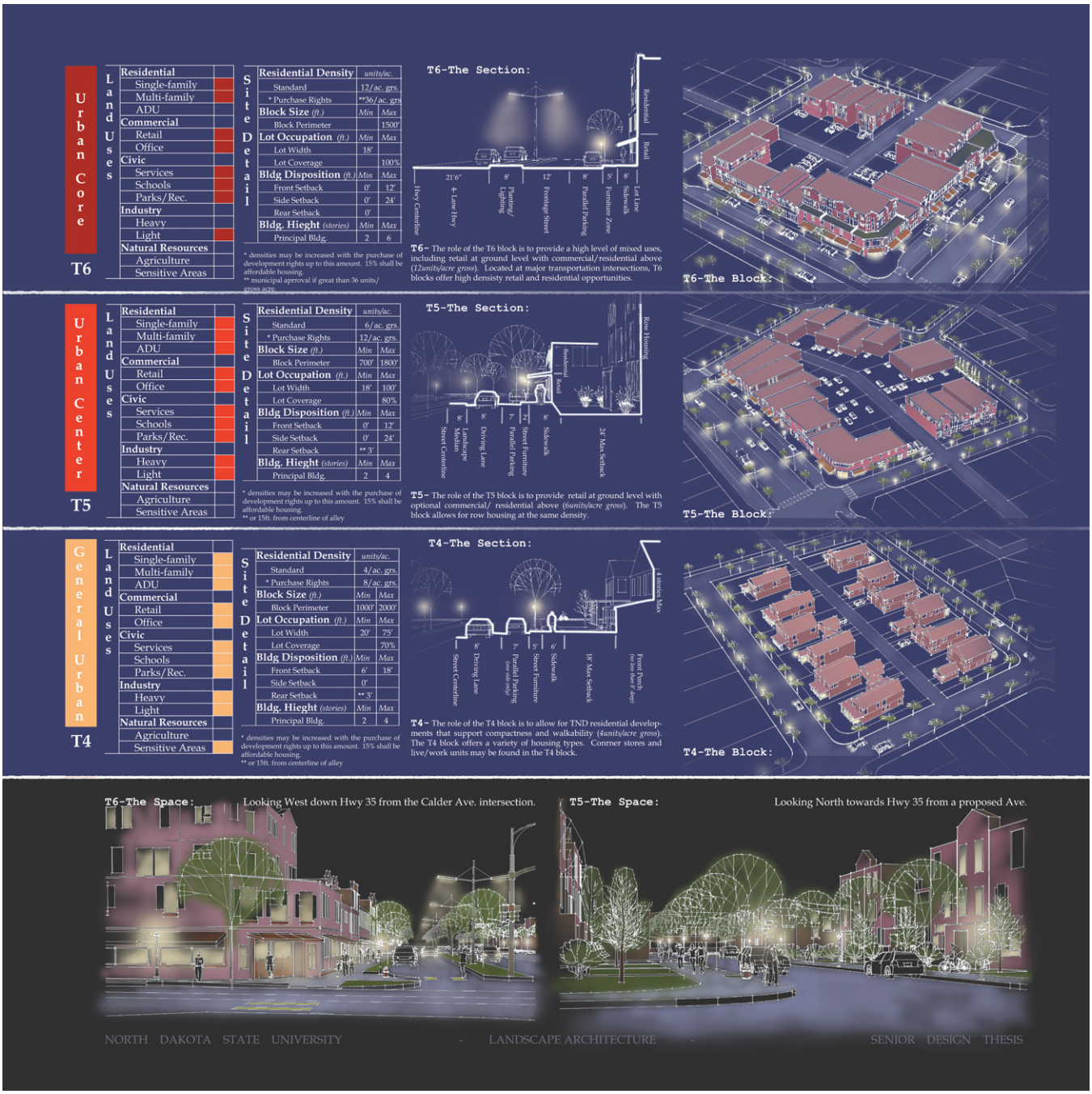
HH Transect Data	Single Family	Multi-Family
T6- Urban Core	10%	90%
T5- Urban Center	15%	85%
T4- General Urban	50%	50%
T3- Sub urban	100%	0%

Transect/Employment:	Acres	Households	Persons
T6	74.39		
Single Family		89.3	271
Multi-Family		803.4	1,784
Total Persons			2,055
T5	930.22		
Single Family		837.2	2,545
Multi-Family		4,744.1	10,531
Total Persons			13,076
T4	1,337.06		
Single Family		2,674.1	8,129
Multi-Family		2,674.1	5,937
Total Persons			14,066
T3	1,043.74		
Single Family		2,087.5	6,346
Multi-Family		0	0
Total Persons			6,346
Grand Total:			35,543

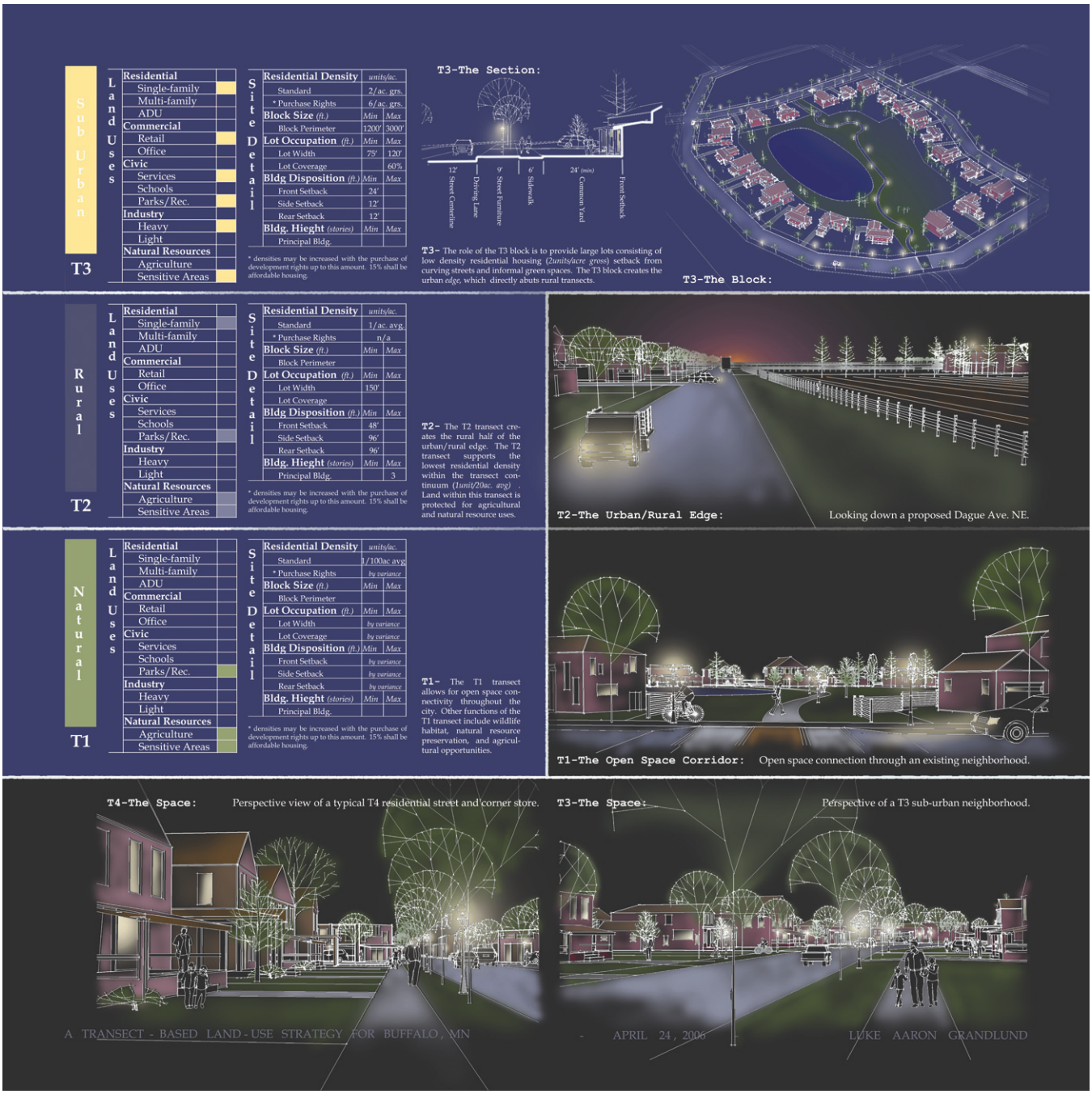
Land Allocation for Sectors & Transects within City Limits (*acres*)



Final Board #6 - The Process:



Final Board #7 - Design Detail:



Final Board #8 - Design Detail:

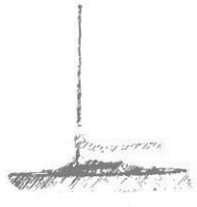
APPENDIX A:

Water Quality Monitoring:

Contaminant	MCLG	Level Found MCL			Typical Source of Contaminant
(units)		Range 2003	Average /Result*		
Total Coliform Bacteria---	0 ---	>1	NA	---	Naturally present in the environment
Fluoride (ppm)	4.0	4.0	1.0-1.2	1.14	State of Minnesota requires all municipal water systems to add fluoride to the drinking water to promote strong teeth; Erosion of natural deposits.
Barium (ppm)	2.0	2.0	N/A	0.08	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.
Nitrite (as Nitrogen) (ppm)	1.0	1.0	N/A	0.34	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.

*This is the value used to determine compliance with federal standards. It sometimes is the highest value detected and sometimes is an average of all the detected values.

Contaminant (units)	MCLG	AL	90% Level	# sites over AL	Typical Source of Contaminant
Lead(ppb)	NA	15	4.0	0 out of 20	Corrosion of household plumbing systems; Erosion of natural deposits.
Copper (ppm)	NA	1.3	0.911	0 out of 20	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives.



APPENDIX A:

Water Quality Monitoring (continued):

Contaminant (units)

Level Found

Range (2003)

Average/ Result

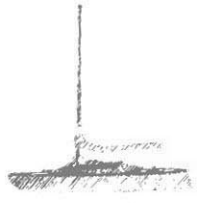
Typical Source of Contaminant

Radon
16.0 – 38.0
30.75
Erosion of Natural Deposits

Some contaminants do not have Maximum Contaminant Levels established for them. These "unregulated contaminants" are assessed using state standards known as health risk limits to determine if they pose a threat to human health. If unacceptable levels of an unregulated contaminant are found, the response is the same as if an MCL has been exceeded; the water system must inform its customers and take other corrective actions. In the table that follows are the unregulated contaminants that were detected:

Contaminant (units)	Level Found Range	Average/ Result	Typical Source of Contaminant
Sodium (ppm)	N/A	6.5	Erosion of natural deposits.
Sulfate (ppm	N/A	13.0	Erosion of natural deposits.

Minnesota Pollution Control Agency, retrieved on December 11, 2005:
http://www.pca.state.mn.us/water/greatermetro-gwp.html



APPENDIX B:

Residential Demographics:

All data for residential demographics of Buffalo were obtained from the US Census Bureau. More information can be obtained from (U.S. Bureau of the Census, Census 2000).

From the years 2003-2004, Wright county Minnesota was the 85th fastest growing county in the nation, growing from 102, 829 to 106,889, a change of 4%. The size of the community is also growing in acres. Total land within the city limits in 1986 was approximately 3,263 acres. The total city limits in 2004 consumes approximately 5,980 acres. The following is a table of demographic data relative to the theoretical premise.

General Population Data

	2000 Census Total	% of 2000	1990 Census Total	% of 1990	Change from 1990 to 2000
Population	10,097		6,856		47.27%
Male	4,951	49.03%	3,264	47.61%	51.69%
Female	5,146	50.97%	3,592	52.39%	43.26%
Relationship					
Total Population	10,097		6,856		47.27%
Population in Households	9,749	96.55%	6,551	95.55%	48.82%
Householders	3,702	36.66%	2,445	35.66%	51.41%
Spouse	2,069	20.49%	1,412	20.60%	46.53%
Child	3,355	33.23%	2,344	34.19%	43.13%
Other Relatives	192	1.90%	114	1.66%	68.42%
Non-relatives	431	4.27%	236	3.44%	82.63%
Household by Type					
Total Households	3,702		2,445		51.41%
Family Households	2,585	69.83%	1,722	70.43%	50.12%
Married Couples	2,069	55.89%	1,412	57.75%	46.53%
Married with Children	1,109	29.96%	603	24.66%	83.91%
Non-family Households	1,117	30.17%	723	29.57%	54.50%

Education Data

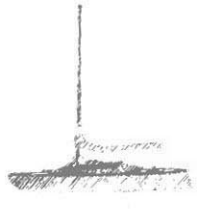
	2000 Census	% of 2000 Total	1990 Census	% of 1990 Total	Change from 1990 to 2000
School Enrollment	2,572		1,637		57.12%
Pre-Primary	320	12.44%	125	7.64%	156.00%
Elementary & Secondary	1,892	73.56%	1,227	74.95%	54.20%
College & Graduate	360	14.00%	285	17.41%	26.32%
Educational Attainment					
(population 25 & over)	6,275		4,101		53.01%
Less than 9th Grade	327	5.21%	481	11.73%	-32.02%
9th to 12th, No Diploma	463	7.38%	349	8.51%	32.66%
High School graduate	1,975	31.47%	1,549	37.77%	27.50%
Some College, no degree	1,600	25.50%	720	17.56%	122.22%
Associate Degree	455	7.25%	325	7.92%	40.00%
Bachelor's Degree	1,094	17.43%	472	11.51%	131.78%
Graduate or Professional Degree	361	5.75%	205	5.00%	76.10%
Pct. High School Grad. or Higher	87%		80%		9.58%

APPENDIX B:

Residential Demographics (continued):

Work, Income & Poverty Data

	2000 Census Total	% of 2000	1990 Census Total	% of 1990	Change from 1990 to 2000	
Employment Status						
In Civilian Labor Force	5,430		3,498		55.23%	
Employed	5,202		3,350		55.28%	
Unemployed	228		148		54.05%	
Percent Unemployed	4.20%		4.23%		-.73%	
Commuting to Work						
Drove Alone	4,043	78.86%	2,620	78.58%	54.31%	
Carpooled	826	16.11%	497	14.91%	66.20%	
Public Transportation	13	.25%	10	.30%	30.00%	
Walked 55	1.07%	95	2.85%	-42.11%		
Other Means	42	.82%	16	.48%	162.50%	
Worked at Home	148	2.89%	96	2.88%	54.17%	
Mean Travel Time to Work	28.00		23.58		18.74%	(in minutes)
Household Income						
Households	3,710		2,459		50.87%	
Less than $10,000	194	5.23%	322	13.09%	-39.75%	
$10,000 to $14,999	147	3.96%	220	8.95%	-33.18%	
$15,000 to $24,999	419	11.29%	521	21.19%	-19.58%	
$25,000 to $34,999	525	14.15%	418	17.00%	25.60%	
$35,000 to $49,999	590	15.90%	485	19.72%	21.65%	
$50,000 to $74,999	968	26.09%	356	14.48%	171.91%	
$75,000 to $99,999	484	13.05%	66	2.68%	633.33%	
$100,000 to $149,999	251	6.77%	46	1.87%	445.65%	
Over $150,000	132	3.56%	25	1.02%	428.00%	
Median Household Income	$49,573		$27,721		78.83%	
Per Capita Income	$21,424		$13,198		62.33%	
Poverty Status						
Families below Poverty Level	119		86		38.37%	
with Children under 18	103		84		22.62%	
with Children under 5	50		69		-27.54%	
Female Householder Families below Poverty Level						
	84		43		95.35%	
with Children under 18	84		43		95.35%	
with Children under 5	42		36		16.67%	
Individuals below Poverty Level						
	492		488		.82%	
18 years and over	313		299		4.68%	
65 years and over	47		90		-47.78%	

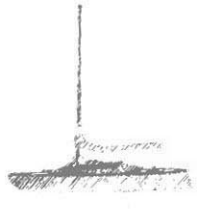


APPENDIX B:

Residential Demographics (continued):

Race, Ethnicity & Language Data

	2000 Census Total	% of 2000	1990 Census Total	% of 1990	Change from 1990 to 2000
Race*					
White Alone	9,768	96.42%	6,794	99.10%	
Black Alone	53	.52%	0	0.00%	
Am. Indian Alone	49	.48%	13	.19%	
Asian Alone	68	.67%	49	.71%	
Other Race Alone	31	.31%	0	0.00%	
More than one race	128	1.26%			
Hispanic/Latino Origin					
Hispanic/Latino	112	1.11%	43	.63%	
White not Hispanic	9,701	95.76%	6,751	98.47%	
Percent Minority	4.24%		1.53%		
Residence (5 Years Earlier)					
Same House	4,118	44.83%	2,342	37.57%	75.83%
Different House in U.S.	5,048	54.95%	3,847	61.72%	31.22%
Same County	2,361	25.70%	1,920	30.80%	22.97%
Different County	2,687	29.25%	1,927	30.92%	39.44%
Same State	1,851	20.15%	1,452	23.30%	27.48%
Different State	836	9.10%	475	7.62%	76.00%
Elsewhere	20	.22%	44	.71%	-54.55%
Nativity					
Native U.S. Citizen	10,046	99.16%	6,805	99.26%	47.63%
Born in U.S.	10,016	98.86%	6,720	98.02%	49.05%
Born in Minnesota	7,932	78.29%	5,599	81.67%	41.67%
Born in Different State	2,084	20.57%	1,121	16.35%	85.91%
Born Outside U.S.	30	.30%	85	1.24%	-64.71%
Foreign Born	85	.84%	51	.74%	66.67%
Language Spoken at Home (population 5 & over)					
English Only	8,972	97.67%	5,988	96.07%	49.83%
Language other than English	214	2.33%	245	3.93%	-12.65%
Speak English less than very well	53	.58%	42	.67%	26.19%

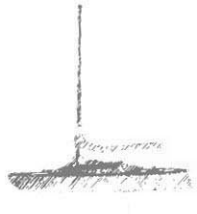


APPENDIX B:

Residential Demographics (continued):

Housing Data

	2000 Census Total	% of 2000	1990 Census Total	% of 1990	Change from 1990 to 2000
General Housing Data					
Total Housing Units*	3,871		2,608		48.43%
Occupied	3,702	95.63%	2,445	93.75%	51.41%
Vacant	169	4.37%	163	6.25%	3.68%
Vacant Seasonal	56	1.45%			
Homeowner Vacancy Rate	.80				
Rental Vacancy Rate	2.30				
Owner-occupied	2,668	72.07%	1,617	66.13%	65.00%
Renter-occupied	1,034	27.93%	828	33.87%	24.88%
Units Per Structure					
Total Housing Units*	3,872		2,608		48.43%
1 Unit, Detached	2,389	61.70%	1,495	57.32%	59.80%
1 Unit, Attached	195	5.04%	20	.77%	875.00%
2 Units	107	2.76%	111	4.26%	-3.60%
3-4 Units	66	1.70%	36	1.38%	83.33%
5-9 Units	182	4.70%	161	6.17%	13.04%
10-19 Units	122	3.15%	178	6.83%	-31.46%
20 or more Units	502	12.96%	333	12.77%	50.75%
Mobile Home	309	7.98%	251	9.62%	23.11%
Other	0	0.00%	23	.88%	0.00%
Bedrooms per Unit					
Total Housing Units*	3,872		2,608		48.43%
No Bedrooms	162	4%	19	0%	752.63%
1 Bedroom	458	11.83%	419	10.82%	9.31%
2 Bedrooms	1,135	29.31%	786	20.30%	44.40%
3 Bedrooms	1,380	35.64%	992	25.62%	39.11%
4 Bedrooms	685	17.69%	327	8.45%	109.48%
5+ Bedrooms	52	1.34%	65	1.68%	-20.00%
Year Structure Built					
Previous 15 Months	180	4.65%	195	7.48%	-7.69%
2 to 5 Years Previous	629	16.24%	351	13.46%	79.20%
5 to 10 Years Previous	448	11.57%	274	10.51%	63.50%
10 to 20 Years Previous	691	17.85%	728	27.91%	-5.08%
20 to 30 Years Previous	731	18.88%	406	15.57%	80.05%
More Than 30 Years Previous	1,193	30.81%	654	25.08%	82.42%
Pre-1940	419	10.82%	367	14.07%	14.17%

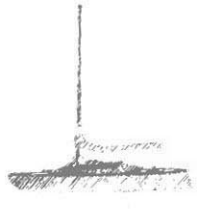


APPENDIX B:

Residential Demographics (continued):

Housing Data (continued)

	2000 Census Total	% of 2000	1990 Census Total	% of 1990	Change from 1990 to 2000
Year Householder Moved In					
Previous 15 Months	842	21.75%	672	25.77%	25.30%
2 to 5 Years Previous	1,356	35.02%	848	32.52%	59.91%
5 to 10 Years Previous	659	17.02%	259	9.93%	154.44%
10 to 20 Years Previous	443	11.44%	427	16.37%	3.75%
20 to 30 Years Previous	260	6.71%	132	5.06%	96.97%
More Than 30 Years Previous	143	3.69%	107	4.10%	33.64%
Value of Owner-Occupied Units					
Less Than $50,000	10	.26%	115	4.41%	-91.30%
$50,000 to $99,999	459	11.85%	958	36.73%	-52.09%
$100,000 to $149,999	1,039	26.83%	141	5.41%	636.88%
$150,000 to $199,999	386	9.97%	35	1.34%	1,002.86%
$200,000 to $299,999	265	6.84%	15	.58%	1,666.67%
$300,000 to $499,999	27	.26%	0	0.00%	0.00%
More Than $500,000	19	.49%	0	0.00%	0.00%
Median Value 129,300	72,500		78.34%		
Gross Rent of Rented Units					
Less Than $200	59	5.71%	135	16.30%	-56.30%
$200 to $299	84	8.12%	124	14.98%	-32.26%
$300 to $499	275	26.60%	345	41.67%	-20.29%
$500 to $749	504	48.74%	191	23.07%	163.87%
$750 to $999	71	6.87%	16	1.93%	343.75%
$1,000 or More	30	2.90%	6	.72%	400.00%
No Cash Rent	23	2.22%	11	1.33%	109.09%
Median Rent	541		406		33.25%



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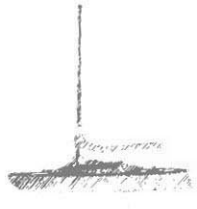

Luke A. Grandlund

"***Party*** while you're in school,
Travel while you're still young,
Love when you're able,
and ***Work*** only when you must."

Buffalo, NY

a transect-based land use strategy

A little ditty to those who follow...

"respect those who have gone before you. For it is in their success and failure that you will find the inspiration and humor to finish. Thesis is what you make it.. Don't loss sleep, friendships, or sanity pursuing such a modest goal... Good Luck!!!

-Lucas A. Grandlund