Appendix H
I-35E MnPASS Extension Land Use Study Support, Encourage, and Enhance Transit & Carpool Use
I-35E MnPASS Extension
Land Use Study
Support, Encourage, and Enhance
Transit & Carpool Use
ACKNOWLEDGEMENTS

This project was produced and completed by The Center for Changing Landscapes (CCL) and the Department of Forest Resources, College of Food, Agricultural, and Natural Resource Sciences and College of Design at the University of Minnesota. Funding for this project was received from the Federal Highway Administration's Value Pricing Pilot Program

The project contributors include:

Center for Changing Landscapes Staff
   Elissa Brown, Research Fellow
   Stephanie Erwin, Research Fellow
   Emily Lowery, Research Fellow
   Janes Pettinari, Senior Research Fellow
   Mary Vogel, Co-Director, Principal Investigator
   Carlos Fernandez, Aune Fernandez Landscape Architects

Special Thanks to:
   Lynne Bly, Multimodal Planning Director, MnDOT Metro District
   Brad Larsen, MnPASS Policy & Planning Program Director, MnDOT

This publication is available at: http://ccl.design.umn.edu/

© Copyright 2015
For alternative formats, please direct requests to:
Center for Changing Landscapes
151 Rapson Hall
89 Church Street
Minneapolis, MN 55455
612.624.7557

All images provided by the Center of Changing Landscapes, except the following: Historic maps were sourced from the Minnesota Historical Society’s Minnesota Maps collection; City plans were sourced from their respective cities.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXECUTIVE SUMMARY</td>
<td>5</td>
</tr>
<tr>
<td>RESEARCH QUESTION, GOAL + OBJECTIVE</td>
<td>7</td>
</tr>
<tr>
<td>PROJECT APPROACH</td>
<td>9</td>
</tr>
<tr>
<td>OPPORTUNITIES + CHALLENGES</td>
<td>13</td>
</tr>
<tr>
<td>PREVAILING REGIONAL PATTERNS</td>
<td>31</td>
</tr>
<tr>
<td>// Transportation Networks</td>
<td></td>
</tr>
<tr>
<td>// Land + Built Structures</td>
<td></td>
</tr>
<tr>
<td>// Hydrological Systems</td>
<td></td>
</tr>
<tr>
<td>DESIGN STRATEGIES</td>
<td>63</td>
</tr>
</tbody>
</table>
## DESIGN SITES

### LITTLE CANADA // I-694
- Community Character
- Inventory + Analysis
- Design Concepts: Reshaping the Commercial Center
- Design Concepts: Strengthening the Civic Heart

### VADNAIS HEIGHTS // Cty Rd E
- Community Character
- Inventory + Analysis
- Design Concepts: Spaces to Promote Carpoools + Transit Use

### CENTERVILLE // Cty Rd 14
- Community Character
- Inventory + Analysis
- Design Concepts: Preserving + Enhancing Downtown

### HUGO // Cty Rd 14
- Community Character
- Inventory + Analysis
- Design Concepts: Park + Pool to Promote Transit Use
- Design Concepts: Gather + Go to Promote Transit Use

## APPENDIX
- Metropolitan Council Regional Transportation Plan Policy Excerpt
- Presentation: December 9, 2014
- Corridor Lessons: Observations from Conversations with I-35E Extension City Officials
- Corridor Maps
MnPASS I-35E Extension Study: Land Use Strategies for Increasing Transit, Vanpool, and Carpool Use

This study is funded by the Federal Highway Administration’s Value Pricing Pilot Program and is one of three related studies that addressed the practicality of extending MnPASS on Interstate 35E (I-35E) between Little Canada Road and County Road 96, and ultimately northward to its intersection with County Road 14.

Along the proposed I-35 E MnPASS Corridor Extension route land use patterns, community forms, and transportation systems in select communities were studied to identify land use and community design strategies to support, enhance, and encourage transit, vanpool, and carpool use. Ways to strengthen community connectedness through bicycle and pedestrian pathways between existing and new developments in the Corridor were also explored. The communities selected all had access to I-35 E and to regional Park-and-Ride facilities. They represent a variety of community types that presented diverse challenges and opportunities. The selected Corridor communities and focus areas are Little Canada (Little Canada Road), Vadnais Heights (County Road E), and Hugo and Centerville (County Road 14).

Because communities that have few continuous streets and roads and many residential areas of low density, such as those studied, are not able to sustain robust transit service, the study addresses how to create areas of concentrations of people and activities as sources of trip origins and trip destinations. The strategies presented include increasing density, increasing mixed-use land use, creating or using existing neighborhood-sites as gathering spaces for carpool and vanpool pickups that draw residents to them, and improving community connectivity through bicycle and pedestrian pathways. No in-depth comprehensive community plan is offered. Within its limited budget, the work offers representative design concepts and prototypes that respond to the challenges and opportunities offered by a limited number of specific suburban and emerging suburban locations. Because many suburban and emerging suburban communities have similar characteristics, challenges, and opportunities, the prototypes are developed for application in similar environments as well.
Research Question
What land use strategies are needed to create community form in developed and developing Twin City Metropolitan Area suburban communities that foster transit use and carpooling and strengthen communities?

Goal
Using community sites within the Interstate I-35E Corridor (I-35E) as prototypes, demonstrate land uses that support, encourage, and enhance transit and carpool use in each community and identify barriers to transforming auto-oriented communities into more transit-friendly and carpool-friendly communities.

Objective
Studying the Corridor communities associated with the three chosen I-35E intersections to identify design concepts and strategies that illustrate options for Corridor communities to facilitate and foster greater transit, carpool, and vanpool use of the MnPASS investments in the I-35E Corridor.
PROJECT APPROACH


**Select Corridor Cities**

Not all Corridor communities are included in this study; the study was limited to communities associated with three I-35E intersections. Selection was based upon the study and analysis of the Corridor’s physical environment and Corridor community comprehensive plans. County Road 14, County Road E, and Little Canada Road I-35 E intersections were chosen. The communities associated with these intersections are:

- Centerville, Hugo, and Lino Lakes *(County Road 14)*;
- Vadnais Heights *(County Road E)*; and
- Little Canada *(Little Canada Road)*.

Each community is both unique and has a number of characteristics that are typical of suburban environments. The communities are diverse representing a variety of types: first ring, second ring, and outer ring suburbs that are classified either as suburban or emerging suburban edge.

**Background Scan**

The study design team began its analysis of these locations through documentation review informed by conversations with local officials. Sources include Metropolitan Council plans and documents, community comprehensive plans, site visits, map analyses, newspaper articles, and planning/design literature.

Listening sessions with Corridor City staff members also helped study leaders learn about each community. (A summary of these listening sessions is in the appendix.)

**Recent and Ongoing Work in Support of Multi-Modal Transportation**

A lot has happened already in the Corridor to support multi-modal transportation in addition to the region’s large investments in Park-and-Ride facilities and MnPASS lanes. These include:

- Little Canada has increased its mixed-use development.
- Vadnais Heights has developed a new city center and is concentrating development at County Road E and I-35E.
• Lino Lakes is making a new city center between I-35W and I-35E.
• Centerville has an ambitious downtown plan that it is rethinking, and
• Hugo has a whole new commercial center surrounded by neo-traditional planned development and has plans for its historic downtown.

Design Strategies & Principles for Transit-Friendly, Vanpool-Friendly, and Carpool-Friendly Suburban Environments

Creating and retrofitting existing disparate suburban environments to make them more transit-friendly, vanpool-friendly, and carpool-friendly requires fundamental changes from car-oriented, car-dependent suburban environments to integrated multi-modal community-scaled transportation systems that provide access by drivers, cyclists, and pedestrians to living, learning, working, and playing environments within each community and within the region.

Using I-35E communities as its focus for study, the physical realities of the Corridor & its communities were studied in the context of each community’s uniqueness, history, human capital, cultural assets, environmental assets, current challenges, and future aspirations. The study looked at each community and asked the question, “What are the challenges and opportunities in supporting, encouraging, and enhancing transit, van pool, and carpool use within the I-35E Corridor in this community?”

This study presents the challenges and the opportunities inherent in transforming suburban car-dominated environments to transit-car-bicycle-people environments, and some ways to address these challenges through development and retrofit strategies that demonstrate opportunities for enhancing community form that encourage greater use of transit, carpools, and vanpools. The strategies and principles are directed at a wide audience that includes governmental units, private developers and property owners, and neighborhood groups.

The study does not propose specific designs for each community studied; it does not propose a one-size-fits-all design strategy; nor does it seek to make all communities the same. It recognizes that each community is different and unique with its own history, cultural and environmental assets, current challenges, and future aspirations. It uses these differences to illustrate principles to create potential approaches to more multi-modal environments. The identified design principles are informed by achievable goals, current and evolving comprehensive plans, and an appreciation of what is already there.

Several setting-specific design concepts are provided to illustrate application of the principles within the studied communities.

Study as a Tool to Inform Conversations

The study is a resource to help inform conversations in I-35E Corridor communities and other Metro Area communities about their futures. Hopefully it will inspire incremental changes over time in land use patterns and in transit, car, bicycle, and pedestrian systems in keeping with each individual community’s identity, interests, resources, and aspirations.
OPPORTUNITIES + CHALLENGES
Communities are Grounded in Uniqueness +
Change is Inevitable

Each city studied in this project started out as a unique place shaped by the natural environment, the culture of the people who settled there, and the challenges and opportunities they faced when they first established a community. Over time each city has changed in response to the substantial opportunities and challenges presented in the decades that have followed. Hopefully this report will start a conversation or add to an existing one that focuses on how each corridor city can build upon its existing strengths to become an even stronger, more livable community.

The study looked at each community and asked the question, “What are the challenges and opportunities in supporting, encouraging, and enhancing transit, van pool, and carpool use within the I-35E Corridor that this community faces?” Today each corridor city in its own way is striving to maintain and articulate its unique identity because communities are more than an aggregation of developer-driven subdivisions, industrial parks, recreational facilities, office buildings, and shopping areas. Besides the people-to-people connections made by residents, each has its own culture and layers of interconnected physical webs of roadways, sidewalks, and bicycle trails; water lines, sewer lines, and power line corridors; and lakes, wetlands, and streams.

The opportunities and challenges listed on the pages that follow are not presented as distinct categories because often they are both an opportunity and a challenge — an opportunity is nested within a challenge, and an opportunity may bring special challenges to its realization.

Sources for the opportunities and challenges listed include Metropolitan Council documents, community comprehensive plans, listening sessions with city officials, site visits, map analyses, newspaper articles, and planning/design literature.
OPPORTUNITIES + CHALLENGES
Community Character + Readability

There is an opportunity for supporting and enhancing a community’s distinctive character/readability through land use design because:

- Most Corridor cities see themselves as possessing a unique character based upon their rural heritage, their community history, and their natural amenities; they value their individual identities and wish to reinforce those characteristics that express it.
- Community residents see themselves as non-urban. As the communities continue to grow, change, and become 21st century places, many want to retain their non-urban character.
- Corridor communities share common borders, have a number of similar features, and are part of the larger Metropolitan Area, where one community ends and another begins is often hard to identify.
- Corridor communities are dominated by a variety of separate residential neighborhood subdivisions that have been built over time with dissimilar road configurations, making it often hard to read individual communities as a whole.
- Community identity expressed by logos on water towers and signs at city borders could be extended to other elements within the city.
- Names of residential subdivisions that cite a connection to nature are popular ways to reference the community’s non-urban character and living-with-nature values.
- Valued and unique community features are sometimes expressed in civic art works.
Historic Centers + Identity

Many Corridor communities are places that have existing assets that could be used to increase transit, carpool, bicycle, and pedestrian use because:

- Many corridor communities originated as stand-alone communities and are among the oldest communities in Minnesota; these historic small town centers often define the community as a place and are very important to city identity.
- Historic centers have a small-scale, concentrated form that is amenable to pedestrian, bicycle, and transit systems.
- They often have community-gathering places; connections to the surrounding neighborhoods were features of these centers.
- Historic centers adapted over time as historic roads became busier highways or county roads.
- In the 20th century, freeways have intentionally bypassed historic centers, some historic centers have not continued to grow or have atrophied as markets changed, and development became larger in scale and more freeway-centric.
- Some communities have plans to redevelop their historic centers to meet new needs and create new value. In light of the recent economic downturn some have postponed or scaled back their plans.

Images (clockwise from left): A historic map of Ramsey County shows the town of St. John, which later developed into Little Canada and Vadnais Heights; Hugo’s Downtown Comprehensive Plan for 2030 strives to both preserve and strengthen its historic downtown; Centerville’s ambitious Downtown Plan, created in 2006, is now being rethought in light of new economic realities.
Need for Interconnectedness

There are opportunities and challenges to create new connections within the community because:

- Building the freeways divided some communities; there is a need for strengthening the connections between the community “parts” made by the freeways.
- Many existing residential subdivisions were designed as separate entities with street systems that provide few connections and very limited access for those that do not live there; it is often challenging to move by car, bicycle, or foot from one subdivision neighborhood to another part of the community. This separateness can make transit and car-pooling challenging.
- Most cities value connections within their community that include inter-district transit, pedestrian, and bicycle systems, and most have plans for making their existing systems more connected.
- Shared-use, city-maintained pathways and trails as community connectors are valued as important amenities and are well accepted. Less so are conventional sidewalks that require individual property owners’ maintenance.
Relationship to Development and Redevelopment

Rules and Regulations

In order to be credible, strategies need to be responsive to their immediate context and their larger development/redevelopment/neighborhood context because:

- Cities are well versed in their development/redevelopment opportunities and challenges and the culture of city neighborhoods.
- Many cities perceive that the Metropolitan Council’s forecasts represent opportunities, but think that they do not reflect complex local conditions and that the Council does not fully perceive the local infrastructure investment implications that are needed to meet Council goals.
- Some cities would like more performance-based rules and incentives.
- Some cities perceive that Metropolitan Council priorities and development requirements are not always aligned with each other.

Need to Scale Projects to Community Capacity

Strategies need to be responsive to local conditions because:

- Small communities have small staffs and modest budgets.
- Scale of the community often drives the need for incremental changes.
- Corridor communities have embraced technology.
- Volunteer efforts have played an important quality-of-life role in many small communities and are potential powerful forces in community change and/or resistance to change.

Competition and Cooperation Among Cities

Strategies that foster cooperation can be beneficial because:

- Many cities share services, recognizing the opportunities inherent in sharing services when based upon common interests, mutual benefit, cost savings, and other efficiencies.
- Cooperation among communities is valued if it respects and reinforces each community’s unique character and has some financial advantages.
- If communities have a history of collaboration, it does not always equal trust, but it can be a basis for future collaborative efforts.
- Cities value protecting those things that reinforce their unique character that distinguish them from their neighboring communities.
OPPORTUNITIES + CHALLENGES
Suburban Development, Redevelopment + Retrofit

Metropolitan suburbs offer development, redevelopment, and retrofit opportunities and challenges because:

- Many older East Metro suburbs started out as separate farming communities. Over time they have been absorbed as suburbs as the Twin City growth expanded. They retain some elements, remnants, and culture of their former separate status.
- They are mostly fully developed. Available developable land is very limited, and some sites available for potential redevelopment may need mitigation due to previous uses or may have significant environmental constraints.
- The grid development pattern in some cities can potentially facilitate and enhance bicycle and pedestrian networks and transit access.
- Existing infrastructure for sewer and water services could lower development and redevelopment costs in older suburbs although some services may need to be expanded, replaced, or upgraded.
- Although one study area suburb is connected to the Saint Paul Water System, currently most of these suburbs have municipal well water-based systems and plan to continue to use well water to serve their future needs; the future availability of water may limit development and redevelopment in well-dependent communities.
- Streets and roads have been widened over time to accommodate increased traffic.
- Some busy I-35E access roads were built prior to the freeway when the community was a freestanding community. Some of these roads have many older, small houses with individual driveways that limit road reconfigurations.
- Some communities have some sidewalks, but sidewalks are absent along many streets particularly in neighborhoods that were built after World War II.
- Mail is delivered to curbside residential mailboxes by car in many residential neighborhoods.
- Residential, commercial, and industrial development/redevelopment that enhances their tax base without negatively impacting community character and does not require substantial community investments is preferred.
- Many communities have multi-family housing units built in the '50s-'80s that need extensive retrofitting or redevelopment.
- All the communities have dense mobile home parks that house many residents.
- Existing small lot sizes of single-family housing pose challenges for assembling enough land for multi-family housing redevelopments that could increase community density.
- A significant portion of the suburban population is aging and needs services and senior housing to remain in their community.
Emerging Suburban Edge Development + Redevelopment

Emerging Suburban Edge communities offer development/redevelopment opportunities and challenges because:

- Often stand-alone communities have long-time residents that wish to retain the community’s character and identity even though it has already been transformed into a suburb.
- Large undeveloped tracts of land are available.
- Potentially developable land often is not served by infrastructure.
- Current development trends and housing desires are reflected in the new developments.
- There is a potential to build transit, pedestrian, and bicycle network facilities into new development requirements.
- Individual mailboxes are aggregated in accessible locations in planned unit developments.
- Some PUDs have stormwater retention ponds, small landscaped spaces, and small playgrounds scattered throughout the development.
OPPORTUNITIES + CHALLENGES
Changing Landscape Values + Perceptions

In the Corridor changing landscape values and perceptions impact land use changes because:

- The Corridor had many farms; previously much current suburban land was valued for its economic value as truck farms or commodity farms.
- Currently farmlands and former farmlands are valued for their landscape character that promotes residential development and a lifestyle that values connecting with nature, so farmlands in the Corridor have been or are being rezoned for development.
- Parks continue to be valued, and natural areas are being preserved because they are being recognized as community assets with important ecological roles.
PREVAILING REGIONAL PATTERNS

<table>
<thead>
<tr>
<th>Transportation Networks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land + Built Structure</td>
</tr>
<tr>
<td>Hydrological Systems</td>
</tr>
</tbody>
</table>
Transportation’s Impact on Community Location + Form

Transportation infrastructure has been and is important to communities because:

- Some roads originated as Indian trails.
- Historically railroad lines, early roads, county roads, and highways determined the location of freestanding communities and shaped their earliest development patterns. Development was sited along main roads and at railroad stations in the Corridor.
- Road surfaces impacted development patterns. Developers developed lands that had direct access to roads; county paved roads were preferred to gravel county and township roads.
- While highways and freeways were first built to connect suburban residential neighborhoods to job centers, they also shaped the form and placement of auto-oriented commercial and industrial buildings and determined neighborhood locations.

Images (clockwise from left): A historic map of Hugo and the Oneka township; A historic map of Centerville from 1940; the Railroad Commissioners’ Map of Minnesota from 1930.
Freeway Impact on Communities

Freeways have had a big impact on Corridor communities especially because:

- When Interstate Highway I-35E and 694 were built, they became new drivers of land uses creating new residential, commercial, and industrial development and redevelopment opportunities.
- The new freeways consumed large amounts of community land, severed connections within communities, reordered community movement patterns, and isolated some parts of a community from the rest.
- Freeways altered transportation routes to the metro core, increased traffic on freeway access roads, created additional traffic noise, and altered hydrological systems.

Community Response to Freeways

All Corridor communities have been impacted by the freeways; responses include the following:

- Community land use patterns have been altered in response to freeway access points; commercial development, industrial development, multi-family, and cluster residential development have increased along freeway access roads.
- Sound walls have been erected in places along the freeways to mitigate the impact of freeway noise upon communities.
- At major freeway access points some communities have created new commercial centers on either side of the freeway or on the access road at a short distance from the freeway.
- Strip malls, gas stations, franchise fast-food establishments, drug stores, and other small commercial ventures line I-35E access roads in places closest to the freeway, and strip malls have been built where freeway access roads intersect with important roads.

Railroad Impact

Railroads have a big impact on communities because:

- Rail lines helped to create communities. Hugo-area farmers brought their produce to Hugo’s elevator sited along the rail line, and White Bear Lake grew as a popular summer community because of rail access from Saint Paul.
- Train/road crossings impact traffic patterns; a number of crossings have been grade-separated for safety and to keep road traffic moving.
- Noise ordinances in some communities ban train whistles at rail crossings.
- Currently more frequent rail traffic on some lines, longer trains, and the change in materials shipped have created a need to assess the community impact of these changes in service.
- Decreased rail traffic on some lines and the ending of rail use in others has created potentials for recycling former rail right-of-ways for trails or other uses. Vadnais Heights supports the eventual transformation of one of its rail lines into a transit corridor that would connect to Minneapolis, and a rail corridor has been converted into the Hardwood Trail through Hugo.
- The potential alignment of the Rush Line transitway follows a rail corridor in some segments.

Railroad Impact

Railroads have a big impact on communities because:

- Rail lines helped to create communities. Hugo-area farmers brought their produce to Hugo’s elevator sited along the rail line, and White Bear Lake grew as a popular summer community because of rail access from Saint Paul.
- Train/road crossings impact traffic patterns; a number of crossings have been grade-separated for safety and to keep road traffic moving.
- Noise ordinances in some communities ban train whistles at rail crossings.
- Currently more frequent rail traffic on some lines, longer trains, and the change in materials shipped have created a need to assess the community impact of these changes in service.
- Decreased rail traffic on some lines and the ending of rail use in others has created potentials for recycling former rail right-of-ways for trails or other uses. Vadnais Heights supports the eventual transformation of one of its rail lines into a transit corridor that would connect to Minneapolis, and a rail corridor has been converted into the Hardwood Trail through Hugo.
- The potential alignment of the Rush Line transitway follows a rail corridor in some segments.
Roads + Streets

The character and location of roads and streets have a big impact on communities because:

- As community populations grew, some road construction negatively impacted environmental systems and features, but over time new environmental regulations restricted where and how roads could be built.
- As the communities continued to grow, roads were widened, lanes added, traffic speeds were increased, parking along them was prohibited or limited, and major streets became roads that were often difficult for pedestrians to cross.
- Because many existing roads and streets have been widened, often there is little space in their remaining rights–of–ways, limiting the potential for retrofitting pedestrian and bicycle systems.
- Some communities are retrofitting existing automobile-dominated roads with sidewalks, pedestrian-scale lighting, and street trees to make them more pedestrian-friendly.
- Parking is prohibited on many busy roads and streets; parked cars along city streets and roads provide a buffer between automobile traffic and pedestrians.
- Traffic calming medians are not always feasible or appropriate on busy roads or streets.
- Single-family houses whose driveways directly access the street or road, as well as strip mall accesses and other commercial driveways, can create hazards by increasing the number of potential conflict points for drivers, bicyclists, and pedestrians.
- Some new multi-family housing developments have rear garages or they have garages on one side with access from a side street or alley. These designs eliminate the number of driveways and help to create or preserve the pedestrian character of the residential street.
- Although some streets in older neighborhoods have sidewalks, in many residential areas private lots often come right up to the edge of the street limiting the opportunities for adding sidewalks where they do not exist.
Trails, Bicycle Routes + Sidewalks

The Corridor’s number, type, and length of bicycle routes varies considerably from community to community:

- Some are on streets and roads, while others are on trails shared by pedestrians.
- Some trails are sited along existing sewer and electrical utility corridors.
- There is a higher density of bicycle and pedestrian facilities south of Highway 96.
- Bicycle routes connecting to the new Park-and-Ride lots provide opportunities to strengthen the connection between the community and the transit facilities.
- The Corridor has both regional and local trails, and more are planned.
- The older community cores and new centers have sidewalks, but many of the areas built in the ‘70s, ‘80s, and ‘90s do not.
- Some cities have added sidewalks to existing roads and streets and have required sidewalks in new developments.
- Many of the sidewalks and trails on major streets often have very little separation between cyclists or pedestrians and car and truck traffic, especially if the streets have been widened over time to accommodate increased vehicular traffic.
- Corridor communities are valuing their trails as recreational assets and there is a growing awareness that they could be an important part in their city’s transportation system.
PREVAILING REGIONAL PATTERNS // Transportation Networks
Transit

Transit service is varied within the Corridor because:

- The number and variety of transit services within the Corridor include a few local routes, some cross-town and limited stop services, peak routes, express service, and all-day service; dial-a-ride services are available in some cities. Local bus service coverage becomes more limited as one moves north.
- Many cities would like more transit within their communities even though they currently lack the density to support it.
- Some communities have initiated investments and planning that support additional transit expansion.
- Some transit stops have benches and shelters; others do not; many are unreachable in winter.
- Corridor communities are served by an extensive school bus system that connects residential neighborhoods to schools.
- Where young children wait for the bus along a busy road or street, parents often wait with them.
- Corridor communities identified a need for focused transit stops.
- Many cities identify a need to link pedestrian and bicycle systems to transit stops, residential areas, commercial areas, schools, and community facilities.
- In some places business owners support transit because their employees need access.

Park-and-Ride Lots

- Considerable investment has been made in the new 300-car Metro Transit Park-and-Ride lots off I-35E at County Road 14 and County Road E in Lino Lakes and Vadnais Heights.
- The new lots are accessible by walking, cycling, and driving from close-by neighborhoods, but the spread-out nature of the communities limit pedestrian and bicycle access from some neighborhoods that are located at a distance from them.
- Some smaller, older Park-and-Ride lots are being phased out.
- In some places informal Park-and-Ride places have been created.
Public Lands + Civic Spaces

- Most communities have very few public gathering spaces outside of parks and schools.
- Comparatively few public spaces are associated with the many community lakes found throughout the Corridor.
- In the Corridor much public land is devoted roads, streets, and their right-of-ways.
- Some public land is associated with city halls; large areas of public land are associated with schools and parks.
- The Corridor’s regional and local public parks and trails provide opportunities for active sports and access to natural amenities.
- The Saint Paul Regional Water Services owns substantial Corridor land; it routes the water it takes from the Mississippi River through a number of lakes, channels, and pipes to its treatment and distribution system. To protect water quality, the Service restricts some types of lake access.
- A Metropolitan Council Environmental Services’ interceptor sewer line runs through the Corridor.
- Although there are some public places along the Corridor’s many lakes, much lakeshore is privately owned.

Developable Land

- Most developable land is located in the Emerging Suburban Edge communities.
- Although there are very few open sites within community cores, land zoned for mixed use, multi-family housing, commercial, and industrial uses is for sale in several communities.
- Some land is designated as rural and is located outside the Metropolitan Urban Service Area, the Metropolitan Council’s primary tool for managing growth.

Redevelopable Land

- Some community sites have buildings on them, but are candidates for redevelopment because of their prime locations.
- The large lots associated with some housing provide opportunities for redevelopment with denser housing or mixed uses.
- Small houses on small lots in old city cores may provide opportunities for redeveloping for mixed uses and/or increased housing density, but assembling a large parcel may be a challenge.
- Old commercial centers provide opportunities for denser, mixed uses.
Older Commercial Cores

- Older commercial cores are important places in Corridor communities and have many characteristics of neo-traditional town planning and transit-oriented design.

- Centerville, Hugo, Little Canada, and Vadnais Heights, all formerly freestanding communities, have historic commercial cores that have common characteristics. The cores varied in size, but each was important as the community’s place for commercial activities, community gathering, and community identity. Each core was located on an important road and was easily accessible by community residents.

- Some cores were part of a street grid pattern that extended into the neighboring residential areas.

- Some linear commercial areas paralleled an important road and/or the rail line.

- Core buildings often had more than one story and a mix of uses. Usually stores were on the first floor with offices or living quarters above.

- Buildings were sited close to the street and often had shared walls.

- Sidewalks and pedestrian-scale lighting were sited between the building face and the street or road.

- Parking was located on the street in front of the stores or behind them.

- Buildings were serviced from alleys.

- Many businesses were locally owned and operated.

- Landmark churches with stately steeples were important features of the community’s historic core.

- I-35E bypasses each community’s historic commercial core; the current distance from the old core to I-35E varies from community to community.
PREVAILING REGIONAL PATTERNS // Land + Built Structures
Retail Strip Malls

- A popular car-oriented building type for both retail and other commercial uses, strip malls are found in many places throughout the corridor.
- Most are linear one-story buildings sited parallel to a busy road.
- Strip mall tenants usually include stores, restaurants, and may have a public use such as a branch post office.
- It is not uncommon to see former retail spaces within some strip malls converted into offices.
- Some strip malls are L-shaped and located at the corner of a busy intersection.
- The mall’s buildings are set back from the road with a large parking lot and large signs in front.
- Although some communities have recently added sidewalk access, many strip mall sites do not have sidewalks and are hard to access by pedestrians.
- Many are underutilized; some are barely occupied.

Office Strip Malls

- Using the strip mall building type for offices has become popular; many are newer than the retail strip malls.
- Although some are built to look like houses, they share many of the characteristics of retail strip malls.
- Office malls are usually on a site parallel to a busy road or street with access provided from driveways directly off the busy road or street.
- Parking is provided by a large parking lot located between the building and the street.
- Many do not have sidewalk access.
- Most often they are a one-story, linear building with multiple tenants; sometimes one tenant, like a dental practice, occupies the whole building.

Big-Box Stores

- National chain big-box retail stores have become very popular in the late 20th and early 21st centuries; they range from discount versions of department stores like Target and Wal-Mart to more focused stores like Home Depot. Their sites are very big; their large auto-oriented, one-story buildings have very large parking lots in front and large signs visible from the freeway.
- Substantial stormwater pond capacity is needed to accommodate the stormwater run-off from these buildings and their parking lots.
- Their locations close to freeway exits on arterial roads and their large numbers of customers generate additional traffic on the arterial roads. Although big box retail stores are very auto-oriented, some communities have made efforts to provide pedestrian access.
- Their profile is largely counter to the needs of intensive, dense transit-friendly development.

Stand-Alone Buildings

- Many stand-alone buildings or pad buildings on separate sites are found along busy roads or streets throughout the Corridor.
- This car-oriented building type is characterized by a large set-back from the road or street, a large parking lot in front of the building, little or no pedestrian access, single or multiple driveway accesses, and large signs on poles or on the building that can be easily read from a passing car.
PREVAILING REGIONAL PATTERNS // Land + Built Structures
Underutilized Commercial

- Changing retail patterns have driven under utilization of some older big box stores and commercial strip malls that could potentially provide sites for redevelopment opportunities.
- East Metro examples of recycled commercial areas include an aging strip mall and Kmart site in Oakdale that is being redeveloped for housing and a grocery store; a proposal to convert Sibley Plaza in Saint Paul to a mixed-use development; and the failed Phalen Shopping Center in Saint Paul that was recycled for multi-family housing and a restored lake.
- Some underutilized commercial sites on bus routes have large parking lots that could perhaps be used as temporary Park-and-Ride or Park + Pool lots.

Concentrated Commercial

- New concentrated places of commercial activity have been created at a distance from historic community centers on freeway access roads.
- Some are sited in concentrated clusters and others are sited linearly on isolated pads.
- While some community commercial uses have moved from their historic locations in town centers to new locations, older commercial activities located at a distance from the freeway have suffered from competition from the newer commercial sites.
- Newly constructed ponds that receive stormwater run off from areas of concentrated buildings and the parking lots are often sited in ways that make pedestrian connections challenging, but communities have made efforts to provide pedestrian access to these new areas of activity.

Medical Facilities

Some of the larger new buildings in the Corridor are medical facilities ranging from office to urgent care facilities.

- They are located on dispersed sites on or near I-35E.
- Some have large parking lots and limited non-car access; some have pedestrian and transit access.
Residential Neighborhood Spaces

• Many cities want community space in new residential neighborhoods.
• Developments that cluster single-family or multi-family housing use land more efficiently and can make it possible to create neighborhood common space.
• Although neighborhood public space is limited in older, more spread-out neighborhoods, a small residential lot could be recycled as neighborhood space.
• Spaces vary in use, size, location, and ownership in communities that have many neighborhood-scale spaces dispersed among their residential neighborhoods. Some spaces are quite small, while others like a neighborhood park are large.
• Many are publicly owned, others are part of a multi-family development, an apartment complex, a planned unit development, etc.
• Most offer good access by foot and bicycle to those that live in the neighborhood.
• Although many are found in neighborhoods of winding, circuitous streets, for most of these spaces the time needed to travel the distance from the space to a main road or through street by car is not great.
• Current neighborhood spaces are usually single-use spaces; these include land with a stormwater retention function, a space for a bank of residential mailboxes, a small play area, a small garden, a gathering area, a landscaped area along a street right-of-way, a neighborhood park, etc.
  • A change in mail delivery practices has generated clustering of mailboxes in locations associated with new housing developments.
  • Small neighborhood-scale playgrounds are popular with families with young children.
  • Requirements for stormwater runoff storage have generated a number of stormwater ponds in new developments.
  • Residents who want a non-urban lifestyle value areas that have been left natural or designed as a natural area.
  • Residential patterns reflect the style prevalent in the era in which they were built. Few are informed by a city plan that dictated their form.
PREVAILING REGIONAL PATTERNS // Land + Built Structures
Older Housing

- Some older houses were originally part of farms that were formerly prevalent around community cores.
- A number of the older houses that were built when the cities were freestanding communities are located on a street grid.
- After World War II some houses were built in stages. Working class residents lived in their basements while building the upper stories. These houses, and others from this era, may be candidates for redevelopment.
- Many small, single-family detached houses are on small lots in compact neighborhoods; most have either attached or detached garages with driveways that are connected directly to the street.
- Some older homes along roads that became busy after the freeway was built offer potential opportunities for redevelopment.

Affordable Housing

- Although there is some more recent affordable housing within the Corridor, historically mobile home parks provided much of the Corridor’s affordable housing. Access to each home is provided by a drive with individual pull-ins.
- Some multi-family housing is affordable housing such as the housing developed by Commonbond.
- Metropolitan Council policy has and continues to encourage suburban communities to host more affordable housing.

Newer, Single-Family Housing

- Many newer single-family houses tend to be on single lots and are set back from the street.
- Most have 3-car attached garages; many have garages and driveways that dominate the streetscape.
- Some developments cluster houses, preserving open space and possibly lowering road-building costs.
- New single-family, detached houses continue to be built in corridor communities even though a recent Metropolitan Council study stated that given recent trends, the region has an adequate supply of single-family houses.
PREVAILING REGIONAL PATTERNS // Land + Built Structures
Multi-Family Housing + Planned Housing Density

Much multi-unit housing is found in Corridor communities even though historically single-family housing has predominated in each city. Corridor multi-family housing takes many forms and provides both opportunities and challenges because:

- Most of the Corridor’s multi-family housing has been built after World War II and reflects development patterns and architectural forms popular in the era in which they were built.
- Much of the older multi-family housing is rental and in need of retrofitting.
- Most new multi-family units tend to be concentrated in specific areas within the city. They are both rental and owner-occupied; some new developments on former agricultural land are very dense.
- Many condominiums and apartments and townhouses have been built recently in suburbs that were developed primarily between 1970 and 1990, and in the formerly older, stand-alone communities that are now part of the Metropolitan Area’s developing suburban edge. Much of this housing supports the non-urban identity valued by its residents.
- Some troubled multi-family housing is not perceived as a community asset.
- Corridor cities want multi-family housing that reinforces and/or enhances the city’s character.
- City comprehensive plans call for an increase in high and medium housing density in proximity to I-35E and other major roads (i.e. Centerville Road) while also maintaining areas of rural, exurban, and low density.
- New mixed-use developments include multi-family housing.

Senior Housing

- Multi-unit housing for seniors is found throughout the Corridor and additional housing is continuing to be built.
- Some of the houses that older people are currently living in no longer meet their needs.
- There are many older residents in Corridor communities, and many communities wish to provide senior housing to enable older, long-term residents to stay in the community as they age.
- As medical conditions in seniors arise, there is often a need for housing that has supportive services.
- As seniors move from their existing single-family homes, younger families can move in or the property can be redeveloped.
- New multi-unit senior housing that uses land efficiently increases community density.
- Like other multi-unit housing, senior housing is desired that reinforces and/or enhances the city’s character.
PREVAILING REGIONAL PATTERNS  // Hydrological Systems
Water + Corridor Communities

- Little Canada and Vadnais Heights are in the Saint Paul-Mississippi River Watershed, while Hugo, Lino Lakes, and Centerville are within the Rice Creek Watershed.
- Both the historic character and the current character of Corridor communities are inextricably connected with their water resources.
- The Corridor’s hydrological systems are complex and have been heavily altered over time by roads, railroad lines, and community development.
- Dropping water levels in the aquifers that supply most of the communities with water and lowering lake levels in White Bear Lake were the impetus for a recent Department of Natural Resources-led study of water conditions in the Northeast Metropolitan Region.

Water as Community Asset

- There are many beautiful lakes, streams, and wetlands in the Corridor.
- Although there are a number of parks and trails associated with Corridor lakes, streams, and wetlands, much lakeshore land is privatized, so public connections to Corridor lakes are limited. Unlike the lakes in Minneapolis and Saint Paul, much Corridor lakeshore property has little or no public access.
- There are a number of developable or re-developable lands associated with lakes and wetlands in the Corridor.
### Groundwater

- Lowering aquifers and dropping lake levels in White Bear Lake are raising groundwater supply concerns within the Corridor and are driving strategies for groundwater conservation. The Department of Natural Resources is currently leading a groundwater study. An in-depth examination of this issue is beyond the scope of this study; however, it is noted that groundwater use is likely to impact future development in Corridor areas dependent upon groundwater as their potable water source.
- Groundwater use for traditional lawns and golf courses during periods of reduced rainfall are of particular concern because they require one half inch of water weekly during the growing season.
- In order to protect water quality and not compromise the groundwater supply, development and redevelopment need to be sensitive to and protect areas with a high potential for groundwater and surface water interaction and areas of groundwater recharge areas within the Corridor.

### Surface Water

- Lakes, wetlands, streams, stormwater retention ponds, and drainage ditches are extensive throughout the study area and characterize the Corridor’s landscape.
- In the past, lakes, streams, and wetlands were important food sources for both encamped Indians and early farmers who settled the area.
- Since the nineteenth century, many Corridor lakes have been an integral part of Saint Paul Regional Water Services; water from the Mississippi River is routed through a series of lakes, streams, and pipes as part of the utility’s water cleaning and delivery system.
- To protect lake water quality, Saint Paul Regional Water Services limits some types of lake access.
- The lakes have played an important part of many communities’ development because early settlers homesteaded by lakes, and lake cottages were some of the first housing built in communities.
- Over time, original cottages were altered to become year-around residences, and later large lake homes were developed along the lakes or overlooking them.
- Connectivity within the Corridor is made more difficult by its large number of lakes, wetlands, and streams. County roads and important local roads are often discontinuous due to these features.
- The stormwater ponds required for commercial, industrial, and residential development create barriers to connectivity, and their design potential as community amenities is underutilized.
- Large areas of impervious land cover are risks to water quantity and quality because they do not recharge the aquifer, and they create stormwater runoff that carries sediment, chemicals, and other pollutants into wetlands, streams, and lakes.
PREVAILING REGIONAL PATTERNS
// Hydrological Systems
Municipal Water

The water in the East Metropolitan Area is an important resource used by Saint Paul Regional Water Services (SPRWS) to supply wholesale and retail municipal water to ten area cities.

- 70% of the SPRWS’s water is pumped from the Mississippi River in Fridley and piped across the northern suburbs to Vadnais Lake Watershed lakes.
- From Pleasant Lake in North Oaks the water flows south in a conduit and an open canal to Sucker Lake and Lake Vadnais before it is piped to the McCarrons Water Treatment Plant on Rice Street and distributed.
- When needed, additional water is piped from the reserve areas.
  - Water from the Rice Creek Chain of Lakes is piped south and is joined by water piped from Otter and Bald Eagle Lakes.
  - Several wells south of Lake Vadnais pump water from the Prairie Du Chien and Jordan aquifers.
- The lake chains play an important role because they clean the water as it passes through them.
- The Vadnais Lake Area Watershed Management Organization manages surface water in the Vadnais Lake Watershed.
- Although the water from many of the Corridor’s communities north of Little Canada plays important natural purification and supply roles in the System, and the routing passes through them, these communities do not use SPRWS water in their municipal systems.
- Little Canada, Maplewood, and Saint Paul receive water from Saint Paul Regional Water Services. Other communities north of Little Canada receive water from groundwater wells pumped from the aquifers.
- Although Sucker and Vadnais Lakes are part of the Snail Lake Vadnais Regional Park and are popular fishing lakes, boating on them is prohibited to protect their water quality.

Sewers

- One of the Metropolitan Council’s major tools for shaping development in the Metropolitan Area has been its Metropolitan Urban Service Area (MUSA) designation; only areas within the MUSA designation have access to sewer services.
- Most land within the Corridor is within the MUSA; however three areas close to the Corridor are not.
- Large non-MUSA areas are found in North Oaks and in protected areas in the heart of Lino Lakes, and eastern Hugo has been designated as an area that will maintain its diversified rural character.
- All study sites are located close to the sewer interceptor system.
DESIGN STRATEGIES
Because this study investigated ways to increase transit, vanpool, and carpool use of MnPASS, these design strategies identify specific actions and activities that support both the potential and the propensity for transit and MnPASS use. In order to facilitate increased transit and MnPASS use, the strategies both overcome the challenges inherent in current auto-centric land use patterns and respond to the opportunities that already exist, are being developed, and/or need to be developed that support increasing and enhancing access by pedestrian and cyclists though land use changes and modifications. The strategies:

- Support the integration of transit/car/bicycle/pedestrian networks and systems into the physical and social fabric of each community to demonstrate ways to move from auto-centric communities to more multimodal land use patterns that include increasing density and mixed-use land uses.
- Cite ways to overcome the distances and the circuitous, non-continuous travelways created in communities by development patterns and environmental constraints such as wetlands.
- Demonstrate incremental changes of proper scale and capacity.
- Respond to and support increased interest in cycling and walking as part of one's lifestyle.

The strategies listed below are a menu of potential suggested actions and activities to be considered. They have been sketched based on the Corridor communities’ setting and character, but are potentially more broadly applicable, both within the Corridor and in other parts of the region (and possibly beyond). The strategies are not listed in a particular order because each community is unique. They are presented in an illustrative laundry list from which each individual community could select an array of potential strategies that respond to its own specific opportunities, challenges, and aspirations.

Respond to Each Community’s Historic Character + Development Pattern to Support and Encourage MnPASS, Carpool, and Transit Use

Little Canada, Vadnais Heights, Centerville, and Hugo have unique identities, forms, and histories that can inform their future growth. They were communities before becoming “reluctant suburbs,” sociologist William H. Dobriner’s name for freestanding communities that became part of the greater suburban landscape when development surrounded them. Historic forms supported pedestrian and bicycle access and created dense town centers. Strategies strengthening identity, historic patterns, and form include:

- Extending the existing grid/linear form into new neighborhoods,
- Reviving old civic and commercial centers with redeveloped and new mixed-use development that enhances and honors existing landmarks and creates new ones,
- Preserving human scale when present and restoring it in areas where the automobile-scale prevails,
- Creating or strengthening public connections to important landscape features like lakes and wetlands, and
- Strengthening community identity through creating or enhancing civic gathering places and protecting cultural features that express the community’s roots and its uniqueness.

Use Large Park-and-Ride Facilities as Civic Places to Support and Encourage MnPASS, Carpool, and Transit Use

Typically large Park-and-Ride lots are used heavily during the week and used lightly during weekends. Locating a Saturday farmers’ market in one area of large Park-and-Ride facilities could be one potential use that draws locals and familiarizes them with the facility while extending its value to the community beyond its single use. County Road E and County Road 14 Park-and-Ride sites could be examples within the Corridor.


**Make a Network of Pedestrian-Friendly and Bicycle-Friendly Streets and Trails to Support and Encourage MnPASS, Carpool, and Transit Use**

Trails are popular in Corridor communities and are seen as a part of their integrated transportation system that offers opportunities to knit separate neighborhoods together and provide access to important community destinations. To realize their potential as important parts of the city’s transportation system, trails should:

- Be regarded as important community transportation corridors as well as recreational assets,
- Be maintained by the community for year-around use,
- Provide opportunities for some children to get to school,
- Extend into areas not served by sidewalks, and
- Connect to commercial districts, job sites, recreational assets, Park-and-Ride facilities, and civic areas.

Community representatives interviewed for this study indicated that pedestrian sidewalks and bicycle routes are issues in several Corridor communities. Busy roads offer challenges to pedestrian and cyclist use. Because many of the current bike routes are on busy county roads with no separation between cars and bikes, bicycle use is intimidating for all but mature, skilled cyclists, and many of these same roads have poor accommodations for pedestrians, even though some have bus stops. Sidewalks may be problematic where responsibility for maintenance falls to the property owner, in contrast with pathways/trails where the local unit of government provides year-round service.

Creating bicycle facilities and pedestrian pathways on less busy streets could encourage greater use. Roads and streets that provide bike lanes and pedestrian paths that separate cyclists and pedestrians from cars are preferred, but when this is not possible other traffic calming devices could be employed to make them more pedestrian and cyclist friendly. Some of these strategies include:

- Adding street trees and pedestrian-scaled lighting that separate pedestrians from vehicular traffic
- Making islands of vegetation or other features in the middle of the road or street where turn lanes end to slow traffic,
- Shortening pedestrian crossings at intersections,
- Striping and signing pedestrian crosswalks at intersections,
- Ensuring that pedestrian facilities are fully accessible (compliant with ADA requirements), and
- Installing pedestrian-activated signals at busy, non-controlled intersections.

**Promote Denser Housing + Mixed-Use Development/Redevelopment to Support and Encourage MnPASS, Carpool, and Transit Use**

Land use patterns in Corridor Communities are predominantly residential, and although mobile home parks and medium density housing can be found in each community, single-family houses on individual lots are the most common land use. Because denser housing and mixed-use development have been found to promote transit use and because in some areas there is very little easily developable land left in the Corridor, redeveloping land with multi-unit housing or mixed-use developments that include housing can increase density, provide for commercial and retail spaces, enhance the tax base, create spaces of community activity, and strengthen community identity. Successful mixed-use redevelopments respond to the community context, are scaled to the community, and reflect community needs. The types of places within Corridor Communities that could have denser housing or mixed-uses include:

- Former farms that are being converted into developable sites,
- Areas of small, older houses and houses on large lots that are strategically located,
- Older city cores and older commercial areas that are
DESIGN STRATEGIES

candidates for denser, mixed-uses, and
• Areas in proximity to valued environmental
amenities that are candidates for environmentally
sensitive dense housing.

Recycle Existing Underutilized Retail Properties
to Support and Encourage MnPASS, Carpool,
and Transit Use

The Corridor’s underutilized retail properties provide
opportunities to create denser, mixed use developments
and create or strengthen the pedestrian character of the
street by locating new buildings closer to the street and
providing sidewalks and pedestrian-scaled lighting. As
the shift to on-line and big boxes retail continues, these
under-utilized sites are candidates for denser, mixed-
use redevelopment that could include live/work units
because their proximity to activities, connections to
utilities, and transportation corridor locations make them
desirable. Corridor retail properties that are candidates for
redevelopment include the following:

• Empty stand-alone retail stores; many are small or
pad-style buildings set back from the road or street
on a much larger lot.
• Strip malls with vacancies; many in the Corridor
have the following characteristics:
  • Locations on busy streets or roads or at busy
intersections,
  • Locations on an existing bus line,
  • Large parcels of land with relatively small
building footprint,
  • Linear or L shaped one-story building set back
a distance from the street or road,
  • A large parking lot between the street and the
building,
  • Direct access from the street from two or more
driveways,
  • No pedestrian sidewalk or trail access,
  • Municipal sewer and water service, and
  • A variety of tenants, mostly relatively small
retail stores.

Develop/Redevelop with Ecological Sensitivity
+ Use Environmental Attributes as Amenities to
Create Value Support and Encourage MnPASS,
Carpool, and Transit Use

• Many Corridor Communities have water features.
Some are historic, some were altered over time,
and many others were created to deal with the
stormwater runoff from impervious surfaces of
roads and developments.
• Many water features are underutilized water
amenities and represent opportunities to create
value because: early concentrated development
patterns in Corridor Communities were often
centered upon roads or railroads and access to the
lakes was privatized. Many homes line the Corridor
Community lakeshores, and redevelopment offers
opportunities to create public access to lakes and
higher value uses.
• Many stormwater retention areas were designed
to meet stormwater requirements; their potential
to be an integral part of the development or
community amenities often has been unrecognized
or underutilized. Designing them as special site
features, siting them so that they do not create
barriers to connectivity, or creating pedestrian and
bicycle paths along them creates an enhanced
asset.
• Developments and redevelopments offer
opportunities to address current and future
groundwater concerns through design strategies
that increase stormwater infiltration that helps to
recharge the aquifers that supply water to residents
and businesses. Because all Washington County
communities rely on groundwater sources for their
municipal water systems and many individual
homes rely on private wells for their water, it is
important to protect the current and future water
supply.
Address Unintended Consequences of Large Environmental Interventions

Identify opportunities to respond to unintended consequences of large environmental interventions such as a freeway dividing a community into parts, filling wetlands, etc. For example, Vadnais Heights responded to the building of I-35E by making a new civic and commercial center through:

- Relocating the city hall and a fire station west of the freeway on County Road E,
- Concentrating commercial development along County Road E on both sides of the I-35E intersection,
- Developing a large Park-and–Ride facility, and
- Supporting the creation of a transit corridor along the existing rail line if and when it becomes available for repurposing.

Respond to Opportunities that 21st Century Technology Presents

- Connecting people to form carpool is now much easier with the Internet; individuals could find each other or communities or regional agencies could sponsor events and/or websites.
- Cell phones provide opportunities to stay in touch with one’s fellow carpool members to make pickups more efficient.
- Because over 50% of the region’s jobs are now located in the suburbs, this has implications for forming more carpools for MnPASS use, transit use, and suburb-to-suburb commuting.
- The Internet has transformed what people do and where and how many people work; many telecommute to their jobs, others have home businesses. This change creates opportunities for (re)developing live/work units within the Corridor, particularly on sites near existing commercial areas and transit stops.

Create Park + Pool and Gather + Go: Multi-Neighborhood and Neighborhood Scaled Places to Support and Encourage MnPASS, Carpool, and Transit Use

Although the two new large Park-and-Ride lots at County Road 14 and County Road E serve the longer distance user, the car owner, and those that live nearby, smaller-scaled places could serve local neighborhood residents. Pedestrian- and bicycle-friendly neighborhood places accessible to neighborhood residents who live at a distance from the large lots and those who may not have a car would help promote informal neighbor-to-neighbor carpooling. Because the new large facilities are at a distance from areas where many Corridor residents live, reaching them by walking or cycling may not be practical for potential transit and carpool users.

Park + Pool: Designated Sections in Existing Parking Lots

The Park + Pool concept is for smaller, multi-neighborhood scale dispersed Park-and-Ride facilities that use designated portions of existing parking lots.

- After parking their car in a Park + Pool, users could join each other in one car to either use the I-35E MnPASS lane or to ride together to a new, large Park-and-Ride lot and ride the bus.
- Park + Pools would increase overall carpooling capacity and create carpool lots in locations that are assessable to more residents while reducing initial capital costs and long-term costs for this increased capacity.
- P+Ps could be created by partnering with local landowners to designate Park + Pool sections in portions of existing parking lots that are not used to capacity during the standard business day such a church parking lot, a big box parking lot, or at a large community-scale park such as Kohler Park.
- While such sites may be used informally for ride sharing, a map or other designation for facilities could enhance recognition of these opportunities and enhance their use. Where a system is being
Design Strategies
delineated. Designated P + P stalls should be clearly
marked and accessible by drivers, cyclists, and
pedestrians and have a bike storage facility and a
simple shelter with a bench.

Park + Pool locations would have these characteristics:
• Easily accessible by cars, bicycles, and pedestrians
from a number of neighborhoods, and
• Occupying a visible location on the edge of an
existing large parking lot near the street and away
from the entrance of the associated building.

Park + Pool prototype design elements include:
• Designated parking places for cars,
• Secure bicycle lockers for bicycles,
• A sign with a battery-operated personal security
camera,
• A handicapped assessable space for waiting, and
• An optional shelter. Although not mandatory, a
shelter with a bench may be desired to provide
protection from rain, snow, and sun and a place
for users to sit as they wait for their carpool or
vanpool to arrive. If a shelter were desired, a roof
and benches could be added to the P+ P marker
in a style that reflects the local character. The
shelter location would be dependent upon the site
conditions of each site.

Gather & Go: Multi-Use Neighborhood Spaces

• Like Park + Pool users, Gather + Go carpoolers would
be able to use I-35E’s MnPASS lane at no cost, or
gather to drive to one of the new Park-and-Ride lots
and ride the bus. But Gather + Go sites are a concept
for neighborhood places that not only support
increased transit use and MnPASS use, they also
support increased carpooling to destinations not
served by I-35E.
• The forms of suburban neighborhoods often
discourage carpooling and transit use. Because
many developer-designed developments and street
systems were made for privacy, not accessibility, the
time-consuming task of having to drive through
winding, circuitous streets to pick up fellow
carpool members is unappealing to many. Because
neighborhoods were often designed as separate
enclaves, residents who work near each other and
are potential fellow carpool members may even not
know each other.
• Many neighborhoods are connected to very busy
roads that are not conducive places for local
carpool users to congregate.
• Within Corridor communities currently there are
single-use and under-used public, semi-public, and
common spaces within residential neighborhoods
and planned unit developments. These include
small parks, mini playgrounds, areas with banks of
mailboxes, stormwater ponds, gardens, etc. Many
such locations could serve as informal gathering
sites for carpoolers.
• A Gather + Go neighborhood space, whether
retrofitted or newly constructed, should be located
along a street that is accessible to immediate
neighbors by foot and/or bicycle paths. Where
frequent Gather + Go use is anticipated, sites could
include secure bicycle racks, a bench, a simple
shelter, and a designated stopping area for carpools
and school buses.
• Besides supporting carpooling, these multi-purpose
areas can become important neighborhood
spaces for informal community-building that
increases social capital and creates neighborhood cohesiveness among waiting residents.

- In the future these spaces could possibly be used for bus stops for local transit service.
- *Gather + Go* (G+G) types are listed below.

- **Neighborhood Gather + Go**
  The Neighborhood G + G concept is an area with a shelter, benches, a secure bicycle storage facility, and a safe pickup area. They could be in a number of neighborhood parks or other public spaces dispersed throughout the city.

- **Planned Unit Development Gather + Go**
  G + Gs could be designed into new planned unit developments or retrofitted into existing developments. Some small-scale G+Gs that are easily accessible by foot and serve very concentrated areas would not need bicycle storage facilities. In addition to the shelter with benches, the G+Gs in planned unit developments could have additional uses such as the development’s banks of mailboxes, a playground area, a stormwater pond, a garden, or a simple gathering area.

- **New Civic Amenity Gather + Go**
  G+Gs could also be new civic amenities. Besides having a shelter with benches and bicycle storage facilities, they could include new community assets such as a community garden and/or be sited in places where the city’s history and extensive natural resources could be experienced and interpreted, such as in an existing neighborhood park or another public space.

---

*Gather + Go Marker: Design Concept*

- The marker delineates where G + G groups are to gather, creates visibility for the G + G program, and to provides for the personal safety of G + G users with a safety camera.
- The prototype is shown with a limestone detail, but concrete could also be used in its place.
- Adding a simple canopy and benches to the basic marker would provide seating and protection from rain, snow, and sun for G + G users waiting to be picked up by their carpool or vanpool.
- The marker could be custom designed to reflect the character of the neighborhood.
Little Canada 73
Vadnais Heights 95
Centerville 111
Hugo 121
LITTLE CANADA // I-694

Area (sq mi)
- Total: 4.48
- Land: 4.34
- Water: 0.59

Population (2010)
- People: 9,773
- Density: 2,512 p/sq mi

Regional Planning Objectives
- 5 units per acre in developed areas
- Higher density in areas with sewer capacity that have access to transit corridors
LITTLE CANADA
// Community Character
Little Canada has a history as an old, freestanding community; it was settled in 1844, became a township in 1858, a village in 1953, and a city in 1974.

The community grew linearly along the Old Kettle River Road, today’s Little Canada Road.

French Canadians from Saint Paul settled by Savage Lake upon the advice of the Dakota. The new settlers named the lake because Indians gathered there seasonally to hunt and fish.

Just north of the current Little Canada Road the Gervais family, an early settlement family, established a gristmill on Gervais Creek. The former mill site is now part of Gervais Mill Park.

Little Canada was a farming community and much community activity centered on Saint John the Evangelist Church and the civic buildings and spaces in the eastern part of the City.

Beautiful Lake Gervais had many seasonal cottages along its shore; later year-around housing replaced the lake cottages.

As Rice Street developed, commercial activities that served the railroad workers and attracted visitors from Saint Paul became concentrated along the street.
Building + Housing Development

- The community has grown and changed from its original 19th century linear pattern of development.
- As access and automobile use grew, this freestanding farming community changed over time into a suburb of suburban-style single-family and multi-family neighborhoods north and south of Little Canada Road.
- Areas of suburban industrial and commercial development are located on or close to major roads.
- Saint John the Evangelist Church, a beautiful city landmark, dominants the high ground at the intersection of Little Canada Road and McMenemy Street.
- Housing dominants the City east of I-35E. Most housing is single-family detached housing, but there are areas of concentrated multi-family housing between Centerville Road and Desoto Street.
- Housing also dominates west of I-35E. There are areas of single-family housing both north and south of Little Canada Road.
- Concentrated areas of multi-family housing are found in close proximity to Little Canada Road east of Rice Street and west of I-35E and between Demont Avenue East and County Road B2 east of Roseville Elementary School and west of I-35E.
Environmental Features

- Little Canada’s environmental features are found in all areas of the city.
- Many environmental features have been created or impacted by development.
- The water-related environments are its most common and most prominent environmental features; the City’s 9 lakes and ponds cover 340 acres.
- These attractive features are at-risk for water quality denigration from their surrounding land.
- Although much lakeshore is privately owned, public access has been provided in a number of locations.
- Lake Gervais dominates Little Canada’s eastern edge. It is connected to Kohlman and Keller Lakes and is part of the Phalen Chain of Lakes.
- Lake Savage has been greatly altered; the construction of I-35E bifurcated it into East and West Savage Lakes.
- East of Rice Street, Round Lake is just south of Little Canada Road.
- Twin Lake is separated from the rest of the City by I-694, and a small lake is in the City’s northwestern corner.
- A number of ditches, channels, and streams lead to the lakes. In historic Gervais Mill Park three ponds constructed in Gervais Stream treat the pollutants from stormwater runoff before it reaches Lake Gervais.
- The City has a number of wetlands; most are found west of Lake Gervais. Some are associated with parks such as Westwind Park in the northeastern corner; others are scattered throughout the city.
- The Nadeau Wildlife Area is both a wildlife area and a neighborhood park southwest of West Savage Lake.
- In some areas there are opportunities to create appropriate, denser housing that overlook wetlands or have lake views.

<table>
<thead>
<tr>
<th>Environmental Features</th>
<th>Design Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lake</td>
<td>79</td>
</tr>
<tr>
<td>Stream</td>
<td></td>
</tr>
<tr>
<td>Wetland</td>
<td></td>
</tr>
<tr>
<td>Regional Park</td>
<td></td>
</tr>
<tr>
<td>Local Park</td>
<td></td>
</tr>
<tr>
<td>Golf Course</td>
<td></td>
</tr>
<tr>
<td>Water Quality (Low to High)</td>
<td></td>
</tr>
</tbody>
</table>
Circulation Systems: Vehicular + Pedestrian

- Little Canada has an extensive well-developed system of streets, roads, and highways.
- Unlike many suburbs, it has a modified grid system. Although the system is not a continuous, uniform grid, it has many grid characteristics. Most streets, roads, and highways are straight and have either an east-west or a north-south orientation.
- Lakes, wetlands, and freeways interrupt the grid pattern creating discontinuity in the circulation systems.
- Like many suburbs, the City’s main thoroughfares are county, state, or federal roads, not city streets.
- Highways have an extensive city presence and impact; some separate parts of the City from each other.
  - I-694 and State Highway 36 slice from east to west through the City near its northern and southern borders.
  - At its center, I-35E divides the City east and west.
  - State Highway 49, i.e. Rice Street, forms the City’s western edge and is the main north-south route in its western section.
- Edgerton, i.e. County Road 58, is the City’s main north/south route in the east.
- Following an historic trail, Little Canada Road, i.e. County Road 21, is the City’s main east-west spine.
- Most residential single-family housing neighborhoods are divided into long blocks, but their orientation varies. Some are east/west; others are north/south. This irregular pattern undermines street continuity in some areas.
- In neighborhoods with lakes and wetlands, street patterns curve in response to them.
- There is a Park-and-Ride lot at the City’s edge at Rice Street and Highway 36 and a small Park-and-Ride in an important city space at the Little Canada Road and McMenemy Street intersection.
- The grid–like character of some parts of the street/road system facilitate transit service. Transit routes follow along Rice Street, Little Canada Road, Centerville Road, County Road D, and Edgerton with loops on County Road B2, Demont Avenue and Labore Road.
- A very active railroad line passes through the City from Saint Paul in a northerly and northwesterly direction. The line is grade separated at County Road C, and
the City is pursuing at-grade signal upgrades at six locations where it intersects with streets and roads.

- Like many other suburbs, the City does not have a consistent and pervasive sidewalk system although there are sidewalks in some areas.
- The segment of Little Canada Road east of Rice to its intersection with County Road C has recently been improved with paving, pedestrian-scale lighting, and other street amenities.

**Trails + Utility Corridors**

- The City’s comprehensive plan emphasizes the recreational nature of its many trails and their access to parks. The city trail system relates well to its parks and some lakes, but access to Lake Savage West is lacking.
- When the proposed trails are built out, the system will link the City more closely together.
- The trail system’s role as a part of a citywide transportation system has not fully emphasized.
- The City has a number of water, sewer, and electrical utility right-of–ways, and some trails have been sited in utility corridors.
Existing Land Use

- The 2010 land use map shows a patchwork of many different kinds of single uses.
- Single-family housing is the most common use found throughout the City; the largest areas of single-family housing are east of I-35E.
- Most industrial and utility uses are west of I-35E.
- Many different land uses abut each other. The abutting uses range from agricultural to industrial. The variety of adjoining land uses is most prevalent along major roads west of I-35E.
- Although there are large areas of single use, many of these areas are divided into small parcels.
- There are very few areas identified as mixed-use areas.

Planned Land Use: 2030

- Many of the small contiguous parcels of different land uses were eliminated in the 2030 land use plan in the City’s comprehensive plan.
- The plan continues and enlarges the concentrated pattern of industrial and commercial land uses in proximity to Rice Street and I-694.
- The areas designated as mixed-use area are increased.
- The existing institutional uses are retained and expanded.
- Large areas of the city are retained as single-family housing.
- Multi-family housing areas are expanded in existing areas and in some areas close to I-35E and Highway 36.
Existing Civic Heart

Although Little Canada was greatly impacted when I-35E was built through its center, bifurcating Savage Lake on whose shores the community was founded, the City’s eastern part has retained its importance as the community’s civic heart.

- The landmark Saint John’s Church, the cemetery, Gervais Mill Park, Old Fire Hall Park, Spooner Park, watershed district offices, a new fire station, and the city hall are all located in close proximity to each other along Little Canada Road.
- There is an arc of commercial building with a small park-and-ride space at the intersection of Little Canada Road and McMenemy Street opposite the entry plaza in front of the landmark church.
- The Church’s school has a very large parking lot that is accessed off McMenemy Street.

Existing Commercial Center

This area has recently been substantially redeveloped along its southern edge. Pedestrian-friendly and transit-friendly improvements include:

- New sidewalk design, pedestrian scale lighting, bus stops, and street furniture make Little Canada Road pedestrian-friendly.
- Starting at the corner of Rice and Little Canada Road, the siting and building design of the Little Canada Village, the Lodge, and multi-family housing are scaled and sited to support the pedestrian-friendly street.
- Areas of impermeable surfaces have been reduced and new stormwater ponds created.

Although the area is greatly enhanced, there are still challenges north and east of the new developments that include:

- Two underutilized strip malls,
- Unclear circulation through the commercial area, and
- Scattering of buildings, parking lots, and stormwater ponds that contribute to the area’s lack of clear circulation and definition.
Demonstrating use of the strategies to improve transit and carpool use identified in the study, the design builds upon the greater density and transit and pedestrian improvements already in place to address additional opportunities by:

- Clarifying circulation,
- Further strengthening the area's pedestrian character,
- Strengthening the connection between the pedestrian-oriented streetscape on Little Canada Road and the commercial area north of it,
- Reconfiguring some of the parking areas and the stormwater ponds,
- Recycling underutilized retail space to provide multi-unit housing, and
- Creating a gathering space that relates to Little Canada Road and celebrates the area as the City’s commercial heart.

The existing commercial center at Rice Street and Little Canada Road is updated and strengthened by a series of design moves to be implemented over time. These include:

- A new block and open space system strengthens the relationship between the area north of the Road and Little Canada Road.
- Street improvements such as street trees, sidewalks, and pedestrian-scale lighting that continue the pattern established on Little Canada Road, to strengthen the pedestrian connection between new and existing housing areas to the Road, commercial areas, the veteran’s memorial, and the lakefront park.
- A new south-facing common space with central water feature opens to Little Canada Road.
- Mixed-use buildings define the common space’s edge.
- Stormwater requirements are integrated into the design as green elements rather than scattered spaces that divide the area.
- Under-utilized strip mall commercial buildings are repurposed as housing and live/work units with commercial space on the lower level with housing above.
- New housing overlooking Round Lake is built over the existing strip mall buildings, the existing parking lots are reduced in size, and resident parking is moved to the rear.
The Residential Ring

- The current senior housing and Commonbond housing form the eastern portion of the ring.
- The existing commercial strip mall buildings are converted into two-story housing units with live/work space on the ground floor in front with parking at the rear.
- A grocery store is added by the hardware store on the west of the existing strip mall at Rice Street.

The Commercial Ring

- Increasing the commercial activity at the Rice Street/Little Canada Road location builds upon current uses and the precedent of commercial and entertainment activity along Rice Street since the 19th century.
- The design moves away from the automobile-centric pattern of thinly strung commercial activity along Rice Street to a concentrated, repositioned, and re-centered commercial space on and north of Little Canada Road at and east of the Little Canada Road/Rice Street intersection.
- Existing and new commercial buildings form a u-shaped pattern or ring that opens up to the south facing Little Canada Road.
- The commercial ring is split in the middle by a pedestrian mall to provide access from the parking lots and the housing to the north, and to the commercial buildings and the outdoor space.

Parking

- Parking is provided north of the commercial ring to for visitors and customers to the housing, the live/work spaces, and the commercial ring.
- Trees and a rain garden with native plants facilitate the storage and infiltration of stormwater.
- Parking for the housing in the recycled strip mall buildings is provided in the rear of the buildings.

The Central Space

- The building facades form a south-facing central space that can be used for gathering and outdoor dining.
- The space consists of permeable paved areas, underground water storage, and a water feature.
- The water feature aerates the water and serves as a focal point at the space's center.
LITTLE CANADA // Design Concepts: Reshaping the Commercial Center

Alternative 1

- Live/Work Units
- Parking
- Pedestrian Crossings
- New Mixed Use
- Central Gathering Space
Existing Conditions: Strip Mall on Little Canada Road

The two strip malls on the north side of Little Canada Road:
- Have a location east of Little Canada’s commercial heart and just east of Little Canada Road’s intersection with Marketplace Drive,
- Are underutilized commercial spaces with a history of vacancies,
- Have service space behind the buildings with access from Marketplace Drive,
- Have a large parking lot and multiple entrances along Little Canada Road’s edge that provide customer access and parking, but do not support the Road as a pedestrian-friendly environment,
- Offer south-facing views across Little Canada Road of Round Lake, the park and the veterans’ memorial, and
- Have building/site sizes that permit conversion into multi-unit housing.
Live/Work Housing Overlooking Round Lake

The redesign of the existing buildings and site adds housing to the commercial use. It recycles the underutilized strip mall into live/work housing units that take advantage of its location just east of the commercial center on Little Canada Road and its view south across the Road. Design elements of the recycled site and buildings include:

- Retaining the commercial use on the first floor and adding a second floor for residential living spaces,
- Or retaining some first floor space for the resident’s work and/or commercial space while converting some of the ground floor to living space and adding a second floor for additional living space,
- Creating decks off the second floor living spaces that provide views south to Round Lake, the park, and the veterans’ memorial,
- Reducing the size of the parking lot in front of the building,
- Reducing the number of driveways off Little Canada Road,
- Creating resident parking behind the buildings,
- Retaining service to the buildings at the rear of the buildings, and
- Creating an entrance off Marketplace Drive that provides access to the front parking lot, building service area in the rear, and the resident parking lot behind the building.
The design strengthens and enhances the existing civic town center at Little Canada Road and McMenemy Street and creates new housing on each side of Little Canada Road.

**The Plazas**

The landmark church that dominates the intersection of Little Canada Road and McMenemy Street is supported by the enhanced civic space across McMenemy from the church.

- The current spaces on either side of McMenemy Street that are defined by the church and school on the west and a circle of commercial buildings on the east are enhanced and repurposed as pedestrian plazas that relate more strongly to each other.
- A new civic plaza is sited on the existing corner parking lot.
- New mixed-use buildings with housing above with service access and residential parking behind define the edges of the civic plaza.
- The Park-and-Ride facility is relocated to the church and school parking lot.
- The bus stop on Little Canada Road is integrated into the new public plaza in front of the circle of buildings.
- At the McMenemy Street and Little Canada Road intersection pedestrian crossings are striped and pedestrian-operated signal lights are added.
- A green gateway connects the plaza to the existing pedestrian trails, the creek, the forest park areas, the water utility corridor, and the historic mill site park along Gervais Creek.

**Little Canada Road Housing**

Land along Little Canada Road is redeveloped for mixed-use with housing that has views. Some have south-facing lake views; others have north-facing views and connections to parks, forest, existing trails, and the creek.

- Along the south edge of Little Canada Road medium-density housing steps down to the south towards Savage Lake to take advantage of the views of the lake and the Saint Paul skyline beyond.
- A pedestrian pathway along Lake Savage provides public access to the lake.
- A series of blocks with new streets perpendicular to Little Canada Road that intersect with the Road are to be phased in over time along the north edge of Little Canada Road west of the plazas at McMenemy.
- Townhouses are added along the Road’s northern edge.
  - Individual driveways along the Road are eliminated,
  - Townhouse parking is accessed from the new streets perpendicular to the Road.
- A sidewalk along the road is sited in front of the townhouses.
- Examples of possible development types include:
  - Higher-rise buildings along Little Canada Road that face the Road and step down to medium-rise housing south along lakefront and north to the forest, or
  - Low-rise housing types along the lakefront, with high-rise development north of Little Canada Road along several north-south facing axis. The buildings could have street corridor/low rise court housing open to the pedestrian park and forest/creek trails.
VADNAIS HEIGHTS
// Cty Rd E

Area (sq mi)
- Total: 8.24
- Land: 6.98
- Water: 1.26

Population (2010)
- People: 12,302
- Density: 1,762 p/sq mi
VADNAIS HEIGHTS

// Community Character
Historic Pattern

- Vadnais Heights was a freestanding, farm-based community before it emerged as a suburb in the mid-20th century.
- In the mid-nineteenth century it was part of the community of French Canadian immigrant settlers known as Saint Johns that eventually became Little Canada and Vadnais Heights.
- Originally subsistence farms, Vadnais Heights’ farmers became truck farmers who sold their produce at the Saint Paul Market in downtown Saint Paul.
- Over time farmlands were developed as fine-grained suburban neighborhoods.
- After World War II many veterans and their families built modest single-family houses in Vadnais Heights, an opportunity provided by the GI bill.
- Vadnais Heights became a city in the late 1950’s.
- The 1980s were another period of substantial growth in Vadnais Heights; many neighborhoods of multi-family and single-family housing developments were built.
- Today, most of the buildable land has been developed; only one truck farm remains.

Building + Housing Development

- Most residential development patterns are irregular; very few have a grid pattern.
- Clusters of fine-grained residential neighborhoods are separated by wetlands and lakes.
- Larger commercial, industrial, and institutional buildings are clustered to relate to north-south or east-west major roads and streets.
- Although housing is found throughout the City, west of I-35E housing is concentrated in neighborhoods in the northern and southern parts of the city.
Environmental Features

- Human intervention has altered much of the City’s landscape, yet the City has many areas of natural beauty where wildlife and birds thrive.
- Because both natural and man-made water systems dominate the City’s landscape, they are signature elements important to the City’s identity.
- Wetlands are found throughout the city; many are part of the City’s stormwater system receiving stormwater run off from systems of pipes that gather the water.
- Substantial portions of the City are former lakes and wetlands that have been drained.
- Sucker Lake and Lake Vadnais and their surrounds are major environmental and recreational amenities and are part of the Vadnais-Snail/Sucker Lakes Regional Park.
- Sucker Lake and Lake Vadnais are an important part of Saint Paul Regional Water Services; they channel, store, and filter water drawn from the Mississippi River that is piped to the water supply treatment facility by Lake McCarron.
- Although some major roads are built through wetlands, many wetlands have shaped the city’s discontinuous street system.
- Besides being the City’s signature elements, the City’s many wetlands and lakes have driven the City’s form; many areas are unbuildable, and wetlands separate neighborhoods.
Like many other suburbs, a matrix of north-south and east-west county, state, and federal roads and highways play a major role in the City’s circulation system.

The City’s many wetlands and lakes have determined the location of roads and streets and the form of the development pattern of many areas and neighborhoods.

Street patterns vary from residential development to development; many neighborhoods are quite separate from their adjoining neighbors.

Many discontinuous, winding residential neighborhood city streets connect with county and state roads.

Many residential street systems are designed to discourage driving through them.

With the opening of the Park-and-Ride facility in the southwestern quadrant of the I-35E and County Road E intersection and the completion of the first phase of the MnPASS system, Vadnais Heights residents and their neighbors will have new, faster access to downtown Saint Paul by the I-35E transit service and by carpools using the MnPASS lane.

Transit routes are located along the major thoroughfares that pass through the City on Rice Street i.e. State Highway 49, State Highway 96, and I-35E.

Bicycle ways are focused on the regional park and Highway 96.

Pedestrian pathways are along major roads and streets, on the edges of residential developments, and in parks.
Existing Land Use

- Currently this suburban city’s predominant land use is housing.
- Vadnais Heights has a diverse housing stock of neighborhoods of modest and up-scale single-family housing and concentrated areas with multi-family housing; almost all are located west of I-35E.
- The City’s percentage of multi-family units exceeds that found in many other suburbs. Fifty-four percent of its housing is single-family detached housing; the remainder is attached housing.
- Many recreational lands are associated with lakes or wetlands.
- Many of its undeveloped lands are undevelopable because they are wetlands.
- Retail and office activity are concentrated in a central district at the intersection of County Road E and I-35E and along County Road E, Highway 61, and Highway 96.
- A small commercial area is located on Centerville Road just east of Edgerton; this area is the City’s original downtown.
- Institutional uses are scattered throughout the City.
- Industrial uses are scattered east of I-35E in close proximity to the freeway and along the rail line south of Highway 96.

Planned Land Use: 2030

- The City’s land use plan calls for concentrating a diverse mix of development including retail, restaurants, offices, hotels, civic buildings, housing, and light industrial facilities in its new city center in the four quadrants of the I-35E and County Road E intersection. This location is east of its historic commercial heart along Centerville Road.
- The plan calls for more extensive development of County Road E from the freeway to Highway 61, and more intense commercial land uses along Highway 61.
- The plan includes the new Metro Transit Park-and-Ride facility in the southwest quadrant of the I-35E/County Road E intersection.
- The City’s transit planning sees a role in the Rush Line Corridor that is currently being planned, as well as the potential for the eventual conversion of the Minnesota Northern Railroad line into a light rail transit or bus rapid transit commuter line to Minneapolis with a station at County Road E.

Vadnais Heights’ Vision

The vision for Vadnais Heights’ future as put forward in its comprehensive plan and strategic plan is to maintain and improve the community and continue its 50-year focus on quiet, protected neighborhoods, schools, parks, and water resources which is reflected in selective refinements to its pattern of land use, minor additions to the nearly complete road network, refinements to parks, trail, and open space systems, and the protection of surface water and other major sensitive natural features. Both small and large land use changes would be initiated by the private sector for the most part. Potential housing initiatives could include 50 acres of formerly single family 1-5 acre parcels to be redeveloped for single and multi-family housing.
Vadnais Heights Project Focus

Given the City’s vision, its plans, and its work in the establishment the I-35E-County Road E area as its city center with a diverse mix of land uses, a major Park-and-Ride facility, its plans for job growth in areas at a distance from the I-35E intersection, and the creation of neighborhoods of moderate housing density, this project chose to focus on land use strategies for creating neighborhood facilities that encourage and facilitate carpool and transit use rather than suggesting an extensive redoing of its land use policies as reflected in its comprehensive and strategic plans.

The MnPASS Opportunity

With the opening of the Park-and-Ride facility in the southwestern quadrant of the I-35E and County Road E intersection, and the completion of the MnPASS lane, Vadnais Heights residents and their neighbors have improved opportunities for access to downtown Saint Paul by more efficient transit service in the I-35E Corridor and by carpools using the MnPASS lane. The new facilities are anticipated to reduce traffic congestion in the I-35E Corridor.

Transit Use

There are transit use challenges for local residents because:

- The areas of dense worker housing are at a distance from the new Park-and-Ride transit facility,
- Although Vadnais Heights is a car-dominated environment, not everyone has a car, is able to drive a car, or has a car available to get to the new facility,
- Within Vadnais Heights, transit service that permits residents to reach the new facility does not currently exist,
- Irregular patterns of winding residential streets, lack of sidewalks and trails, and numerous wetlands make access to the new facility circuitous and difficult for non-driving residents, and
- Many city streets do not have sidewalks or bikeways.

Carpool Use

- For the many Vadnais Heights residents that do have cars, drive to work, and do not wish to use transit, the new facilities will offer an opportunity to use carpools to get to work taking advantage of the uncongested MnPASS lane by using the ramp closest to their homes, either the County Road E or the Highway 96 ramp.
- Carpools may be attractive to those that do not work along the transit route. Although many job destinations are located in downtown Saint Paul, many job locations are at a distance from the I-35E transit route and are not reachable or efficiently reachable by transit. Other job locations are dispersed or are located in the suburbs.
- Neighborhood-based carpools could also potentially increase I-35E transit use if interested residents could organize carpools to the Park-and-Ride facility at County Road E.

Strategy

Use existing community resources to encourage carpool and transit use by assigning and making new gathering places. This strategy is founded on the ideas that:

- Some existing single-use spaces within Vadnais Heights could be repurposed for multi-uses to promote more car-pooling and transit use.
- Centralized neighborhood-based carpool gathering locations are needed because the non-grid street patterns in Vadnais Heights and in other suburban communities are barriers to creating efficient carpools. Winding, discontinuous streets make it time-consuming to pick up carpool members in dispersed locations.
- The design of housing developments as separate enclaves and the separation of neighborhoods by lakes and wetlands make it a challenge to assemble carpools because prospective members may not know each other.
- Connections between prospective carpool members/transit riders made with the assistance of technology offers an opportunity for the creation of more carpools because prospective members can connect with each other through the internet to form carpools.
- Carpools can be more attractive to prospective members because through cell phones they can function more efficiently. Members can keep in touch by phoning, email, and/or texting.
Because of the separate character of Vadnais Heights’ neighborhoods and its unconnected and discontinuous road system, a traditional transit strategy to serve city residents seems unfeasible at this time. However, the City is a very good candidate for a system of multi-use spaces in existing spaces and required in new housing developments that promote carpool and transit use such as Gather + Go and Park + Pool facilities.

**Gather + Go**

Gather + Go facilities are neighborhood places throughout the city where residents can meet their carpools.

- A Gather + Go facility could be on public or private land.
- The size of the Gather + Gos would vary according to user needs, the opportunities to retrofit them into the existing neighborhood fabric, and the users served.
- Neighborhood residents should be able to easily and safely walk or bike to a nearby Gather + Go as no car parking facilities would be provided.
- A G + G should feel safe and have places for waiting. It should not be directly on a busy road, but it could be located just off a busy road.
- G + G amenities include secure bicycle racks, a battery-operated personal safety camera, a bench, a simple shelter, and a designated stopping area for carpools and potentially school buses.

**Park + Pool**

Park + Pool facilities could potentially increase carpool use by creating a number of modest carpool sites within the city that are easily accessible by car. A Park + Pool is mini Park-and-Ride lot located within a large parking lot that is underutilized during normal commuting hours. A small portion of existing parking lots dispersed throughout the community could be identified as potential locations. The Park + Pool's parking spaces would be marked with signs or painted pavement and located near the entrance to the parking lot so that the other parking lot users could park closer to the facilities associated with the parking lot such as the church entrance, picnic facilities, etc. Prospective users include those who do not want to drive to the new Park-and-Ride facility in Vadnais Center and those that had another destination than downtown Saint Paul or I-35E bus stops.

**There are 3 types of Gather + Go:**

**Neighborhood Gather + Go**

Where significant use is expected, neighborhood G + Gs could have a shelter with benches, a secure bicycle storage facility, and a safe pickup area. They could be in neighborhood parks like Berwood Park. Vadnais Heights has a number of parks dispersed throughout its neighborhoods that could be used as G+G’s.

**Planned Unit Development Gather + Go**

Planned Unit G + Gs could be designed into new planned unit developments or retrofitted into existing developments. Some small-scale G+Gs easily accessible by foot that serve very concentrated areas may not need bicycle storage facilities. In addition to the shelter with benches, the G+Gs in planned unit developments could have additional uses such as the development’s banks of mailboxes, a playground area, a stormwater pond, a garden, or a simple gathering area.

New Civic Amenity Gather + Go

Gather + Gos could also be new civic amenities. Besides having a shelter with benches and bicycle storage facilities, they could include new community assets such as a community garden and/or be sited in places where the City’s extensive natural resources could be experienced and interpreted (e.g. an existing neighborhood park or another public space).

Characteristics of a local system of Park + Pools are listed below:

- **P + Ps** accommodate a limited number of cars and bicycles in designated, marked parking spaces and secure bike racks within a larger parking lot.
- **P + Ps** may be located in community public places such as a community park or in private places such as a church parking lot.
- **P + P** users sign up to use the space and drive or bike to them to meet their carpools.

**Large Public Park-and-Ride/Transit Facilities**

Large park-and-ride facilities differ from the Gather + Go and Park + Pool facilities in a number of ways.

- They are different in scale. As their name implies, they are large and while serving a number of users from the community in which they are located they also draw users from a number of communities beyond.
- They are public facilities that provide transit service and are part of the regional transit system.
- They are located by major transportation corridors.
- Their facilities may include enclosed waiting areas.
Potential Gather + Go and Park + Pool Locations

The map below identifies a number of potential Gather + Go and Park + Pool locations throughout the City of Vadnais Heights. Selection of the proposed locations was based upon the density of the neighborhood, access by users to the site, site characteristics, site safety, and ease of access to roads and the Park-and-Ride at County Road E and I-35E. It is not anticipated that each potential site would be developed as a Gather + Go or Park + Pool location. Neighborhood interest would determine which ones would be selected for development, and over time other sites could be added. The table on the following pages details the Characteristics + Potentials for which each site was selected, as well as Proposed Design Elements that could be integrated into each site.
<table>
<thead>
<tr>
<th>Location</th>
<th>Characteristics + Potentials</th>
<th>Proposed Design Elements</th>
</tr>
</thead>
</table>
| Centerville Road north of County Road F | • Private and public land  
• Planned for new Planned Unit Development with high to medium density housing  
• PUD amenities could include a G + G  
• Adjacent to Bridgewood Park  
• Adjacent to existing medium density housing  
• Potential trail connection  
• Good access: off Centerville Rd, to Highway 96/I-35E ramps | • G + G space with marked shelter and bench  
• Battery-operated personal safety camera  
• Rainwater gardens as the PUD’s stormwater elements  
• Aggregated mailboxes for PUD residents  
• Children’s play space with play structure  
• Wetland overlook with interpretation |
| Edgerton Street and Centerville Road | • Currently planned for commercial land use  
• Suggested new mixed-use development: commercial plus housing with views to Lake Vadnais  
• Access off Edgerton and Centerville Road  
• Adjacent to Vadnais Lake Park entrance  
• Adjacent to Oak Creek Park  
• Adjacent to future medium to high density housing along Centerville Road | • Pull off from Centerville Road  
• G + G space with marked shelter and bench  
• Battery-operated personal safety camera  
• Trail connection to Oak Creek Park  
• Interpretation of the Saint Paul Water Services system |
| Thornhill Lane and Greenhaven Drive | • Adjacent to neighborhoods of dense housing with many workers  
• Good access to Highway 96/I-35E ramps  
• Pedestrian improvements needed on Greenhaven Drive and at its Thornhill intersection | • Pull off on Greenhaven Drive west of its Thornhill intersection  
• G + G space with marked shelter and bench  
• Battery-operated personal safety camera  
• Crosswalks on Greenhaven and Thornhill  
• Pedestrian-controlled crosswalk lights |
| Kohler Meadows | • Existing city park  
• Could serve local neighborhoods and the business park to the north  
• Good access on McMenemy  
• Good access to Highway 96/I-35E ramps | • G + G pull off  
• Marked shelter and bench  
• Battery-operated personal safety camera  
• Secure bicycle storage  
• Plantings to define space  
• Striped crosswalks with pedestrian-controlled lights on McMenemy Road and County Road F |
| Bear Park | • Existing city park  
• Could serve local neighborhoods  
• Good access to Highway 96/I-35E ramps | • G + G pull off  
• Marked shelter with bench  
• Battery-operated personal safety camera  
• Plantings to define space |
| Berwood Park (design concept featured on p. 107) | • Existing city park  
• Could serve several dense local neighborhoods  
• Good access to County Road E Park-and-Ride and the I-35E/County Road E ramps | • G + G pull off  
• Marked shelter with benches  
• Battery-operated personal safety camera  
• Secure bicycle storage |
## POTENTIAL GATHER + GO LOCATIONS (continued)

<table>
<thead>
<tr>
<th>Location</th>
<th>Characteristics + Potentials</th>
<th>Proposed Design Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morningside Park</td>
<td>• Existing city park&lt;br&gt;• Embedded in a neighborhood&lt;br&gt;• Good access to Highway 96/I-35E ramps</td>
<td>• G + G pull off&lt;br&gt;• Marked shelter with benches&lt;br&gt;• Battery-operated personal safety camera&lt;br&gt;• Secure bicycle storage</td>
</tr>
<tr>
<td>Elmwood Park</td>
<td>• Existing city park&lt;br&gt;• Embedded in a neighborhood&lt;br&gt;• On designated bikeway</td>
<td>• G + G pull off&lt;br&gt;• Marked shelter with benches&lt;br&gt;• Battery-operated personal safety camera&lt;br&gt;• Secure bicycle storage&lt;br&gt;• Area designated with plantings</td>
</tr>
<tr>
<td>Greenhaven Park</td>
<td>• Existing city park&lt;br&gt;• Embedded in a neighborhood&lt;br&gt;• On designated bikeway</td>
<td>• G + G pull off&lt;br&gt;• Marked shelter with benches&lt;br&gt;• Battery-operated personal safety camera&lt;br&gt;• Area designated with plantings</td>
</tr>
<tr>
<td>McMenemy Street and Koehler Road</td>
<td>• Trail entrance to Lake Vadnais/Snail Lake Regional Park&lt;br&gt;• Publicly owned land&lt;br&gt;• Along proposed pedestrian way</td>
<td>• Improved/enlarged park entrance plus pull-off&lt;br&gt;• G + G space with shelter and bench&lt;br&gt;• Battery-operated personal safety camera&lt;br&gt;• Hydrological system interpretation</td>
</tr>
</tbody>
</table>

## POTENTIAL PARK + POOL LOCATIONS

<table>
<thead>
<tr>
<th>Location</th>
<th>Characteristics + Potentials</th>
<th>Proposed Design Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Christ the Servant Lutheran Church</td>
<td>• Privately owned land with parking lot&lt;br&gt;• Across Edgerton from Vadnais Heights Elementary School&lt;br&gt;• Access from pedestrian pathway on Centerville Road&lt;br&gt;• Good access from Koehler Road&lt;br&gt;• Good access from future multifamily housing on Centerville Road</td>
<td>• Agreement with the church for a number of designated parking spaces close to Centerville Road and away from the entrances to the church.&lt;br&gt;• P+P marker or marked shelter&lt;br&gt;• Battery-operated personal safety camera&lt;br&gt;• Designated striped and signed parking spaces&lt;br&gt;• Secure bicycle storage</td>
</tr>
<tr>
<td>Vadnais Commons</td>
<td>• Publicly owned civic center with large parking lot&lt;br&gt;• Centrally located in the western section of the City&lt;br&gt;• Good access from County Road F&lt;br&gt;• Good access to Highway 96/I-35E ramps</td>
<td>• Agreement between the church and the city, county, or state for a number of parking spaces&lt;br&gt;• Designated P + P spaces close to Centerville Road and away from church entrances.&lt;br&gt;• P+P marker or marked shelter&lt;br&gt;• Battery-operated personal safety camera&lt;br&gt;• Secure bicycle storage</td>
</tr>
</tbody>
</table>

## PARK-AND-RIDE LOCATIONS

<table>
<thead>
<tr>
<th>Location</th>
<th>Characteristics + Potentials</th>
<th>Proposed Design Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>County Road E</td>
<td>• Large parking lot&lt;br&gt;• Transit service&lt;br&gt;• Good access from County Road E&lt;br&gt;• Good access to County Road E/I-35E ramps&lt;br&gt;• Could be site of a week-end Farmers’ Market</td>
<td>• Improved pedestrian and bicycle access on Arcade&lt;br&gt;• Shelter with benches&lt;br&gt;• Secure bicycle storage</td>
</tr>
</tbody>
</table>
Berwood Park Gather + Go

This site plan below demonstrates how a portion of Berwood Park’s parking lot off Monn Avenue and Greenbriar Streets could be used as a Gather + Go site, if there were sufficient neighborhood interest to warrant its development.

At right are conceptual drawings of what the Gather + Go shelters and signs could look like. Details could be customized to fit the character of each location, but their overall branding would be consistent to facilitate easy recognition.
Site Plantings
Bike Racks
Bicycle Lockers
Concrete Paving
Gather + Go
Sign
Bench
New Crosswalk

Shelter: Side View

Gather + Go Lit Sign
Hung roof
Limestone Inset
Bench Seat

Sign: Side View

Safety Camera
Steel Cabinet
Concrete Base
Site Plantings

C 5x9 Channel, painted black
Limestone Panel Inset
Concrete Base

Sign: Front/Back View
CENTERVILLE // Cty Rd 14

Area (sq mi)
- Total: 2.41
- Land: 2.13
- Water: 0.28

Population (2010)
- People: 3,992
- Density: 2,512 p/sq mi
CENTERVILLE

// Community Character
Historic Pattern

- The current City of Centerville was originally settled by Dakota in the 17th and 18th centuries and then abandoned as a settlement but retained as a wild rice harvesting area.
- French-Canadian trappers came to Centerville in the 1840s.
- From the beginning Saint Genevieve Church has been an important part of the community. French Canadians founded Centerville as a township in 1857.
- Located by Centerville Lake and Centerville Road, the community’s original fine-grained grid pattern and its downtown were centered on Main Street, i.e. County Road 14, and Centerville Road, i.e. County Road 21. Lot sizes were small.
- Although the community has grown considerably since the 19th century and has been transformed into a suburb, it still retains the grid pattern of its historic core, its unique small town identity, and the landmark Church of Saint Genevieve of Paris.

Building + Housing Development

- A small core of detached commercial buildings is located in the historic downtown, and some commercial pad buildings and strip malls are strung along Main Street toward I-35E.
- Single-family detached housing dominants the City’s building types. Areas of single-family housing along the lakeshores and those furthest from the downtown core have the least density.
- Multi–family and senior housing are located between Centerville Road and Dupre south of Sorel Street.
- Dense multi-family housing is located north of Main between 20th Avenue North, i.e. County Road 54 and the city limits.
- The historic landmark Saint Genevieve of Paris Church occupies that high ground between Centerville Lake and Centerville Road just south of Main Street on Goiffon Road.
- The new Saint Genevieve Church Community Center is part of the large campus at 6995 Centerville Road.
Environmental Features

- Like many other communities in the Northeastern Metropolitan Area, Centerville is rich in water resources. Lakes, wetlands, and streams are its important environmental features.
- Part of the Rice Creek Chain of Lakes system, it has two large interconnected lakes: Centerville and Peltier that are the city’s dominant environment features even though neither lake is entirely within the city limits.
- Its two small lakes are Wards Lake and Sherman Lake.
- Several streams wind through the community and flow into its lakes.
- Small wetlands, both natural and manmade, dot the neighborhoods.
- Larger wetland areas are associated with Clearwater Creek and its tributaries.

Recreation

- Although much of Centerville's lakeshores are privately owned or owned by the Saint Paul Regional Water Services, regional trails in the City connect with both Centerville and Peltier Lakes.
- Sections of the regional trails are along busy roads: Centerville Road, i.e. County Road 21, and Main Street, i.e. County Road 14.
- In addition to a new city park by Centerville Lake and a large park west of Centerville Road, neighborhood-scale parks are scattered throughout the areas of newer development.
Streets, Roads, Transit + Utilities

- The City’s lakes, wetlands, and creeks impact the alignment and the continuity of the City’s east-west, north-south roads and streets.
- Centerville’s heart is a tight grid of 4-6 blocks of county roads and local streets.
- Like many suburbs, Centerville depends upon county roads for the City’s main roads.
- Transit runs on both Centerville Road, i.e. County Road 21, and Main Street, i.e. County Road 14.
- Centerville Road, Main Street, and 20th Avenue, all county roads, are the City’s through streets. Old Mill Road, Dupre Road, La Mound Trail, Brian Drive, Shad Avenue, and Peterson Trail provide connections between many of the City’s residential neighborhoods and Main Street.
- Heritage Street, Hunters Trail, Dupre Road, and Hunters Ridge Lane provide residential neighborhood access to Centerville Road.
- Many residential streets wind parallel to the lakes and Clearwater Creek or are interrupted by the wetlands and stormwater ponds dotting the neighborhoods.
- Although many parts of the city do not have sidewalks, the city has a network of bituminous trails and concrete sidewalks along streets that connect to Main Street. A bituminous trail that provides a bicycle and pedestrian connection to the downtown and the school from the north.
- Within the Metropolitan Urban Service Area; the City’s sewer interceptor is sited along Main Street, 20th Street, and the City’s southern border.
- A substantial north-south electric line is near the City’s eastern edge.
- There are buried pipes both within Centerville Lake and Peltier Lake.
Existing Land Use

- The City's preponderant land use is single-family housing.
- Areas of multi-family housing include Main Street at Lake Centerville, on Centerville Road south of Heritage Street and north of Meadow Lane, East of County Road 54, i.e. 20th Avenue North, and west of the commercial area by the City's southern border.
- Institutional uses are located in the historic downtown core, along Main Street, and along 20th Street.
- Commercial uses are sited in the downtown core, along Main Street towards I-35E and on both sides of County Road 54 north of Main Street and south of Main Street on the west side.
- Most industrial use is between I-35E and County Road 54, i.e. 20th Avenue, but there is a small area west of County Road 58 just north of the city limits.
- There are blocks of public and semi-public lands north and south of Main Street, west of Centerville Road, a small area along the shores of Centerville, and a larger area where Coldwater Creek flows into Peltier Lake.

Planned Land Use: 2030

- The City's future land use plan differs from its existing plan in some significant areas. Because the City has very little buildable vacant land in its core, land use changes depend for the most part on redevelopment rather than development.
- Multi-family housing is planned on the north shore of Lake Centerville.
- The mixed-use central business district is expanded, extending north and south of Main Street and to the east along Main Street almost to Clearwater Creek.
- The commercial areas along Main Street are also expanded,
- The high-density residential area is expanded west of the commercial area on County Road 54.
- The vacant land on the City's southern border is changed from single-family residential to medium-density residential.
CENTERVILLE II Design Concepts: Preserving + Enhancing Downtown
Downtown Master Plan

- In 2005 the City prepared a downtown master plan. The plan’s vision included increasing businesses, housing, and parking and improving pedestrian and bicycle and access to create a traditional downtown of mixed uses.
- To date the plan has not been executed and the City is rethinking its scope and scale.

Design Concept

The design preserves, defines, and reinforces the existing historic building and tree canopy patterns while creating more density, strengthening the pedestrian/bicycle systems, and enhancing the connections to Centerville Lake and Centerville Elementary School.

- To strengthen and extend the existing historic grid pattern and to reinforce pedestrian and bicycle use, new blocks connect to existing city streets and public open space systems,
- Selective infill of multi-unit housing and mixed-use buildings in existing vacant lots and in currently underutilized parcels preserve, define, and reinforce the City’s historic building and tree canopy patterns and scale,
- Blocks of mixed-use buildings step down from higher buildings along Centerville Road to smaller multi-unit housing northeast of the edge of Centerville Lake,
- Mixed-use and live/work units are developed along Progress Street south of Main Street,
- The Main Street/Progress Street intersection is striped as a pedestrian crossing and pedestrian-activated signals and a pedestrian traffic island are added,
- Street trees and pedestrian and bicycle enhancements are added along Progress Street south of Main Street to facilitate and strengthen a pedestrian and bicycle connection between the neighborhoods and the school, and
- Public pathways along the Lake, east-west pedestrian paths, and small places strengthen public access to Lake Centerville and the connection between downtown and the Lake.

Gather + Go

- Because there is excellent city access to the new park-and-ride facility north of County Road 14 at I-35E, and the community is small, there is no need for additional Park-and-Ride lots at this time.
- However, because there are green spaces throughout many dispersed neighborhoods, there may be an opportunity for the creation of Gather + Gos within these places.
**HUGO // Cty Rd 14**

**HUGO**

**Area (sq mi)**
- Total: 36.02
- Land: 33.45
- Water: 2.57

**Population (2010)**
- People: 13,332
- Density: 397 p/sq mi

*Note: Although the City occupies an area 6 miles by 6 miles, this project only addressed the area within the MUSA line.*
// Community Character
Study Area Focus

Even though Hugo has been a community since the mid-19th century, it is classified as an emerging suburb because it has large areas of new developments, has large rural, undeveloped areas, has areas both inside and outside the Metropolitan Urban Service Area (MUSA), and is located on the developing edge of the Metropolitan Area. Although the City occupies an area 6 miles by 6 miles, this project concentrated on the City’s southwestern portion that is within the MUSA.

Historic Pattern

- Although it has a long history, Hugo’s status as a city is comparatively recent. The area was established as Oneka Township in 1870, but Hugo did not become a city until 1972.
- In the early nineteenth century and before, the Hugo area was popular with Indians for harvesting wild rice.
- White settlers first settled in the area in the 1850s; Hugo’s first residents were French and French Canadian farmers.
- The railroad hastened Hugo’s development. In 1869 the Lake Superior and Mississippi Railroad established the Centerville Station in Hugo, and many local farming families cut, hauled, and sold wood to the railroad in the winter to use as railroad engine fuel.
- Hugo experienced commercial growth in the early 1900s along Highway 61, and the Hugo Feed Mill was built along the rail line in 1917.
- During prohibition driving to Hugo on Highway 61 for drinking and playing slot machines was popular, and after prohibition Hugo’s roadhouses and nightclubs continued to be entertainment destinations.
- The railroad’s, Highway 61’s, and Oneka and Egg Lakes’ influence on the community’s development pattern and its downtown’s linear form can be seen in the City’s current parcel map. Commercial buildings were built along the highway and parallel to the rail line. Although the rail line is no longer active, nearby residential and commercial development still relate to the historic rail right-of-way and Highway 61.
- Constrained on the east by Egg Lake, residential neighborhoods grew west of the rail line and northeast of the downtown between Egg Lake and Oneka Lake.
Environmental Features

- Like many of its neighbors, Hugo's six-mile by six-mile landscape is dominated by water. Lakes and wetlands abound, and it has several watercourses.
- Small-scale wetlands dot the City's eastern portion.
- Although there are a series of lakes in southeastern Hugo, larger wetlands and larger lakes are concentrated in Hugo's center.
- A centrally located, large Metropolitan Mosquito Control District (MMDC) system connects to Rice Lake and Egg Lake east of Hugo's historic downtown core on Highway 61.
- Large wetlands and small wetland patches are found in the City's western portion on either side of State Highway 61.
- Clearwater Creek connects to the northern tip of Bald Eagle Lake in the City's southwestern corner.
- Much of the land's original vegetation has been cleared for farming in areas that do not have lakes or wetlands.
State Highway 61 and County Road 8 are Hugo’s main roads.

The older sections of the City retain its original north-south, east-west gridded street pattern.

The newer, dispersed developments have curvilinear streets that wind among natural and man-made wetlands.

Although there are few pedestrian paths in the City’s older areas, newer developments have pedestrian paths and bike trails.

Some neighborhood pedestrian paths connect to the Hardwood Regional Trail and the regional trail along Frenchman Road.

A citywide trail system has been planned and partially built. When the proposed city and county trails are built out, there will be strong connections between the disparate areas of the City.

A north-south sewer interceptor is located west of Highway 61, as is the historic rail right-of-way.

East-west sewer interceptors are located south of County Road 8.

Electric utility lines cross Hugo in an east-west, north-south, and diagonal directions.

A series of ditches crisscross the land throughout the city.
Existing Land Use

- Undeveloped areas, large agricultural areas, and residential areas dominate current land uses in the area of Hugo within the MUSA.
- Commercial areas are sited on small parcels along the City’s main roads: Highway 61 and County Road 8.
- Industrial use is concentrated along Highway 61.
- Areas of open space are designated throughout; many are associated with environmental amenities.
- Most institutional uses are located on or just off Highway 61, but a school is bounded by residential neighborhoods.

Planned Land Use: 2030

- Agricultural land within the MUSA line is eliminated.
- Single-family use is greatly expanded.
- Commercial uses are expanded in a concentrated area along County Road 8 and consolidated in some selected areas along Highway 61.
- Industrial uses are expanded and consolidated along Highway 61.
- Large areas of mixed use are designated within the historic downtown core and adjacent to a large recreational open space.
- Sites of current institutional uses are retained.
Hugo's Downtown in 2030 (based on the Downtown Plan)
This study’s design approach is targeted to neighborhood-scale strategies because:

- Hugo has embraced livable city design principals in planning for its future growth and development. It is well on its way in building out areas of the City using planning strategies that are designed to encourage concentration of commercial uses, density in close proximity to commercial areas, and a pedestrian-friendly connected network of sidewalks, streets, and trails.
- The City has adopted a series of plans including Multi Family Development Guidelines (2005), Commercial and Industrial Design Guidelines (2011), and plans for a Rush Line Station Area that support its livable city goals.
- Consequently, at this time Hugo is not in need of additional extensive planning to direct development and redevelopment activities that support it as a carpool–friendly, vanpool-friendly city positioned for a station location on a regional-scale transit system.
- Hugo does offer opportunities to implement smaller scale strategies that support carpooling, vanpooling, and transit use.

Hugo’s Downtown Plan

- Hugo has already created a plan to strengthen and enhance its historic downtown along Highway 61 that connects to its older neighborhoods and ties it more closely to Egg Lake: Downtown Plan & Design Guidelines (2007), so it does not need additional planning/design assistance at this time on this project.
- The City’s downtown plan builds upon Hugo’s interest in redeveloping land in its historic downtown in the following ways:
  - The remnant section of old County Road 8 is terminated and becomes a residential street retrofitted as a pedestrian and bicycle-friendly street between new the County Road 8 alignment and Highway 61. This creates a pedestrian and bicycle connection from the developments in the west to the Heartwood Trail, a potential future Rush Line station location, and the historic downtown.
  - An extension of the street and the pedestrian and bicycle paths from Highway 61 to the east connect to a new lake-oriented development on the shores of Egg Lake to create a space and a civic connection to Egg Lake,
- The new street creates a framework for redevelopment for the remaining shoreline land along Highway 61 north and south of the new road.
- New development that references the City’s past as an entertainment destination is encouraged between the highway and the lake.

Additional Strategies to Support Carpooling, Vanpooling + Transit

Hugo has additional opportunities to support a variety of transportation modes through neighborhood-scale strategies that create Park + Pool and Gather + Go gathering places in strategic locations throughout the City. Park + Pool and Gather + Go implementation strategies include:

- Designating and designing public spaces in older neighborhoods as Gather + Gos,
- Retrofitting the many single-use areas within recently developed neighborhoods as Gather + Go places. Candidates for G+Gs include mailbox stations, small playgrounds, set-aside natural areas, landscaped areas, neighborhood parks, etc.,
- Requiring that G+G areas that are easily walked to or biked to by neighborhood residents be included in planned unit development plans,
- Designing each G + G to reflect the character of its neighborhood location and its identity as a G + G,
- Creating Park + Pools in existing strategic places that facilitate access to the new regional Park-and-Ride lot on County Road 14 or the use of the MnPASS lane, and
- Designing each P + P to reflect the character of its community location and its identity as a P + P.
Park + Pool: Highway 61 + County Road 8 Intersection

Because the new Park-and-Ride lot west of I-35E is at a distance from the old city core, and the Rush Line alignment has not been determined, the intersection of County Road 8 and Highway 61 may be a good candidate for a Park + Pool. Elements of the design concept $P + P$ include:

- A location in the southern part of Hugo’s historic downtown,
- A safe, visible location off the highway and away from church entrances in a large church parking lot,
- A number of clearly marked parking stalls for $P+P$ use,
- Facilities for safe bicycle storage,
- A protected place to sit, and
- An object that identifies the $P + P$.

At right are conceptual drawings of what the Park + Pool shelters and signs could look like. Details could be customized to fit the character of each location, but their overall branding would be consistent to facilitate easy recognizability.
Design Concepts: Gather + Go to Promote Carpoools + Transit Use
Gather + Go: Potential Locations

When a former farm in southwestern Hugo was redeveloped as a residential neighborhood, part of the homestead was recycled into a neighborhood space. This is an example of a site in a development that could become a Gather + Go in addition to its current use.

The design, the scale, and the materials used in this neighborhood shelter reflects the neighborhood’s character. Paying attention to these kinds of design cues can be a way to create P + Ps and G + Gs that blend into their unique locations.
* Source: MET Council GIS DataFinder

Minnesota Board of Water & Soil Resources
• Encourage density of population and activity
• Design for a pedestrian-friendly environments
• Encourage a mixed-use land use pattern
• Develop an interconnected street network that maximizes pedestrian and bicycle access and simple route design
• Support travel options that encourage or compliment using transit
• Plan for linear growth in nodes along corridors

(p. 136)
How can each community benefit from the substantial transportation investments being made in the 35 E Corridor?

Consider analysis & site visit feedback:
LACK OF ACCESS
FEW SIDEWALKS
FEW BIKE ROUTES
WIDE STREETS
SURFACE PARKING

Feasible communities begin with multi-modal transportation
- Efficient, intermodal systems that connect
- Landscaped intersections that integrate pedestrian, cycling, and transit

Potential communities:
- Little Canada is developing more mixed use
- Vadnais Heights is concentrating development at County Road E & 35 E
- Lino Lakes is making a new center between 35 W & 35 E
- Centerville has an ambitious downtown plan
- Hugo has a whole new commercial district surrounded by neo-traditional town-planned development
- MnDOT is making big investments in large park & ride facilities and MnPASS retrofits

After a few listening sessions with community staffs, we learned that a lot is happening in the corridor!

Drivers
- What to expect during this meeting...
- Goal:
- Introduction: Land Use Study Update
- Research Opportunities & Challenges
- Findings Design Approach & Strategy
- Takeaways
- Guiding Principles
- Little Canada is developing more mixed use
- Vadnais Heights is concentrating development at County Road E & 35 E
- Lino Lakes is making a new center between 35 W & 35 E
- Centerville has an ambitious downtown plan
- Hugo has a whole new commercial district surrounded by neo-traditional town-planned development
- MnDOT is making big investments in large park & ride facilities and MnPASS retrofits

What is missing and what could be improved upon?
- We considered community...
  - Uniqueness
  - History
  - Cultural Assets
  - Environmental Assets
  - Current Challenges
  - Future Aspirations—Not Specific Designs
  - From there, we developed design principles informed by...
    - Achievable goals
    - Current comprehensive plans
    - Appreciation of what is already there

Unprecedented in Minnesota, a reimagined transit-oriented development that integrates transit systems that provide connectivity by streets, systems, and a pedestrian network linking walking, biking, and playing environments within and between communities and urban development.

Resilient communities begin with multi-modal transportation
- Efficient, intermodal systems that connect
- Landscaped intersections that integrate pedestrian, cycling, and transit

In conjunction with urban planning, we are developing a comprehensive land use strategy for each community, a multi-modal transportation system, and a comprehensive program to enhance the community identity.

Appendix // 137
APPENDIX // Presentation: December 9, 2014

This project is a resource to inform conversations about community development and sustainability.

So what are the challenges and opportunities in supporting, encouraging, and enhancing transit and car pool use within the 35E Corridor?

Busy roads & streets

Relationship to Development / Redevelopment Rules & Regulations

Need to Scale Projects to Community Capacity

Need for Interconnectedness

Opportunities & Challenges

Community Character & Readability

Drivers

Historic Centers & Small Town Identity
Opportunities & Challenges

Changing Landscape Values & Perceptions

1st & 2nd Ring Development, Redevelopment / Retrofit

Land/Building Relationships & Patterns

Water: Implications for Corridor Communities

Regional Park
City Park
Wetland
Water
Channel/Ditch
Stream
Principal Arterial
Major Collector
A/B Minor Arterial
Local Arterial
Local Street
Bikeway
Paved Shoulder
Planned Paved Shoulder
Multi-Use Trail
Planned Multi-Use Trail
Off-Road Trail
Planned Trail
Sidewalk
Planned Sidewalk

Opportunities & Challenges

Transportation Systems & Communities

Outer Ring Development, Redevelopment / Retrofit

MUSA Line
No
Yes

Sewers

• Change is inevitable but it should happen incrementally, over time
• Reflects Community
• Context

Needs
Aspirations
In Scale
Context
Resources

We considered all of the opportunities & challenges to inform our design approach.

Our approach is illustrated in our design principles.
APPENDIX // Presentation: December 9, 2014

Little Canada Civic Space: Responding to Each Community’s Historic Character & Pattern

Using Existing Spaces in Multiple Ways to Support and Encourage Car Pooling and Transit Use

Using Common Community Elements as a Base for Gather & Go

 Vadnais Heights, Distributed carpooling network

Carpoolers can take advantage of existing smart phone apps and social networking sites to find other carpoolers.

Centerville Downtown

Transformed to promote dense, mixed-use development for development.

Promoting Dense, Mixed Use, Development and Transit Use

They have community hearts and we are strengthening them by preserving and enhancing their unique identities.

Responding to Each Community’s Historic Character & Pattern

Making Pedestrian-Friendly and Bicycle-Friendly Streets and Trails

Using common community elements as a base for Gather & Go

Promoting Dense, Mixed-Use Development and Transit Use

Making Pedestrian-Friendly and Bicycle-Friendly Streets and Trails

Using Existing Spaces in Multiple Ways to Support and Encourage Car Pooling and Transit Use

Carpoolers can take advantage of existing smart phone apps and social networking sites to find other carpoolers.

Little Canada Civic Space: Responding to Each Community’s Historic Character & Pattern

Using Existing Spaces in Multiple Ways to Support and Encourage Car Pooling and Transit Use

Using Common Community Elements as a Base for Gather & Go

 Vadnais Heights, Distributed carpooling network

Carpoolers can take advantage of existing smart phone apps and social networking sites to find other carpoolers.

Centerville Downtown

Transformed to promote dense, mixed-use development for development.

Promoting Dense, Mixed Use, Development and Transit Use

They have community hearts and we are strengthening them by preserving and enhancing their unique identities.

Responding to Each Community’s Historic Character & Pattern

Making Pedestrian-Friendly and Bicycle-Friendly Streets and Trails

Using common community elements as a base for Gather & Go

Promoting Dense, Mixed Use, Development and Transit Use

Making Pedestrian-Friendly and Bicycle-Friendly Streets and Trails

Using Existing Spaces in Multiple Ways to Support and Encourage Car Pooling and Transit Use

Carpoolers can take advantage of existing smart phone apps and social networking sites to find other carpoolers.

Vadnais Heights, Distributed carpooling network

Carpoolers can take advantage of existing smart phone apps and social networking sites to find other carpoolers.

Centerville Downtown

Transformed to promote dense, mixed-use development for development.

Promoting Dense, Mixed Use, Development and Transit Use

They have community hearts and we are strengthening them by preserving and enhancing their unique identities.

Responding to Each Community’s Historic Character & Pattern

Making Pedestrian-Friendly and Bicycle-Friendly Streets and Trails

Using common community elements as a base for Gather & Go

Promoting Dense, Mixed Use, Development and Transit Use

Making Pedestrian-Friendly and Bicycle-Friendly Streets and Trails

Using Existing Spaces in Multiple Ways to Support and Encourage Car Pooling and Transit Use

Carpoolers can take advantage of existing smart phone apps and social networking sites to find other carpoolers.
Mixed use on the Lake

Little Canada New Commercial Center
Developing/Redeveloping with Ecological Sensitivity + Using Environmental Amenities to Create Value

Design Principles

High value housing overlooking Lake Vadnais

Design Principles

Addressing unintended consequences of large environmental interventions

Using community sites within the Interstate 35 E corridor as prototypes, demonstrate land uses that support, encourage, and enhance transit and car pool use in each community and identify barriers to transforming auto-oriented communities into more transit-friendly and car pool-friendly communities.
Multi-Family Housing as a Community Asset

- Although single-family housing has predominated historically in each city, many have multi-family housing.
- Multi-family units tend to be newer than the single-family housing and concentrated in specific areas within the city.
- Many cities that have neighborhoods that were developed in the 1980s need multi-family senior housing so that their older residents can stay in the community.
- Some troubled multi-family housing is not perceived as a community asset.
- The cities want multi-family housing that reinforces and/or enhances the city’s current character.

Suburban and/or Rural Character

- Most cities see themselves as possessing a unique character based upon their rural heritage and their natural amenities.
- Most see themselves as non-urban.

Need for Interconnectedness

- Most cities value connections within their community.
- Sidewalks are not desired in most communities because residents’ object to maintenance obligation but are accepted if the city maintains them.
- The communities value paths and trails as community connectors that are maintained by the city.

Support for Transit

- Many cities would like more transit within their communities.
- In some places business owners support transit because they need transit access for their employees although the cities' residents are not asking for transit service.

Relationship to Development and Redevelopment Rules and Regulations

- Cities are well versed in their development/redevelopment opportunities and challenges.
- Many cities perceive that Metropolitan Council forecasts represent opportunities, but also often do not reflect complex local conditions.
- Some cities think that the Metropolitan Council does not fully perceive the implications for local investment in infrastructure needed to meet Council goals.
- Some cities would like more performance-based rules and incentives.
- Coordination between Metropolitan Council priorities and development requirements is needed.

1st and 2nd Ring Development and Redevelopment

- These fully or nearly fully developed suburbs have challenges because available developable land is very limited and some sites may need mitigation due to previous uses or have significant environmental constraints.
- Much housing in 1st and 2nd ring suburbs needs retrofitting or redevelopment.
- Small lots pose challenges for redevelopment for larger single-family housing and multi-family housing.
- Aging populations need services and senior housing to
 retain them in the community.
• Have existing sewer infrastructure and think that they can continue to use well water for drinking water.
• Have a desire for residential, commercial, and industrial developments that enhance tax base without negatively impacting community character.
• Have a grid development pattern that can potentially enhance bicycle and pedestrian networks.

Need to Scale Projects to Community Capacity
• Small communities have small staffs and modest budgets.
• Scale of the community often drives need for incremental changes.
• Volunteer efforts have played an important quality-of-life role in many small communities.

Outer Ring Development and Redevelopment
• Often are in areas that were once stand-alone communities and have residents that wish to retain the community’s identity as it is transformed into a suburb.
• Have developable land that is not served by infrastructure.
• Have an opportunity to respond to current development trends, housing desires, etc.
• Have an opportunity to build into their developments pedestrian and bicycle networks.

Historic Centers and Small Town Identity
• Historic small town centers are often very important to city identity.
• Historic centers can be enhanced as important community gathering places.
• Historic centers can be recycled to meet new needs creating new value.

Changing Landscape Values and Perceptions
• Previously much current suburb land was valued for their economic value as farms.
• Currently former farmlands are valued for their landscape character that promotes a lifestyle that values living with nature.
As part of the study's initial analysis, I-35E Corridor maps were generated. The data for the maps was drawn from a variety of state, regional, and local sources. The maps portray a variety of conditions found within the Corridor that include both current and planned land uses, development patterns, densities, circulation systems, utility corridors, environmental systems, areas of vulnerability, etc. The maps were used as tools to understand the Corridor's character and inform the rest of the work. Because the study sought to focus on different types of communities and address a variety of issues, the maps informed the selection of the three I-35E intersections and their surrounding communities that were chosen as the study's focus. The Corridor maps also were used to identify Corridor issues and community issues to be addressed in the study. Selected maps are found on the following pages.
CORRIDOR COMMUNITIES

// AERIAL PHOTOGRAPHS OF CORRIDOR STUDY AREA: 1930s + 1960s
EXISTING METROPOLITAN URBAN SERVICE AREA

LEGEND

- Lakes and Streams
- 35E
- Highways and Roads
- City Streets
- 10ft. Contours
- Areas without Metropolitan Urban Sewer Services
- Areas with Metropolitan Urban Sewer Services
- 1/4 Mile Radius
- 1/2 Mile Radius
- 1 Mile Radius

* Source: MET Council GIS DataFinder

Scale: 1:75,000
**INFRASTRUCTURE**

// COMMUNITY WATER SOURCES

---

**LEGEND**

- Lakes and Streams
- i-35e
- Highways and Roads
- City Streets
- 10ft. Contours
- 1/4 Mile Radius
- 1/2 Mile Radius
- 1 Mile Radius

- Community Serves Multiple Communities Using Local Source for Public Water Supply
- Community Uses Local and Outside Sources for Public Water Supply
- Community Uses Local Source of Public Water Supply
- Community Uses Outside Sources for Public Water Supply
- No Public Water Supply - Private Wells

* Source: MET Council GIS DataFinder

Scale: 1:75,000
INFRASTRUCTURE
// WATER SUPPLY: SURFACE OR GROUNDWATER

LEGEND
- Lakes and Streams
- I-35E
- Highways and Roads
- City Streets
- 10ft Contours
- 1/4 Mile Radius
- 1/2 Mile Radius
- 1 Mile Radius
- Groundwater
- Both Surface and Groundwater

* Source: MET Council GIS DataFinder

Scale: 1:75,000
LEGEND

- Lakes and Streams
- 35E
- Highways and Roads
- City Streets
- 10ft. Contours

Wastewater Treatment Plant Sewershed

- Metro
- 1/4 Mile Radius
- 1/2 Mile Radius
- 1 Mile Radius

* Source: MET Council GIS DataFinder

Scale: 1:75,000

appendix // 153
LAND USE
// 1984

* Source: MET Council GIS DataFinder
I-35E MNPASS EXTENSION:
Land Use to Increase Transit Use Along 35E

LAND USE
// 1990

LEGEND
- Lakes and Rivers
- 35E
- Highways and Streams
- City Streets
- 10ft. Contours

- 1/4 Mile Radius
- 1/2 Mile Radius
- 1 Mile Radius

Land-Use
- Agricultural
- Single Family Residential
- Multi-Family Residential
- Commercial
- Industrial
- Institutional
- Mixed-Use
- Multi-Optional Development
- Rural or Large-Lot Residential
- Railway
- Airport

* Source: MET Council GIS DataFinder

Scale: 1:75,000
Land Use

BLUEPRINT PLANNING STRATEGIES FOR 2030

Legend

- Lakes and Streams
- I-35E
- Highways and Roads
- City Streets
- 10ft. Contours
- Agricultural Preservation Area
- Developed Area
- Developing Area
- Diversified Rural
- Non-Council Area
- Rural Center
- Rural Residential
- 1/4 Mile Radius
- 1/2 Mile Radius
- 1 Mile Radius

Source: MET Council GIS DataFinder

Scale: 1:75,000

Appendix
LAND USE
// PARCELS

* Source: MET Council GIS DataFinder
TRANSPORT CONTEXT // FUTURE TRANSITWAYS BY TYPE

LEGEND
- Lakes and Streams
- 35E
- Highways and Roads
- City Streets
- 10ft. Contours
- Rail Lines
- Bike Ways

Status
- Existing
- Planned
- Rail Lines
- Bike Ways

Future Transitways 2030
- Urban and Local Routes: Suburban Circulator
- Radial Crosstown and Limited Stops
- Peak Routes and All-Day Services
- I-35E

* Source: MET Council GIS DataFinder

Scale: 1:75,000

appendix // 163
TRANSIT CONTEXT
// PARKS + TRAILS

Scale: 1:75,000

* Source: MET Council GIS DataFinder
**JOBS + HOUSING**

**// JOB DENSITY**

*Source: MET Council GIS DataFinder*
JOBS + HOUSING

RESIDENTIAL LAND USE FOR 1945 + 1959

LEGEND

- Lakes and Rivers
- 35E
- Highways and Streams
- City Streets
- 10ft. Contours
- 1/4 Mile Radius
- 1/2 Mile Radius
- 1 Mile Radius

Residential Land-Use
- 1945
- 1959

* Source: MET Council GIS DataFinder

Scale: 1:75,000
ENVIRONMENTAL CHARACTERISTICS

// HIGH AMENITY CORRIDOR + HIGHLY COMPLEX HYDROLOGICAL SYSTEM

LEGEND
- Wetlands
- Lakes and Streams
- 35E
- Highways and Roads
- City Streets
- 10ft. Contour Lines
- 1/4 Mile Radius
- 1/2 Mile Radius
- 1 Mile Radius

* Source: MET Council GIS DataFinder

Scale: 1:75,000
ENVIRONMENTAL CHARACTERISTICS

// IMPAIRED WATERS

LEGEND

- Wetlands
- Lakes and Streams
- 35E
- Highways and Roads
- City Streets
- 10ft. Contours
- Impaired Waters
  - 1/4 Mile Radius
  - 1/2 Mile Radius
  - 1 Mile Radius

* Source: MET Council GIS DataFinder

Scale: 1:75,000
ENVIRONMENTAL CHARACTERISTICS

AREAS WITH POTENTIAL FOR GROUNDWATER + SURFACE WATER INTERACTION

LEgend
- Wetlands
- Lakes and Streams
- 35E
- Highways and Roads
- City Streets
- 10ft. Contours
- Impaired Streams
- High Potentially for Groundwater and Surface Water Interaction

1/4 Mile Radius
1/2 Mile Radius
1 Mile Radius

* Source: MET Council GIS DataFinder
Minnesota Board of Water & Soil Resources

Scale: 1:75,000
GROUNDWATER SENSITIVITY TO POLLUTION

ENVIRONMENTAL CHARACTERISTICS

* Source: MET Council GIS DataFinder and MN Data Deli

Legend:
- 35E
- Highways and Roads
- City Streets
- 10ft. Contours

Sensitivity to Pollution
- Low
- High

Scale: 1:75,000

appendix // 177
ENVIROMENTAL CHARACTERISTICS
// GROUNDWATER RECHARGE AREA

LEGEND

- Lakes and Streams
- I-35E
- Highways and Roads
- City Streets
- 10ft. Contours

Groundwater Recharge Levels
- High
- Low

1/4 Mile Radius
1/2 Mile Radius
1 Mile Radius

* Source: MRT Council GIS DataFinder

Scale: 1:75,000
ENVIRONMENTAL CHARACTERISTICS

EMERGING DEVELOPMENT + WATER SUPPLY ISSUE: CHANGING AQUIFER LEVELS

LEGEND
- Lakes and Streams
- 35E
- Highways and Roads
- City Streets
- 10 ft. Contours

Post-Settlement Water Levels of Prairie Du Chien Aquifer:
- 825 ft Water Level
- 850 ft Water Level
- 875 ft Water Level
- 900 ft Water Level
- 925 ft Water Level

Current Water Levels of Prairie Du Chien Aquifer:
- 775 ft Water Level
- 800 ft Water Level
- 825 ft Water Level
- 850 ft Water Level
- 875 ft Water Level
- 900 ft Water Level
- 925 ft Water Level

HYDROSTRATIGRAPHIC CROSS-SECTION OF TWIN CITIES METRO AREA

* Source: Met Council Technical Report 2009

* Source: MET Council GIS DataFinder
ENVIRONMENTAL CHARACTERISTICS

// CANOPY COVER

LEGEND

- Lakes and Streams
- 35E
- Highways and Roads
- City Streets
- 10ft. Contours
- Tree Canopy Cover
  - 1/4 Mile Radius
  - 1/2 Mile Radius
  - 1 Mile Radius

* Source: MET Council GIS DataFinder

Scale: 1:75,000

appendix // 181
ENVIRONMENTAL CHARACTERISTICS
// WILDLIFE HABITAT QUALITY

LEGEND
- Lakes and Streams
- 35E
- Highways and Roads
- City Streets
- 10ft. Contours
- Low
- High

1/4 Mile Radius
1/2 Mile Radius
1 Mile Radius

Source: MET Council GIS DataFinder

Scale: 1:75,000