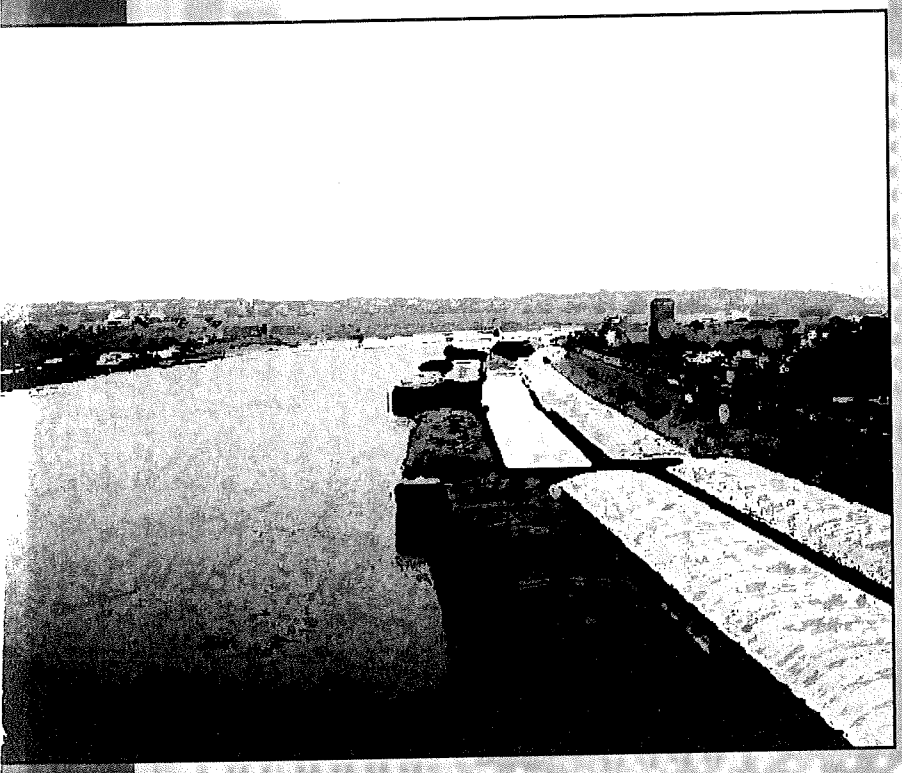
MISSISSIPPI RIVER CORRIDOR PLAN

THE SAINT PAUL COMPREHENSIVE PLAN



Developed under direction of the Saint Paul Planning Commission
Adopted by the Saint Paul City Council January 9, 2002

CITY OF SAINT PAUL
DEPARTMENT OF PLANNING AND
ECONOMIC DEVELOPMENT

The citywide portion of the Saint Paul Comprehensive Plan consists of the following as of adoption by the Saint Paul City Council in 2002. The dates in parentheses show when the City Council initially approved each plan chapter for submittal to the Metropolitan Council.

Plan Summary and General Policy (1999)
Land Use Plan (1999)
Transportation Plan (1997)
Housing Plan (1999)
Parks and Recreation Plan (1997)
Library Services Plan (1996)
Downtown Development Strategy (2003)
Mississippi River Corridor Plan (2002)
Implementation (1999)

A separate Area Plans volume identifies all small area plans and district plans that have been officially adopted as amendments or addenda to the Comprehensive Plan. It also includes summaries of all area plans that have been adopted in summary form under the current neighborhood planning policy. The Plan is subject to amendment, and a publication noting all amendments in force will be available after amendments are adopted.

Plan documents are available at the Saint Paul Public Library and copies may be obtained from the Department of Planning and Economic Development, 25 W Fourth Street, Saint Paul, MN 55102, telephone: (651) 266-6573. (The Water Conservation and Emergency Response Plan is published separately by the Saint Paul Water Utility and is not available from PED or on-line.) **As preparation can be completed, most or all chapters will be accessible from the City of Saint Paul web page at ci.stpaul.mn.us (departments, PED, comprehensive plan).**

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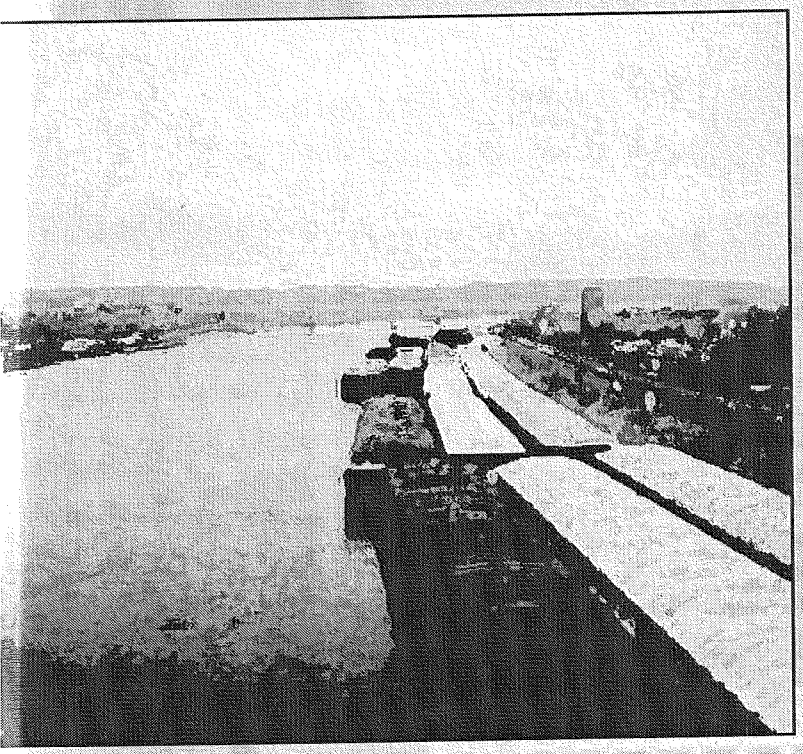

Adopted by Saint Paul City Council subject to review by the Metropolitan Council of the Twin Cities, Department of Natural Resources, and National Park Service March 14, 2001
Approved by the Metropolitan Council of the Twin Cities as part of the revised Comprehensive Plan August 22, 2001
Approved by the Minnesota Department of Natural Resources October 5, 2001
Reviewed by the National Park Service October 22, 2001
Re-adopted by Saint Paul City Council January 9, 2002

CITY OF SAINT PAUL
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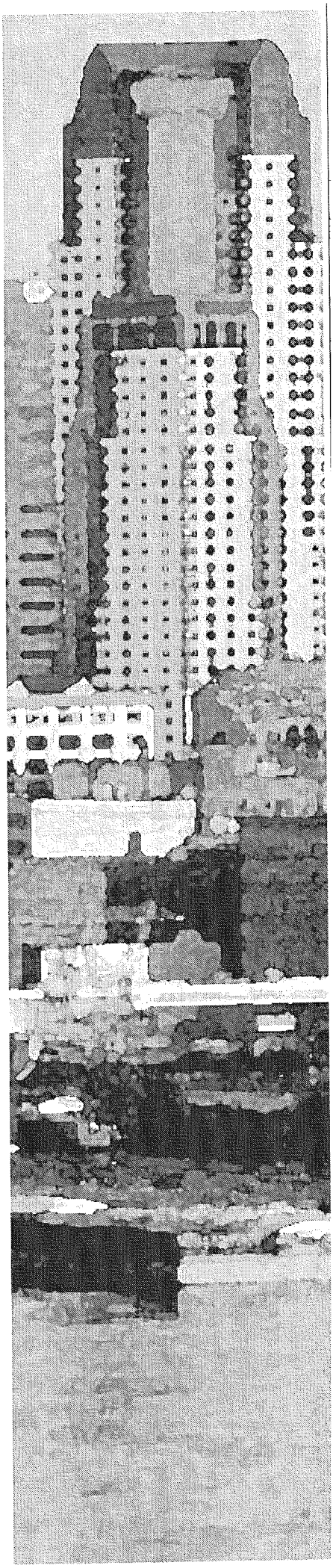

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1.0 Summary

The Saint Paul Mississippi River Corridor Plan describes the Mississippi River in Saint Paul as a series of interrelated systems: natural, economic, social, and built. Just as the River Corridor has been shaped by history, decisions about development and change will influence each of these systems for future generations. Thus, this plan focuses on protecting the resources that support our community and on the management of human activity and the physical environment.

Saint Paul is rediscovering and redefining its relationship with the Mississippi River. Increased environmental stewardship and establishing connections to the river are central to this rediscovery. The Mississippi River Corridor Plan reinforces the body of river-related planning already completed in recent years. Those plans which are most influential come from within and outside the City: the 1999 Land Use Plan, the *Saint Paul on the Mississippi Development Framework*, the Mississippi National River and Recreation Area (MNRRA) Comprehensive Management Plan, and the State Critical Area program.

The Mississippi River Corridor Plan is a chapter of the Saint Paul Comprehensive Plan. The Water Management Plan will be written after the River Corridor Plan is completed. The current Mississippi River Corridor Plan was adopted in 1981 and amended in 1987. After public hearings and consideration of public comments, the Saint Paul Planning Commission will forward the plan to the City Council. The City Council will review the plan and submit it to the Metropolitan Council, the Department of Natural Resources, and the National Park Service for joint review. After receiving comments from these agencies, the City Council will adopt the final plan.

There are numerous entities with jurisdiction over the Mississippi River, ranging from local to federal units of government. The City intends that its plans and ordinances for the river corridor be consistent with those of these governmental partners.

Interjurisdictional Governance

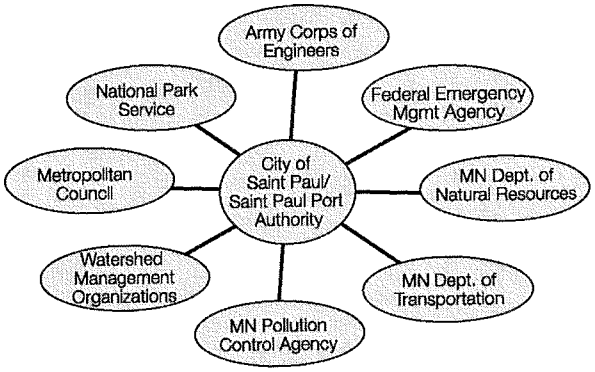
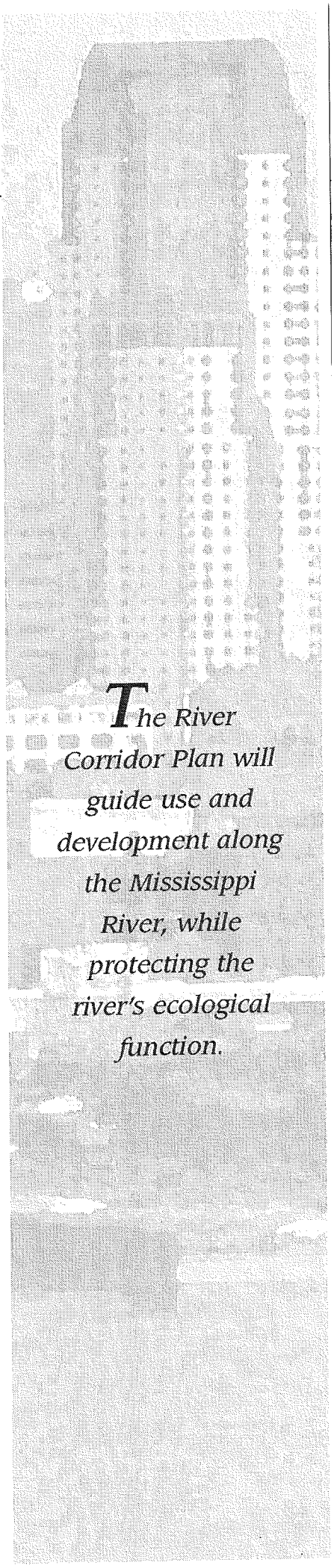


Figure A



The River Corridor Plan will guide use and development along the Mississippi River, while protecting the river's ecological function.

Strategy 1: Protect the River as a Unique Urban Ecosystem

- Undeveloped bluffs should be protected, stabilized, and restored through acquisition, use of native species, building setbacks, and by prohibiting development on the bluff face.

- The River Corridor contains sensitive natural resources. The floodplain and shorelines, wetlands, and natural habitat found throughout the River Corridor should be protected and sustained.

- The City supports the green corridors project of the Minnesota DNR. The goal is to establish regional greenways around high quality native habitat remnants, thus providing continuous habitat corridors for native plant and wildlife species. In Saint Paul, the river valley and the Trout Brook reach are parts of the DNR plan.

- Working with its watershed partners, the City will continue to identify means for improved stormwater management. Public education will continue to be an important way to help protect water quality.

Strategy 2: Sustain the Economic Resources of the Working River

- The City supports continuation of the working river and commercial navigation in Saint Paul. The economic importance of commercial navigation to Saint Paul, Minnesota, and the Upper Midwest is significant. The environmental benefits of barging over other hauling modes (air quality, traffic congestion, etc.) have been well documented.

- The City supports the Port Authority's policy of replacing non-river-related businesses with river-related businesses at Southport and Red Rock Industrial Districts, as leases expire.

- Along the riverfront and its floodplain, new development should have a relationship to the river, a need for a river location, or the capability to enhance the river environment. Industrial and commercial uses, as well as housing may all fit these categories.

Strategy 3: Enhance the City's Quality of Life by Reconnecting to the River

- Parks, open space, and trails are an important way of allowing people to come the river. The City is working on a number of initiatives, including

the realignment of Shepard Road, to increase park and open space along the river. Over time the city's riverfront open space system will become more continuous and river-related. The City will also complete a continuous Mississippi River Trail along the entire length of both sides of the river.

- The views afforded by magnificent bluffs in Saint Paul's river corridor are part of what makes the city a special place. There are opportunities in the Shepard Road/West Seventh Street corridor, Battle Creek and Highwood neighborhoods to create additional view points to the river. To enhance river corridor views, all billboards should be removed from the river corridor and not replaced.

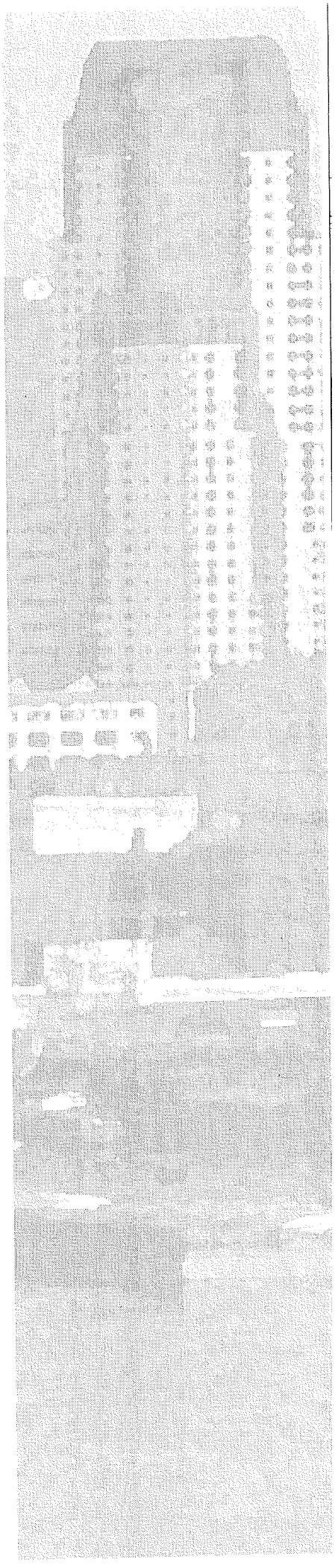
- New neighborhoods are part of creating connections to the river. In strategic River Corridor locations, following adopted design principles, new urban villages should be established.

- Cultural resources in the river corridor include early settlements, historic structures, and architecturally unique bridges. These resources should be preserved and restored, as they are integral to the character and history that defines Saint Paul.

Strategy 4: Use Urban Design to Enhance the River Corridor's Built Environment

- New development should establish "traditional" street and block patterns to enable people to experience the river through visual and physical connections. These traditional street patterns will restore connections between neighborhoods further upland and the river.

- Primary view corridors should remain open and unobstructed. Accordingly, the scale of new buildings in the river corridor should relate to topography and should preserve critical public views.



2.0 Introduction

The Saint Paul Mississippi River Corridor Plan is a chapter of the City's Comprehensive Plan. Other plan chapters address Land Use, Parks and Recreation, Housing, Downtown Development Strategy, Transportation, Sewers, and Libraries. The River Corridor Plan will guide use and development along the Mississippi River, while protecting the river's ecological function. There are multiple facets to the river's role in the city and region — as an ecological system, as a cultural and historical resource, as a public amenity, as a focus for recreational activity, for commercial and industrial activity, and increasingly for new residential development. The River Corridor Plan will help Saint Paul realize the full potential of the river as the city's symbolic "front yard." The River Corridor Plan recognizes that the ecological function of the river is not only affected by activity throughout the river corridor as defined in this plan, but also by activity in the watersheds that feed the river.

There are multiple facets to the river's role in the city and region—as an ecological system, as a cultural and historical resource, as a public amenity, as a focus for recreational activity, for commercial and industrial activity, and increasingly for new residential development.

2.1 Purposes

The purposes of the Saint Paul Mississippi River Corridor Plan encompass its designation as a state critical area and as a national river and recreation area — the Mississippi National River and Recreation Area — as well as its role as a multi-purpose resource for the city, state and region. These are:

- To protect and preserve the Mississippi River Corridor as a unique and valuable resource for the benefit of the health, safety, and welfare of the citizens of the city, state, and region.
- To restore and establish the unique urban ecology of Saint Paul's Mississippi River Corridor.
- To reinforce the Mississippi River Corridor as Saint Paul's front yard, and the backbone of a community-building network extending beyond the shoreline and into the fabric of surrounding neighborhoods.
- To manage the Mississippi River Corridor as an important economic resource for river-related industries and commercial navigation for the city, state and region.
- To expand opportunities for using the Mississippi River Corridor as a city amenity and enhance citizens' quality of life, including increased public access, recreation and education.

- To protect and preserve the Mississippi River Corridor as an essential element in the federal, state, regional and local recreation, transportation, sewer and water systems.

- To prevent and mitigate danger to the life and property of the citizens of the city, state and region and prevent and mitigate irreversable damage to this state, regional, and national resource.

- To preserve, enhance and interpret the Saint Paul Mississippi River Corridor's natural, aesthetic, historic, archeological and ethnographic (cultural) resources.

2.2 Legislative History and River Corridor Plan Background

In the past twenty five years there has been an increased legislative focus on environmental stewardship of the Mississippi River. The first major effort, authorized by state law in 1976, was the designation of the Mississippi River Corridor within the Twin Cities Metropolitan Area as a State Critical Area. The Critical Area program required coordinated planning among communities in the river corridor to resolve land and water use conflicts, and to preserve and enhance the natural, aesthetic, cultural and historical value of the river for public use. Cities were required to establish protection of the river resource through planning and related ordinances.

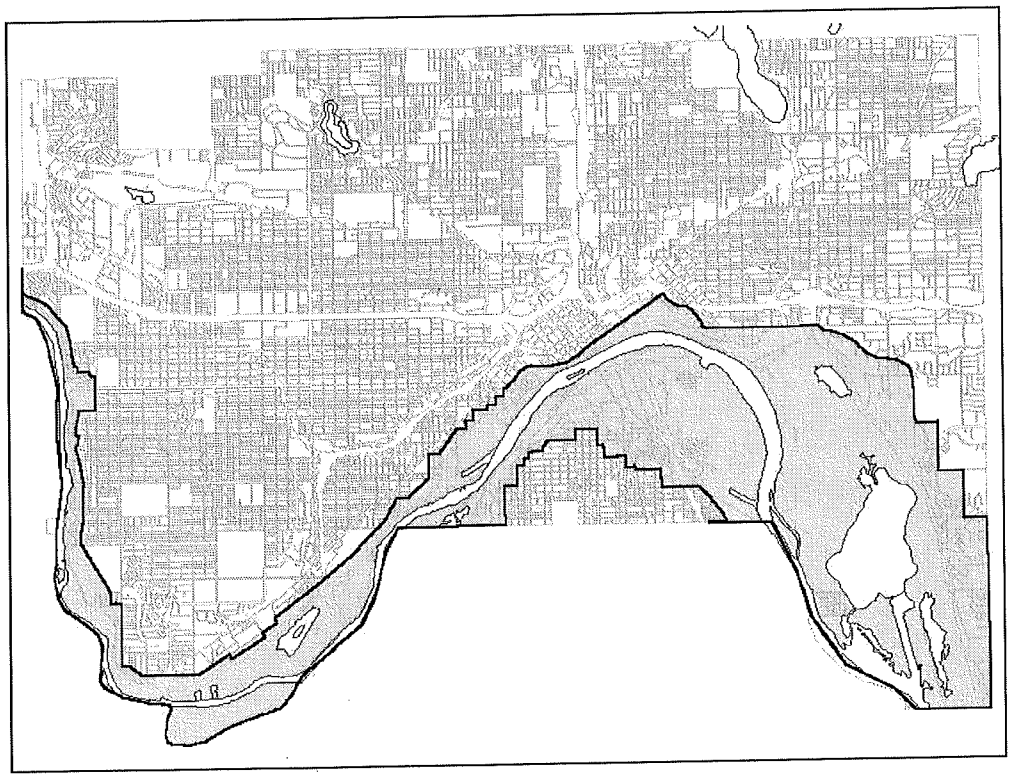
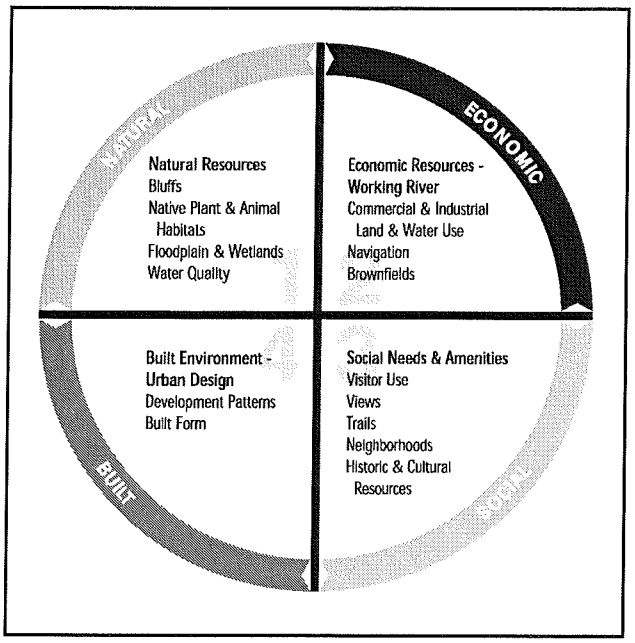


Figure B
Mississippi River Critical Area in Saint Paul

In response, the Saint Paul City Council adopted a *Saint Paul Mississippi River Corridor Plan* in 1981, with policies for managing this important resource and balancing open space use with industrial and commercial development. This plan fulfilled the state's requirement for a Critical Area Plan. It also became a chapter of the Saint Paul Comprehensive Plan, and was last amended in 1987 to incorporate the 1986 Riverfront Pre-Development Plan. Recent state law has required all Twin Cities municipalities to update their comprehensive plans, and Saint Paul has nearly completed this effort. As part of the required update to comprehensive plans, the City will also review and revise its river corridor-related zoning regulations.

To further guarantee effective management of the river resource, the U.S. Congress designated the Mississippi National River and Recreation Area (MNRRA) as a unit of the national park system. The boundaries of the MNRRA corridor are identical to those of the Critical Area, the 72-mile corridor of the Mississippi River stretching from the Crow River in Anoka County to beyond the City of Hastings, and including Saint Paul and Minneapolis. The MNRRA designation led to the creation of a Comprehensive Management Plan (CMP) with policies related to land and water use, resources management, and visitor use and interpretation. This updated River Corridor Plan responds to the vision for the Mississippi River outlined in the MNRRA Comprehensive Management Plan, as well as the continuing requirements of the Critical Area program.



2.3 River Corridor Plan Strategies

In response to the MNRRA Comprehensive Management Plan, and as part of the City's own process of updating its comprehensive plan, this Saint Paul Mississippi River Corridor Plan outlines four strategies for future management of the river corridor. The four strategies focus on the various systems related to the river: natural systems, economic systems, social or human systems, and built environment. The River Corridor Plan seeks to balance these strategies, all of which are interrelated and affect each other.

3.0 The Setting

3.1 Planning Assumptions

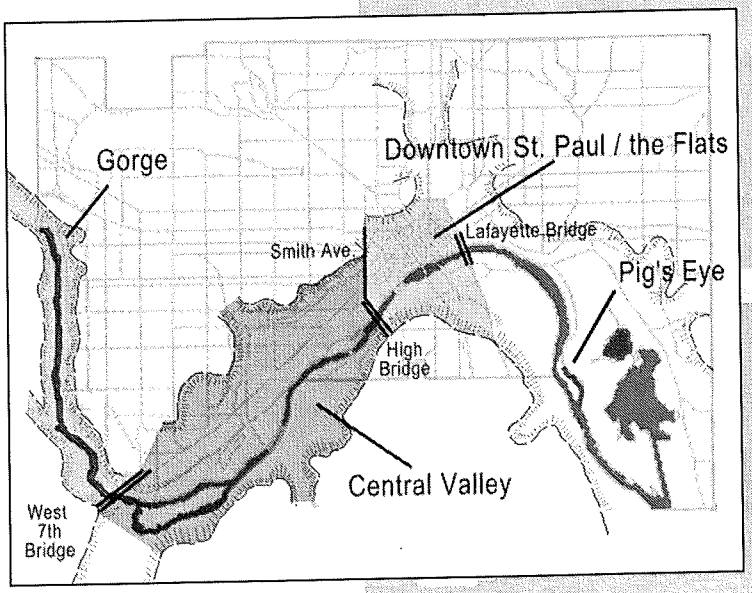
The main assumptions that underlie the recommendations in this River Corridor Plan are:

1. For nearly a century, the Mississippi River's role as primarily a transportation and industrial corridor led the city to think of and treat the river as its "back yard." The city is now gradually rediscovering and celebrating the river as its front yard — a majestic and unparalleled natural amenity which unites neighborhoods and downtown. Part of this rediscovery includes the opportunity over the next 10 to 20 years to create new neighborhoods near the river.

2. The river and its reaches are more than a thin ribbon moving through the city. The river corridor should be viewed as a watershed model, an entity that incorporates elements, communities, and patterns from well beyond the river itself.

3. The character of the river valley changes over its 29 miles. The river valley contains a variety of landforms, from the low lands along the river's edge to the high bluffs. The character of river valley land uses also changes considerably, from the quiet, residential character of the gorge, to the mixed commercial, industrial and residential uses along the West Seventh Street corridor, to the vibrancy of Downtown and the Flats, to industrial districts downstream of downtown, and preserved blufftop neighborhoods in the West Side, Dayton's Bluff, and Highwood neighborhoods.

Figure D
Mississippi River Valley



4. Parkland and open space are the predominant uses of riverfront land in Saint Paul. Most of this land will remain unchanged. There are however, many opportunities to explore additional access, preservation, and restoration projects throughout the parks/open space system. When development in these areas does occur (the enhancements at Harriet Island, for example), it should be in the context of preserving the river corridor.

3.2 Planning for the Mississippi River: City and Other Plans

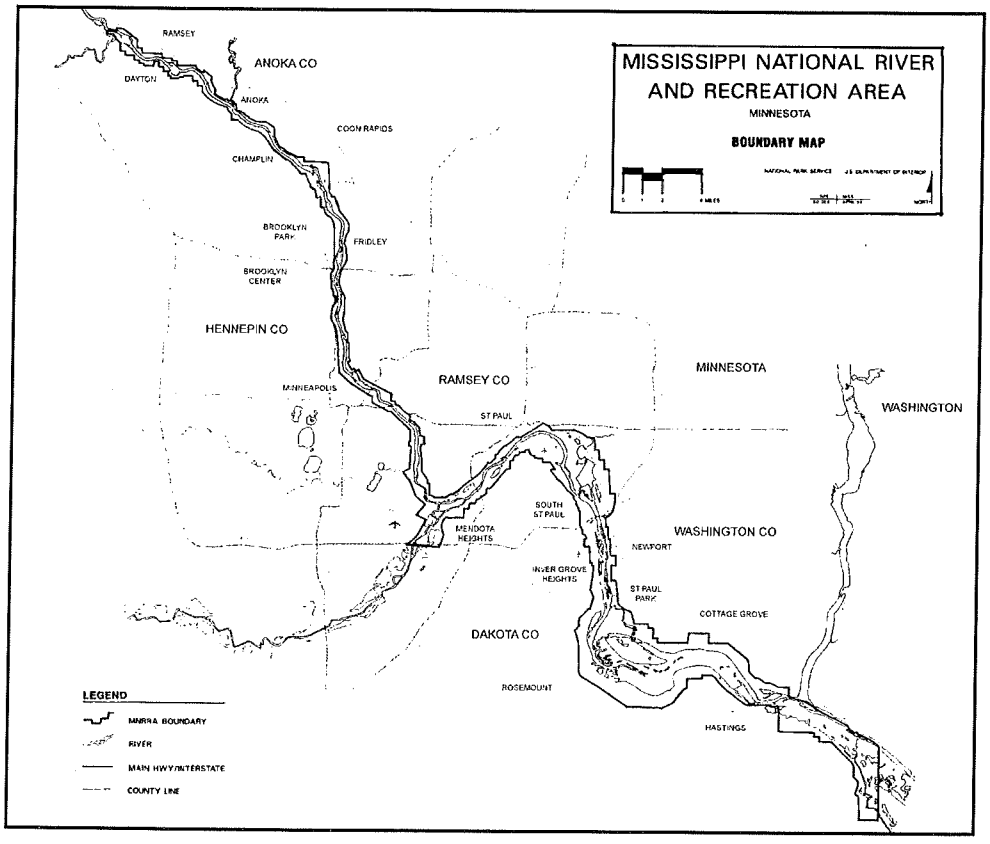
In the past five years there has been a tremendous amount of river-related planning, both by the City of Saint Paul and by other organizations. These visions and plans have focused on Saint Paul's Mississippi River corridor in an evolutionary and remarkably consistent manner, and include the following:

Saint Paul Comprehensive Plan (Parks & Recreation, Transportation, and Land Use chapters) Completed in 1996, 1997, and 1998, respectively. In addition, there are Small Area Plans and other neighborhood plans for the river corridor that have been recognized by the City Council, or adopted as part of the Comprehensive Plan. Some of these plans are currently being written.

Mississippi National River and Recreation Area (MNRRA) Comprehensive Management Plan National Park Service, Mississippi River Coordinating Commission and the U.S. Dept. of the Interior.

The MNRRA Comprehensive Management Plan was approved by the U.S. Dept. of the Interior in 1995 and is intended to provide guidance for managing the river corridor for the next 10-15 years. The plan's goals are to 1) preserve the unique and significant resources of the Mississippi River Corridor in the Twin Cities metro area, 2) encourage the coordination of federal, state and local efforts, and 3) provide a comprehensive management plan to assist the State of Minnesota and local governments in managing development in the corridor. The MNRRA vision advocates the protection of both the working river and the natural river ecosystem. The MNRRA plan suggests a voluntary set of additional policies that cities may adopt to enhance preservation of the Mississippi River corridor as a unit of the national park system, referred to as "Tier II" policies. ("Tier I" policies are required by existing State Critical Area policies and regulations, and should already exist in

Figure E
Mississippi National River and Recreation Area Boundary



cities' river plans and ordinances.) Local governments should work with the Metropolitan Council, the Department of Natural Resources and the National Park Service to incorporate MNRRA policies into their river corridor plans and ordinances.

Saint Paul's Central River Valley Development Framework - Project of the Design Center for the American Urban Landscape (Bill Morrish), College of Architecture and Landscape Architecture, University of Minnesota.

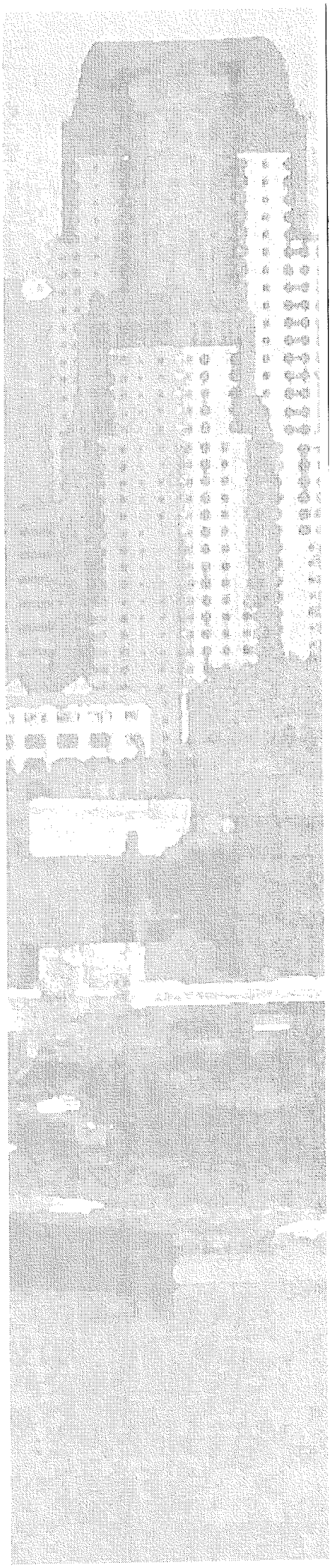
This project, completed in June 1995, served as one of the foundations for the *Saint Paul on the Mississippi Development Framework* that was completed in 1997. In conjunction with its *Case Study Integrating Urban Design and Ecology* project and newsletters (August 1994 - May 1995, six newsletters), the Design Center compiled an urban design inventory of Saint Paul's physical resources in the form of maps that visually display the city's physical resources connected to the Mississippi River. These Saint Paul-Mississippi River contextual maps highlight Saint Paul's unique river valley landscape and ecology, including its valleys, reaches, bluffs, landings, neighborhoods, vegetation, wildlife and the potential connections among all of these unique resources. The goals of this project were to identify the following for Saint Paul's Central River Valley: 1) image, identity and orientation, 2) community gathering places, 3) connections and continuity, and 4) river-related projects and locations.

Metro Greenprint: Planning for Nature in the Face of Urban Growth - Greenways and Natural Areas Collaborative.

In 1997, this collaborative project involving a group of citizens from around the seven-county Twin Cities Metropolitan Area included representatives from metro counties, watershed districts, Dept. of Natural Resources, Greening the Great River Park, University of Minnesota, Metropolitan Council, Friends of the Mississippi River and Trust for Public Land. The *Metro Greenprint* outlines a vision and specific strategies for creating a region-wide network of natural areas, open spaces, parks and greenways while accommodating urban growth in the Twin Cities metro area. The vision focuses on identification of natural areas and open spaces and potential connections between them, along with recommended conservation techniques and funding strategies. The Mississippi, Minnesota and Saint Croix river valleys represent a significant portion of this green network.

Saint Paul on the Mississippi Development Framework - City of Saint Paul, Saint Paul Riverfront Corporation, and the Capital City Partnership.

The City's most comprehensive vision for the Mississippi River was outlined in the *Saint Paul on the Mississippi Development Framework* in June of 1997,



following more than two years of intense work by the community, City staff, and other organizations. The *Framework* calls for reconnecting the city's downtown and neighborhoods to the river by restoring the river valley's and the city's natural environment, creating new urban villages near the river and creating a physically appealing and vital downtown environment. The *Framework* is based on "an implicit understanding that quality of life - the ability of a city to effectively balance economy, environment and society - provides a primary competitive advantage in an increasingly globalized world." The *Framework* outlines the following ten principles that represent an integrated approach to city building:

- Evoke a sense of place.
- Restore and establish the unique urban ecology.
- Invest in the public realm.
- Broaden the mix of uses.
- Improve connectivity.
- Ensure that buildings support broader city-building goals.
- Build on existing strengths.
- Preserve and enhance heritage resources.
- Provide a balanced network for movement.
- Foster public safety.

Although the *Framework* is not part of the City's Comprehensive Plan, the plan's vision, ten principles and recommendations were endorsed by the City Council as the guide for the City's development policies downtown and along the central riverfront and should be incorporated, as appropriate, into the City's Comprehensive Plan updates and amendments. The ten principles are incorporated into the Land Use Plan (1999).

Riverfront Action Strategies - Saint Paul Port Authority.

Completed in 1999, this document highlights the importance of the Mississippi River and Saint Paul Port to the Upper Midwest economy. As a working river, the Mississippi is part of an intermodal freight transportation system that enables agricultural producers throughout the Upper Midwest to compete in the global market. This strategy document signals the Port Authority's commitment to maintain shipping-related uses in its riverfront facilities. It also expresses the Port Authority's commitment to beautify industrial sites, to clean up roadsides and riverbanks, and to manage stormwater on-site.

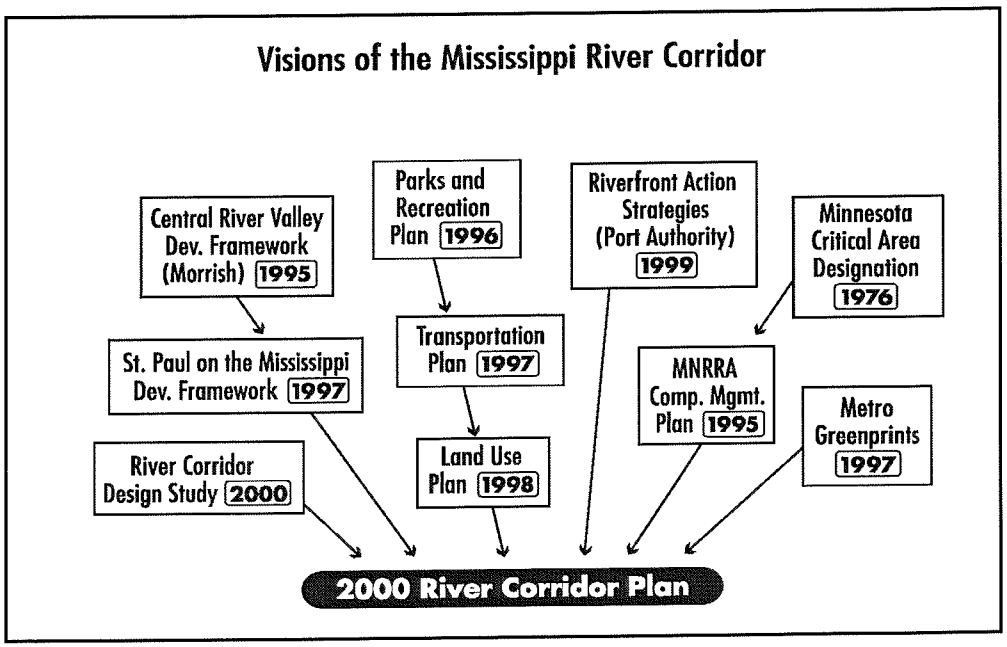


Figure F
River Corridor Planning

Design Study for River Corridor Redevelopment Sites - Saint Paul PED, Saint Paul Design Center.

To complete this River Corridor Plan, Saint Paul PED, along with the Saint Paul Design Center and the Riverfront Corporation, sponsored a design study to examine selected redevelopment sites. The study was conducted in early 2000, with consultants from the Cuningham Group and Close Landscape Architects. The study's goals were to consider the scale of new development, and to create design guidelines that met the spirit and intent of MNRRA and Critical Area requirements. An intergovernmental working group, chaired by the Planning Commission, and including the Department of Natural Resources, Metropolitan Council and National Park Service assisted in this process. The results of this study provide the basis for policies in Chapter 7 of the plan; recommendations for the five redevelopment sites can also be found in Chapter 7 and Appendix A.

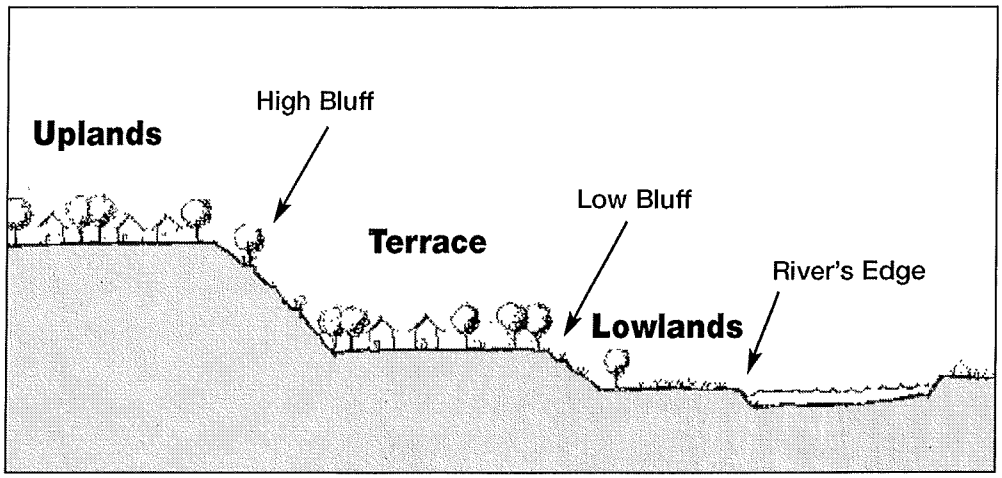
Together, these planning efforts have established a new framework for thinking about the Mississippi River, and Saint Paul's place on it that emphasizes thinking of the river and the city as an integrated living ecosystem within a larger regional setting. The intent is to restore the river's natural ecology, to establish and improve green connections between neighborhoods and downtown and the river, and to support urban intensification consistent with a river setting, while maintaining the working river. Collectively, these visions provide a map for stewardship and use of the river in the next century. This Mississippi River Corridor Plan brings these visions together in one document for the entire river corridor in Saint Paul.

The intent is to restore the river's natural ecology, to establish and improve green connections between neighborhoods and downtown and the river, and to support urban intensification consistent with a river setting, while maintaining the working river.

3.3 National Trends

Nationwide, certain trends have emerged pertaining to urban riverfronts. There has been a resurgence of interest in the recreational use of riverfront land, and communities nationwide are creating new trails, green space, promenades, and other recreational amenities. As industries that traditionally were located on the riverfront have changed, industrial land is turning over and being redeveloped to create housing and entertainment-oriented commercial activity. Finally, there is increased awareness and interest in the ecological function of rivers and the watersheds that feed them. Disastrous floods in past years have served as reminders that watershed management plays an integral role in protecting rivers and the communities along them.

Figure G
River Valley Landforms



3.4 Typology of River Landforms

The Mississippi River valley is comprised of a range of landforms, each with unique characteristics and requiring specific responses. While most of this plan's policies apply to the entire river valley, many of the Urban Design policies of this plan are tailored to the specific landforms, described below:

- The **River's Edge** is characterized by natural shoreline vegetation in parkland or natural areas. The River's Edge downstream of the High Bridge is stabilized with a variety of man-made treatments for the purpose of channel maintenance, including rock rip rap and walls.

- The **Lowlands** are the lands adjacent to the River and are either flood prone or formerly flood prone lands. Lowlands provide critical habitat for migratory birds, yet developed areas in the Lowlands are nearly devoid of tree canopy. The Lowlands are generally characterized by mixed manufacturing or office uses, dedicated public parks and open space, or

cleared and vacant lands. Largely redeveloped for industry, buildings in the Lowlands tend to be larger floorplate structures with associated large parking areas.

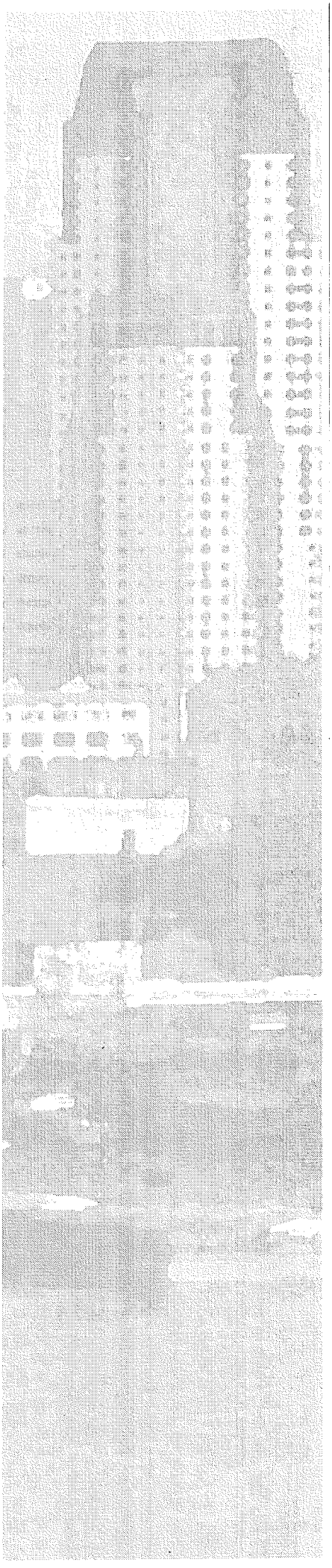
- The **Low Bluff** is landward of the Lowlands. It is generally characterized by a varied edge of dense woods and open views, sometimes eroded or overgrown. There exist occasional and dramatic bluff face/rock outcrops expressing the natural geology of this valley, although the elevation change of the Low Bluff is less striking than the High Bluffs (described below). Access from the Lowlands through the Low Bluff is somewhat limited. The Low Bluff is less legible as either habitat or public open space than the High Bluff.

- The **Terrace** is the generally flat area located between the Low Bluff and the High Bluff. The elevation of the Terrace ranges in between 740 and 780 feet above sea level. At locations throughout the valley, the Terrace makes transitions into River Reaches and Ravines. The Terrace is generally fully developed, and characterized by mixed use commercial and industrial lands transitioning from rail oriented manufacturing to service/convenience uses. The Terrace also contains multi-story housing with smaller fragmented pockets of single family homes.

- The **High Bluff** is located landward of the Terrace, and is the most recognizable feature of Saint Paul's visually stunning river valley. The High Bluff is characterized by a nearly vertical limestone bluff face in many areas. In other areas, the High Bluff is covered with a continuous, often dense canopy of overstory trees with occasional openings for views and limited public access. The High Bluff is an environmentally sensitive area that is highly susceptible to erosion and associated loss of vegetation and animal habitat. Selected roads traverse the High Bluff, creating primary connections between the Terrace and Uplands (described below).

- The **Uplands** are the areas located above the highest bluffs. The Uplands are flat or gently sloping, and are generally characterized by mixed residential neighborhoods coming to the edge, with occasional multi-story multifamily structures and institutional landmark buildings. The urban forest of the Uplands generally consists of boulevard trees.

A map showing the general location of these landforms throughout Saint Paul can be found in Chapter 7.



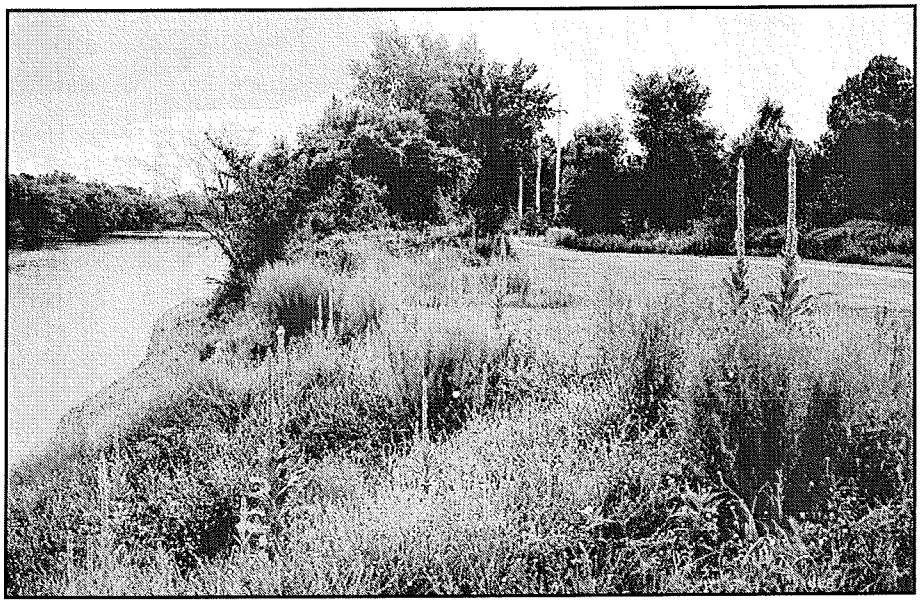
4.0 *Strategy 1:* **Protect the River as a Unique Urban Ecosystem**

As the twenty-first century begins, the city has endorsed an ecosystem approach to planning which balances environmental, community, and economic imperatives.

The Mississippi River, as it weaves through Saint Paul, is part of a complex ecosystem, and is a unique and valuable natural resource. The river has been designated by the Minnesota State Legislature as a State Critical Area, and by the U.S. Congress as a nationally significant commercial navigation system, a National River and Recreation Area, and an American Heritage River. The history of Saint Paul has always been closely tied to the Mississippi River, but over time development has heavily impacted many of the river's indigenous landscapes. As the twenty-first century begins, the City has endorsed an ecosystem approach to planning which balances environmental, community, and economic imperatives. This approach moves the City in the direction of thinking of the river, river valley, and developed areas as an integrated living ecosystem. The City will provide for the continuation of a variety of urban uses, including industrial, commercial, and residential within the river corridor, while strengthening its commitment to preserving the natural resources of the river corridor. The intent of this chapter is neither to discourage future development, nor to promote wholesale restoration of the natural environment. Rather, natural resource management policies will be strengthened to enhance the urban ecosystem in the Mississippi River corridor, and improve the quality of place in Saint Paul.

Saint Paul currently uses river corridor overlay zoning to protect natural resources throughout the state-designated Critical Area of the Mississippi River. Overlay zoning restricts what type of development may occur in the floodplain, and applies strict standards for development. These standards include development setbacks from the river, and prohibiting development on steep slopes.

Figure H
Natural Shoreline



This chapter addresses protection of bluffs, native plant and animal habitats, wetlands and floodplain, and water quality. (Appendix F contains maps that show the location of steep slopes, significant vegetative stands, wetlands, the floodplain, storm water discharge points, and natural drainage routes.)

Objective 4.1 *Protect the blufflands of the river corridor*

Saint Paul's natural topography relates much of the city to the river. Bluff formations framing the Mississippi River reinforce the city's unique natural setting and contribute to Saint Paul's character and sense of place. The topography of the river valley varies considerably. Along the West Seventh corridor and the West Side, there are distinct high and low bluffs separated by a terrace. In the so-called "river gorge" between Saint Paul and Minneapolis and in the Highwood neighborhoods, however, the high bluffs descend dramatically to the river, or adjacent low land areas. Likewise, the location of bluff areas relative to the river varies from the gorge where the river lies directly below the bluffs, to portions of the Highwood and West Side neighborhoods where the bluffs are set back more than a mile from the river. While the bluffs, ravines, and tributary areas are an attractive and unique urban amenity, they are a fragile part of the river ecosystem.

Historically, both Ramsey County and the City have been active in protecting and restoring bluff lots with steep slopes facing the river. Ramsey County has acquired lots between Upper and Lower Afton Road for permanent county park ownership. Over the past several years, the City has used Federal ISTEA funding to acquire lots between Lower Afton Road and Highwood Avenue to be permanently dedicated as city parkland. Saint Paul also currently maintains a required bluff setback for development, and prohibits development on steep slopes along the bluff line to prevent erosion, and to maintain the natural, vegetated appearance of the bluff line visible from the river.

Policies:

4.1.1 The City will continue its program to acquire lots on the bluff face as funding opportunities arise, extending the program to include lots south of Highwood Avenue. Private efforts to acquire lots for open space dedi-

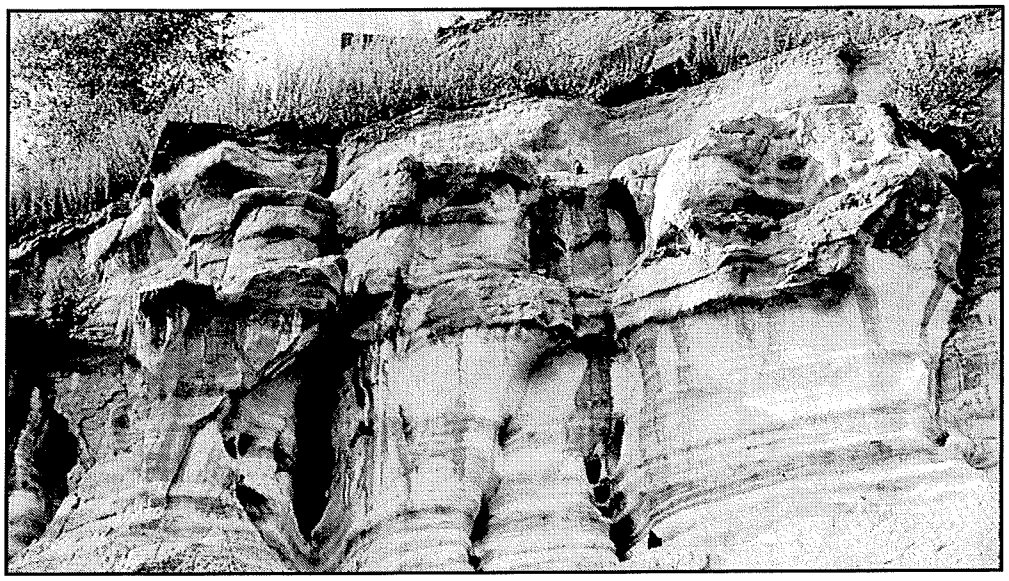


Figure I
Bluff face

cation are encouraged, as are actions by Ramsey County to convert lots acquired through tax forfeiture to permanent public park ownership.

4.1.2 The City will support efforts to stabilize all bluffs in public ownership through reintroduction of native species and visitor use management. Efforts such as those by Friends of the Parks and Trails and the West Side Bluff Task Force to create bluff management plans for the gorge area and the West Side bluffs, respectively, are encouraged. The West Side bluffs, in particular, are in need of management and stabilization.

4.1.3 To protect the bluff face, the City will prohibit any additional structural development or land alteration on the bluff face, except for the north side of the river between Chestnut Street and Lafayette Boulevard. Further exceptions may be allowed for a limited number of low impact public structures related to pedestrian access, public utilities and slope stabilization. Such structures should be uncommon. The City will define the toe, top and face of the bluff in the zoning code.

4.1.4 In order to protect steep slopes and minimize erosion, consistent with Executive Order 79-19, and consistent with the MNRRA standard for commercial and industrial development, the City will continue to prohibit industrial and commercial development on slopes that exceed 12 percent, and the City will continue to prohibit residential development on slopes that exceed 18 percent. The City will work with DNR during the ordinance development phase to develop conditions for any development allowed on bluffs between 12 percent and 18 percent slopes.

4.1.5 The City will continue to preserve the bluff impact area (forty feet landward of the bluff line) in a natural state.

Objective 4.2 *Preserve and restore native plant and animal habitats*

Saint Paul is located at the meeting of the prairie and eastern hardwood forests. Despite the changes accompanying urbanization, a variety of habitat types continue to exist today within the river corridor, including remnant savannas, prairies, river edge wetlands, riverine areas, the bluffs, as well as the river itself and its floodplain. The Department of Natural Resources inventories rare species and natural communities, and according to the its Natural Heritage Database, there are 55 known occurrences of such species or communities in Saint Paul's Mississippi River Corridor. These include Bald Eagles sighted in the Pig's Eye Heron Rookery and Battle Creek Regional Park, Blanding's Turtles sighted at Lilydale Regional Park and Hidden Falls - Crosby Park, several types of mussels, and a variety

of other plant and animal species. (For a full listing, see Appendix C.) Particularly near downtown Saint Paul, remnant landscapes and the animal habitats they contain have historically become disconnected from the larger river ecosystem, and their long term viability is continually challenged by the effects of urbanization.

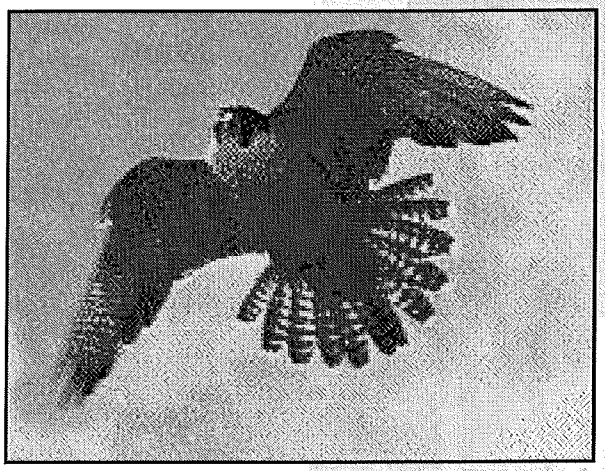


Figure J
Peregrine Falcon
Photo courtesy of Raptor Center, University of Minnesota, June, 2000.

Fortunately, there are many opportunities for preserving and restoring native plant and animal habitats throughout the river corridor. Great River Greening has played an instrumental role in restoring vegetation throughout the river valley, with the goal of creating a connected greenway for migrating songbirds and improving the ecology of the Mississippi River valley in Saint Paul. Over the past several years the organization and its volunteers have planted more than 30,000 native trees and shrubs and 25,000 native wildflowers in the river corridor near downtown. Addressing the downtown area, the *Saint Paul on the Mississippi Development Framework* has signaled the need to improve the balance between the natural and built environments through protection of native vegetation and improved river edge treatments. The redevelopment plans for Harriet Island Regional Park and the East Bank Mississippi River Trail Corridor are examples of this shift in approach, as they call for redesigning river edges to incorporate both hard edge and indigenous vegetative treatments. Of course, projects to restore natural shorelines must be compatible with the requirements of channel design and flood management.

There are many opportunities for preserving and restoring native plant and animal habitats throughout the river corridor.

Policies:

4.2.1 To the greatest extent possible, existing native vegetation will be preserved in existing development and site development projects. The City will work with DNR during the ordinance amendment phase on adopting site plan criteria for buffering, landscaping, and revegetation, and adopting regulations for vegetative cutting. In the Highwood neighborhood, the City will continue to enforce the Tree Preservation District standards to maintain a maximum vegetative canopy.

4.2.2 The City will encourage use of native vegetation or other compatible floodplain vegetation in redevelopment projects. Where appropriate, when redeveloping or stabilizing the river's edge, soil bio-engineering techniques and native plantings will be used in combination with more traditional engineered solutions. In the more formal landscape treatments occurring along the downtown riverfront, the shoreline will be strengthened with native vegetation, including native trees and shrubs. Throughout the river corridor, the City will encourage integration of

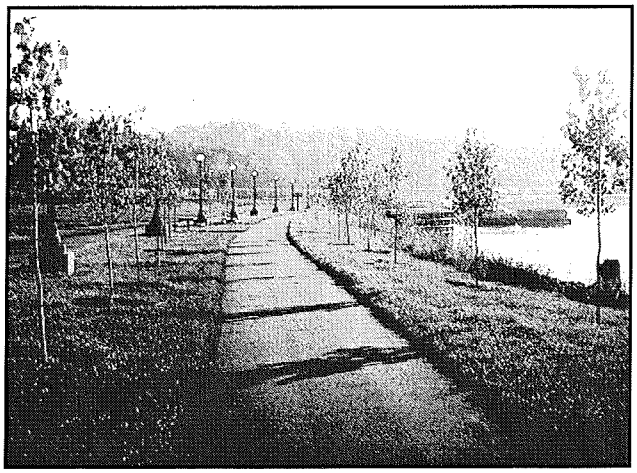


Figure K
Trail between Warner Road and the Mississippi River

future growth and development with restoration programs that reconnect and restore remnant natural communities.

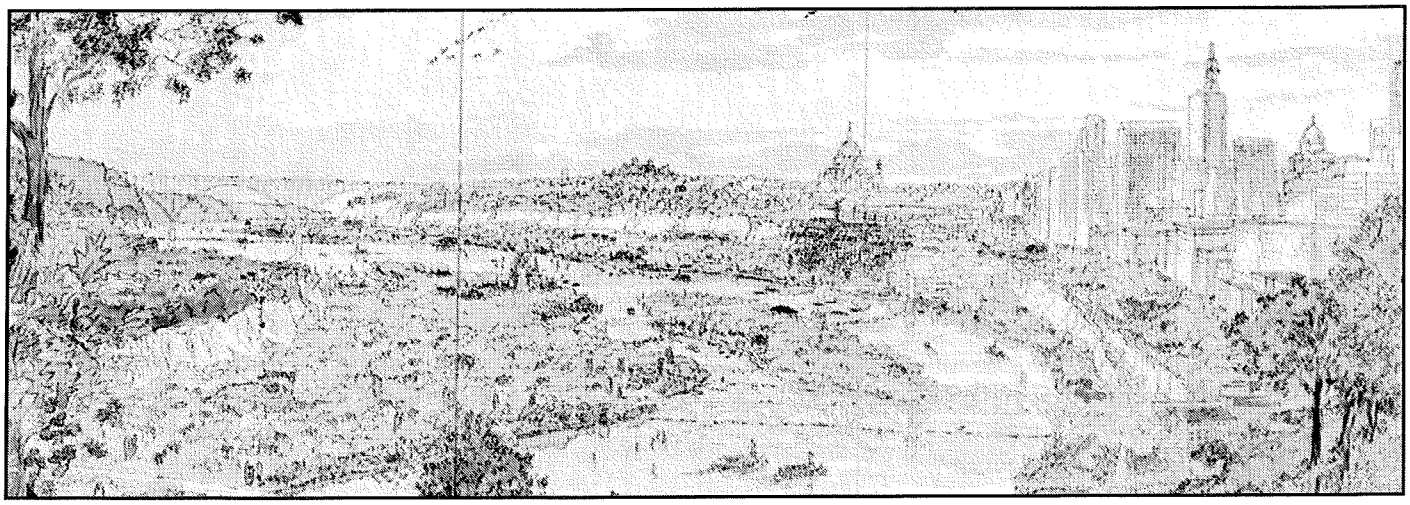
4.2.3 The City will continue to support the efforts of organizations such as Great River Greening to restore native grasses, shrubs and trees along the riverfront downtown and elsewhere in the river corridor.

4.2.4 The City will continue to enforce the 50 foot shoreline setback for structures. In addition, the City will support efforts to restore the shoreline to a more natural character within 100 feet of the river to facilitate wildlife movement, and to improve the aesthetic appearance of the floodwall. Such efforts must be compatible with current channel design and flood control management, and exceptions are made for marinas, and other uses requiring river access. Redevelopment should include removal of unused docking facilities (i.e., at the Koch-Mobil site).

4.2.5 In all new developments, threatened and endangered wildlife habitats shall be protected from alterations which would endanger their survival.

4.2.6 The City will integrate its plans with the work of the DNR's Metro Greenways and Natural Areas Collaborative. This metro area collaborative has identified high quality native habitat remnants which could be linked into regional greenways, providing continuous habitat corridors to support native plant and wildlife species. Many potential greenway opportunities exist in the East Metro area, including Saint Paul.

Figure L
Ben Thompson's vision of "The Great River Park"



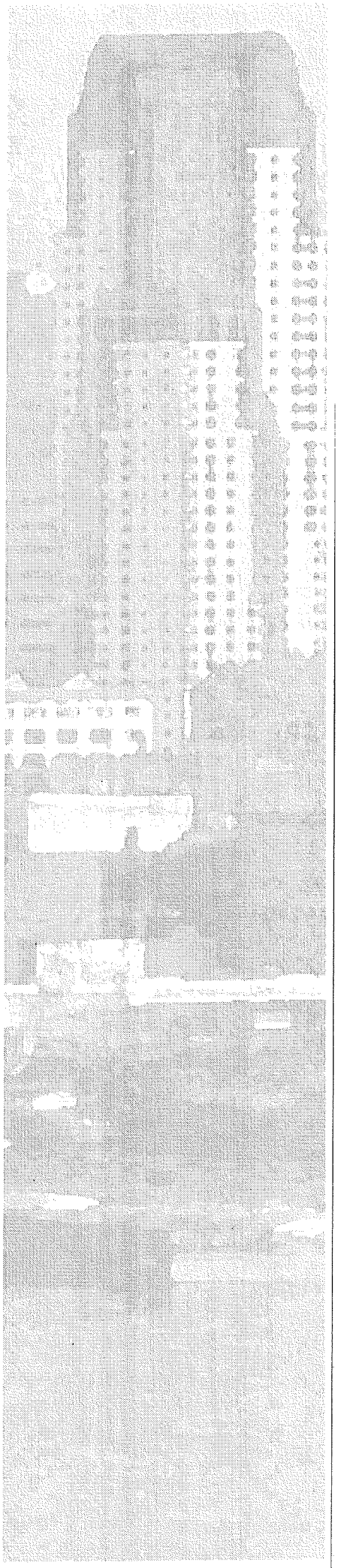
Objective 4.3 *Protect and preserve floodplain and wetland areas in the city*

The last comprehensive Federal Emergency Management Agency (FEMA) study of the Saint Paul floodplain occurred in 1989. Since that time, two major flood events occurred in 1993 and 1997, and other changes have occurred in the floodplain. In addition, the Army Corps of Engineers has completed a multi-year flood protection project on the West Side which will result in removal of the West Side Flats from the floodplain, because the new higher levee will control a 500-year flood. As a result of these changes, the City, DNR and the Corps of Engineers are working together to update the City's Flood Insurance Study. The Flood Insurance Study update includes changes to the cross-sectional area caused by development and revisions to the hydraulic model that incorporates these changes. FEMA and DNR will review the Flood Insurance Study update following submission and make an approval decision (concluding in 2001). FEMA's process will result in revised floodplain boundaries in the river corridor and accompanying changes to FEMA flood insurance rate maps and the City's floodway and flood fringe zoning districts.

Wetlands also play an important role during floods, and for controlling stormwater. Their flexible storage capacity allows flood waters to be released slowly, reducing flood damage. In the era when most of Saint Paul's neighborhoods developed, modern ecosystem knowledge was lacking, and wetlands and creekbeds were routinely drained and filled. Through zoning and site plan review, Saint Paul began protecting wetlands in 1994, after passage of the state Wetlands Conservation Act. The Legislative Commission on Minnesota Resources (funded through state lottery revenues), has provided financial resources to communities, including Saint Paul, for wetland restoration projects. The restoration of Ames Lake — formerly the Phalen Shopping Center site — is one such example. Other opportunities for restoration exist, including efforts by the Lower Phalen Creek Restoration Project to connect Swede Hollow Park to the river by restoring lower Phalen Creek in the ravine between Dayton's Bluff and Lowertown. As our understanding of watersheds continues to evolve, the need for careful management and planning in wetland and floodplain areas of the city is assumed.

Policies:

4.3.1 The State of Minnesota, through the Department of Natural Resources, allows new development to occur in the Mississipi River floodplain up to a one-half foot increase over the 100-year flood elevation, as reflected by the City's floodway boundary designation. The City will enforce the state floodplain encroachment limit.



4.3.2 Recognizing the need to treat wetlands as a valued resource, and assuming its responsibility to administer the Wetlands Conservation Act, the City will protect existing wetlands and encourage restoration of degraded wetlands.

Objective 4.4 *Protect water quality through comprehensive and coordinated watershed management*

The water quality of the Mississippi River is directly connected to the activities in the surrounding watershed. Pollution comes from both direct, or point sources, such as a sewage treatment plant discharge, and from nonpoint sources, such as stormwater runoff. The largest source of nonpoint source pollution into the Mississippi is the Minnesota River, which contains significant amounts of agricultural runoff from outside of the Mississippi River Corridor. The Minnesota Pollution Control Agency is attempting to address this problem, which is complex and will take extensive time and funds to correct. While all sources of pollution will be addressed, the City's program will focus on city stormwater runoff pollution prevention due to the relatively greater impact this source has on the river.

The water quality of the Mississippi River is directly connected to the activities in the surrounding watershed.

SEWER SEPARATION PROGRAM

Historically, Saint Paul's original sewers drained directly to the Mississippi River or to several natural streams that in turn drained into the river. The oldest sewer on record in Saint Paul was built in 1856. At the time it was standard engineering practice throughout the country to convey both storm water and sanitary waste to receiving waters in one pipe. However, by the early 1920's it was becoming apparent that the Mississippi River was polluted and something had to be done. In 1938, the first sewage treatment facility on the entire Mississippi River went into operation. Minneapolis and Saint Paul each financed and built their own interceptor sewers and shared the cost of building the treatment plant. Dry weather flows were then treated prior to emptying into the river, but during rainstorms, when the flows exceeded the sewer's capacity, combined sewer overflows (rainwater and sewage) continued to pollute the river.

In 1985, after years of study and discussion, sewer separation was determined to be the most economical method to abate combined sewer overflows to the Mississippi River and to meet federal and state water quality standards. At this time the Minnesota Pollution Control Agency directed Saint Paul, Minneapolis and South Saint Paul to develop a new plan for combined sewer overflow elimination and for the Metropolitan Waste Control Commission to incorporate each city's plan into an overall metro plan.

In response, Saint Paul developed the *Comprehensive Sewer Plan for the City of Saint Paul*. Although Saint Paul began separating its combined sewers in

1960, by 1985, only half of the city was served by separate sanitary and storm sewer systems. The ten year program initiated in 1986 was a massive undertaking with over $172 million in designated projects (1984 dollars).

The sewer separation program has led to significant improvement in the quality of the Mississippi River. The following are viewed as indicators of the improved water quality:

- Pollution-sensitive Hexagenia mayfly have returned to Twin Cities' stretch of river after a 30 year absence.
- Metropolitan Council Environmental Services' monitoring data shows a significant drop in fecal bacteria levels in the river as a result of sewer separation.
- Bald eagles have returned to the Twin Cities' stretch of river.
- Fish population and diversity have recovered from 3 species to over 25 species.
- Minnesota Department of Natural Resources has established catch and release fishing regulations to protect trophy sized walleyes that are being caught from the metropolitan stretch of Mississippi River.

The completion of Saint Paul's sewer separation program has achieved the overall purpose of cleaning up the river, demonstrating the City's commitment to improved stewardship of the river environment, and exceeded its performance goals. The city now has two completely separate sewer systems, one carrying surface water runoff and the other one carrying sanitary sewage. But the work of protecting and restoring the Mississippi River goes on. The partners involved in this project will continue to address the issues that affect the Mississippi and our environment.

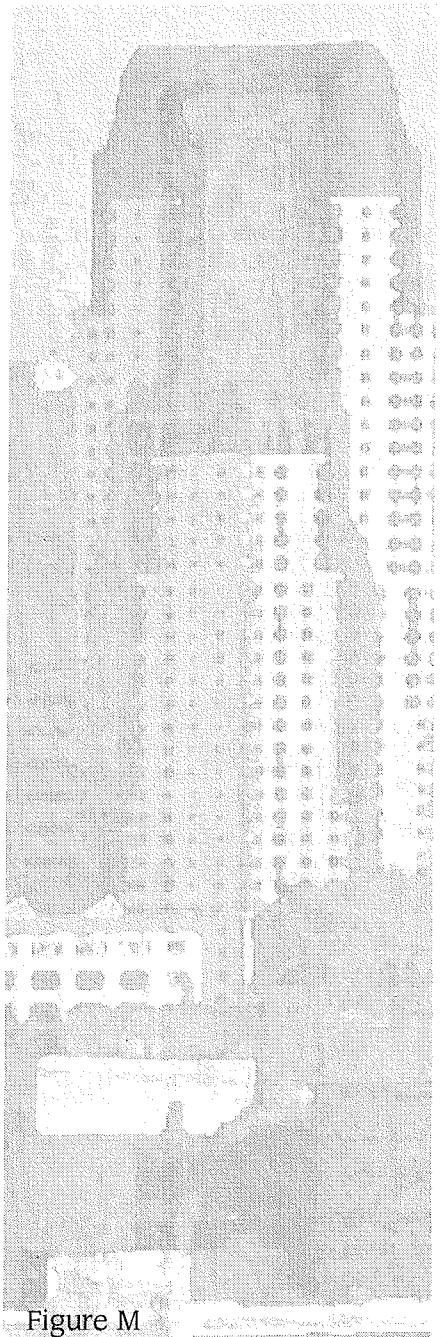


Figure M
Volunteers promote public awareness

WATERSHED AWARENESS EDUCATION

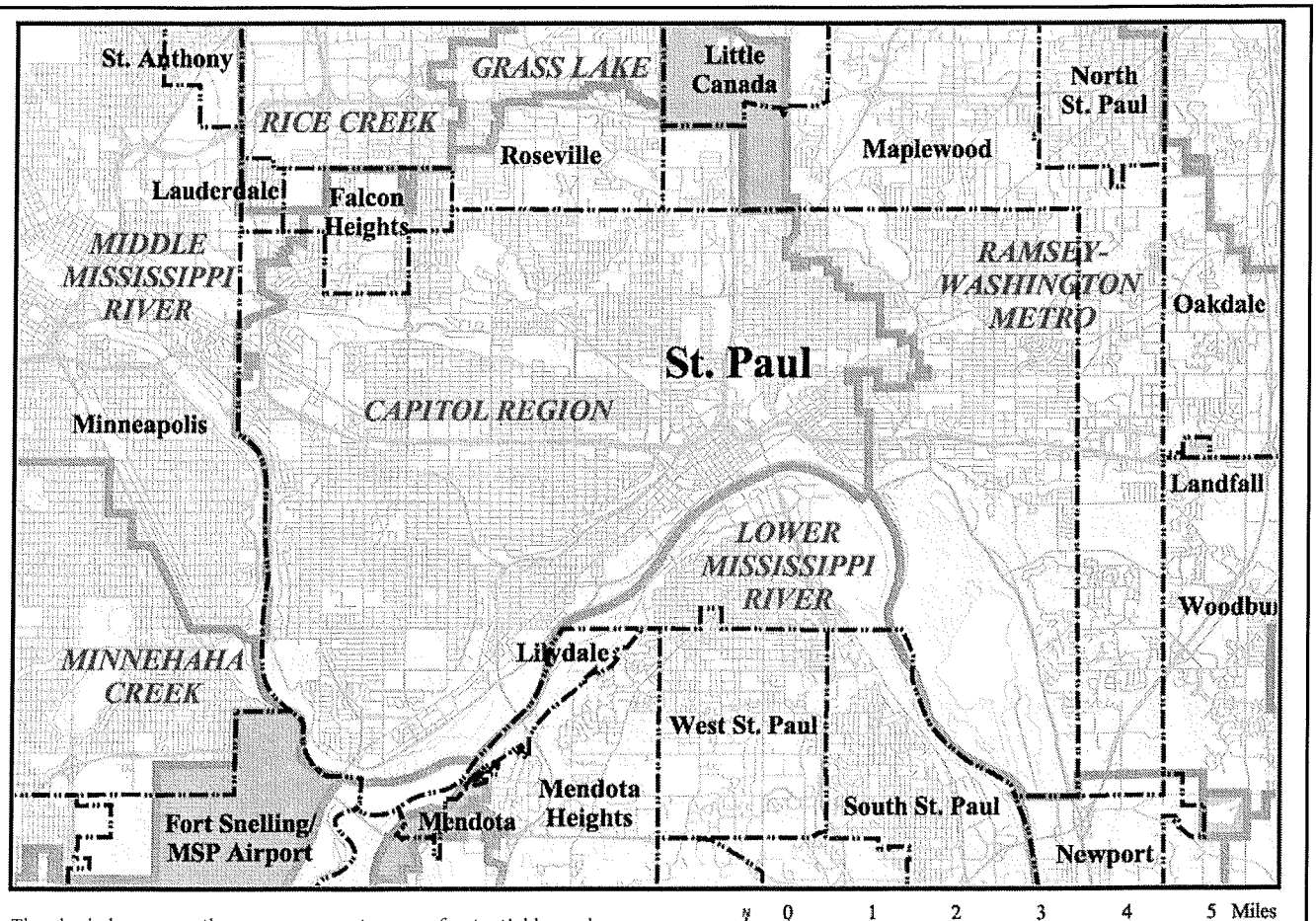
Saint Paul falls within the boundaries of four watershed management organizations, each of which develops a comprehensive watershed plan. Saint Paul's new Water Management Plan will be completed by the Public Works Department two years after the completion of the watershed management plans. The four watershed management organizations are 1) Capitol Region Watershed District, 2) Ramsey-Washington Metro Watershed District, 3) Lower Mississippi River Watershed Management Organization, and 4) Middle Mississippi River Watershed Management Organization.

Photo courtesy of Friends of the Mississippi River

Saint Paul has been actively educating its residents about water quality issues for years. Early efforts began to explain the need for the Sewer Separation Program and the associated benefits to the Mississippi River. Currently, the City and the Friends of the Mississippi River are working in partnership on the Storm Drain Stenciling Program. Since 1993, the City has worked with thousands of volunteers to stencil a message, "Don't Pollute Drains to River," next to storm drains and to distribute door hangers to the surrounding neighborhood. In addition, City staff are working with schools in Saint Paul on watershed education projects.

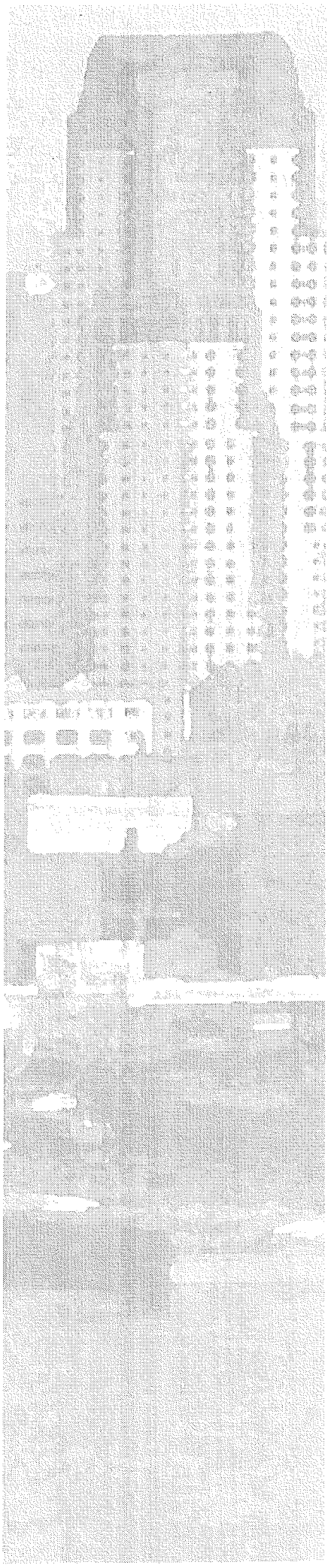
Saint Paul is also a Watershed Partner, which is an award winning partnership of metro area agencies, non-profit groups and local units of government. Watershed Partners developed an educational watershed exhibit, which is used at venues across the Twin Cities every year, including the Minnesota State Fair. The Partners are currently involved in a metro wide media campaign which involves news print and radio messages as well as printed grocery store bags and magnets. Efforts to promote better public awareness can have a profound impact on reducing nonpoint source pollution.

Figure N
Watershed Management Organizations



The shaded areas on the map represent areas of potential boundary discrepencies which are currently under investigation.

The Minnesota Fish Consumption Advisory provides guidelines for safely eating fish caught in the Mississippi River where it flows through Saint Paul, per the Minnesota Department of Health's *Minnesota Fish Consumption Advisory* (available on the DNR web site). Fish in Minnesota's lakes and rivers are monitored annually for the amount of methyl mercury and PCBs present.



WATER MANAGEMENT AND REGULATION

Water management and regulation is complex, multi-leveled and overlapping. See Appendix D for the entities that are responsible for water management in Saint Paul.

Policies:

Most of the policies cited in this chapter will be replaced and more fully addressed by Saint Paul's Water Management Plan, which will be completed by April, 2003.

4.4.1 Continue participation in existing watershed management programs and in developing the City's stormwater permit program and local water management plan. Coordinate municipal activities that affect water quality as part of the stormwater discharge permit and the local water management plan.

4.4.2 Strengthen city-wide education programs that address watershed awareness and stewardship.

4.4.3 The City encourages a reduction in use of chemicals for fertilizer and pest control in residential areas and on public land and supports sustainable land treatment activities and integrated pest management practices.

4.4.4 The City supports minimizing direct overland runoff and improving the quality of runoff onto adjoining streets and watercourses.

4.4.5 Encourage alternatives to turf in the shoreline area to reduce fertilizer and pesticide runoff into the river.

4.4.6 Support enforcement of federal, state and watershed management organization floodplain and wetland protection policies.

4.4.7 The City supports using stormwater management elements such as ponds and swales to unite development areas with the natural environment. Emphasize what these elements add to site development in terms of aesthetic benefits and cost- effective stormwater management. Incorporate public use as a site amenity whenever possible in designing

stormwater management systems.

4.4.8 The City will support programs to better manage and decrease the volume of toxic waste in the river corridor.

4.4.9 Protect streambanks and water quality from the negative impacts of recreation.

4.4.10 The City will support regional pollution prevention and control plans for the metropolitan area.

4.4.11 The City supports programs to develop and implement spill prevention and response plans for the river.

4.4.12 Development in areas without public sewer shall comply with all local and state laws for construction and maintenance of on-site sewage systems.

5.0 *Strategy 2:* Sustain the Economic Resources of the Working River

The Mississippi River will continue to function as a major commercial navigation resource for Saint Paul, the Twin Cities and the Upper Midwest, connecting the area to the Inland Waterway System, the Gulf of Mexico and international markets. River-related, shipping-related, and river dependent industries will continue to locate in the river corridor, contributing to the city's diverse economy and job market. Three of Saint Paul's 29 miles of riverfront are presently dedicated to industry. (Appendix F contains a map of commercial navigation facilities and barge fleeting areas.)

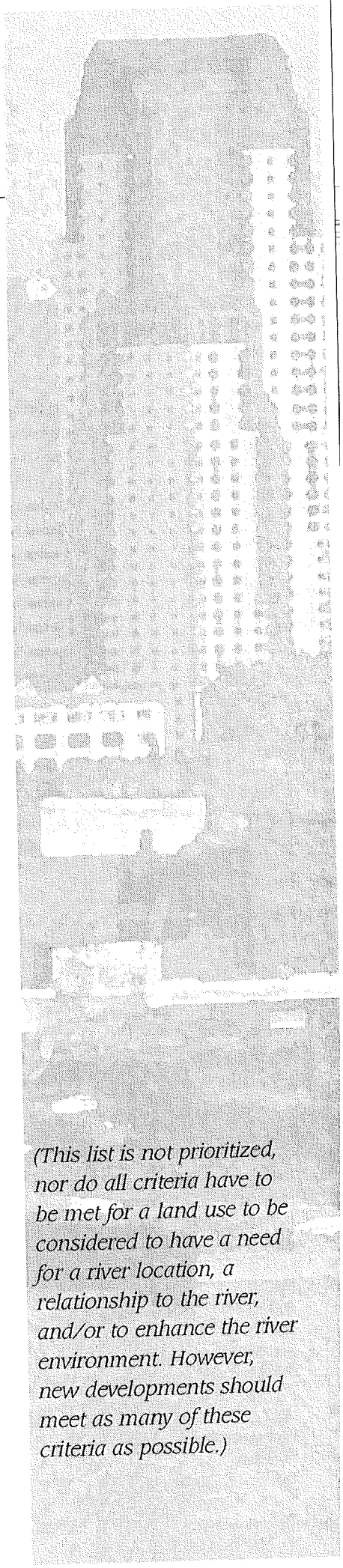
Objective 5.1 *Continue commercial and industrial uses of river corridor land and water, consistent with the Saint Paul Land Use Plan*

Industry and commerce are an important function of the river. The City recognizes that commercial and industrial uses of river corridor land will continue. Given the continued mix of land uses in the river corridor, careful planning for the use of land along the river's edge is warranted. The City recognizes that the use of land in the floodplain or within 300 feet of the ordinary high water mark has the potential for serious adverse effects on the river if not properly managed. As a matter of course, all development must comply with existing regulations governing the floodplain and river corridor.

Policies:

5.1.1 New development in the floodplain or within 300 feet of the ordinary high water mark should have a relationship to the river, a need for a river location, and/or should enhance the river environment. (New development on the north side of the river between Chestnut Street and Lafayette Blvd. is exempted from this policy.) In addition, new development should not hinder implementation of existing Plans, and in all other respects should be consistent with the goals and policies of the Comprehensive Plan. Criteria for approval of new development include:

- having an economic or operational need for a river location
- supporting the attractiveness of surrounding neighborhoods
- sustaining the economic vitality of riverfront improvements
- offering public access to and along the river
- maintaining views of the river
- cleaning up polluted areas on the site



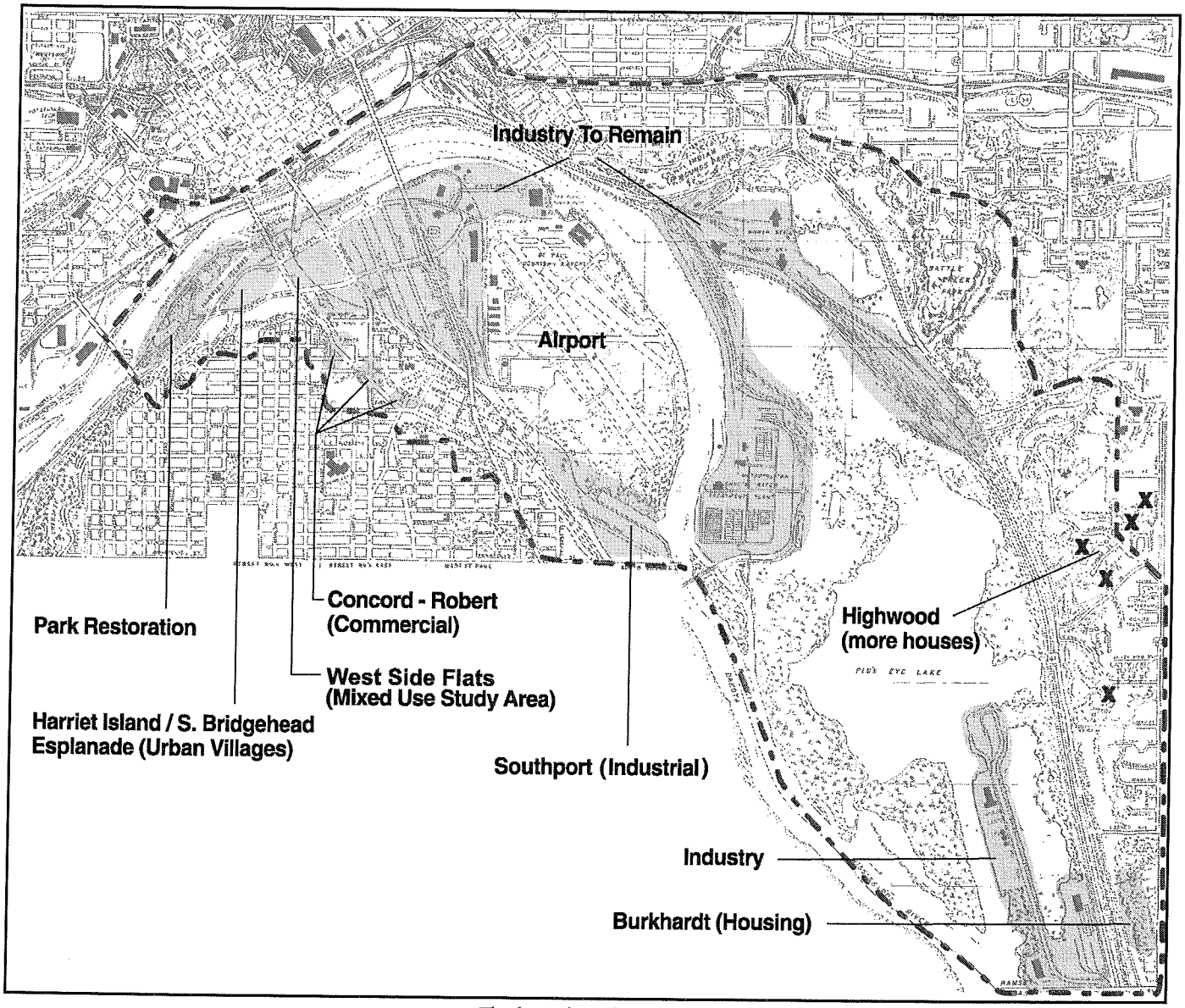
(This list is not prioritized, nor do all criteria have to be met for a land use to be considered to have a need for a river location, a relationship to the river, and/or to enhance the river environment. However, new developments should meet as many of these criteria as possible.)

- meeting or exceeding applicable natural resource policies in this Plan

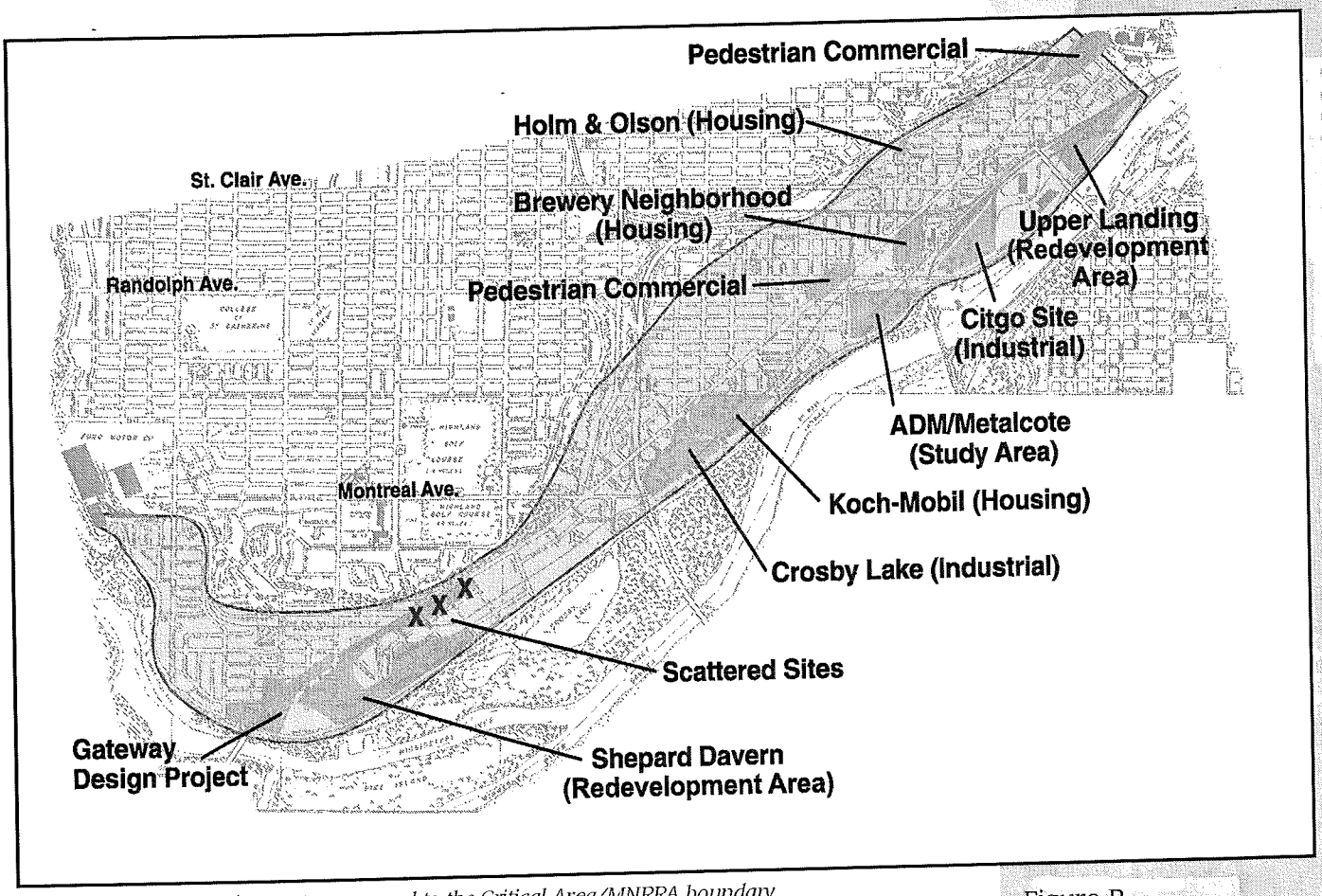
5.1.2 Expansions of existing uses in the floodplain or within 300 ft. from the ordinary high water mark are acceptable. Expansions should be consistent with the natural resource protection policies laid out in this Plan. Expansion of uses on the north side of the river between Chestnut Street and Lafayette Boulevard should be consistent with natural resource protection policies where practical.

5.1.3 The City supports continuation of industrial uses in appropriate portions of the corridor as indicated in the Land Use Plan and shown in Figures O and P. Modifications or additions to industrial uses in the river corridor should be supported only when they have no significant adverse impact on water quality or air quality for the river corridor and adjacent neighborhoods, and when they do not substantially impair the visual character of the corridor from adjacent neighborhoods or from the river itself.

Figure O
River Corridor South Development Opportunities



The boundary shown does not correspond to the Critical Area/MNRRA boundary.



The boundary shown does not correspond to the Critical Area/MNRRA boundary.

Figure P
West Seventh Corridor Development Opportunities

As stated in policy 5.2.1 of this plan, the City in principle supports the use of riverfront industrial land by river-related business. As stated in the Land Use Plan in the section on environmental stewardship, the City and Port Authority will make all reasonable efforts to substantially decrease any negative environmental effects of industry through regulation, enforcement, and financing agreements.

5.1.4 The City encourages screening of industrial development with native vegetation wherever appropriate to minimize its visibility from the river or the opposite shoreline. The City supports the Port Authority's policy to landscape and beautify industrial sites. The Port Authority should encourage the use of walls, fences, vegetation, terrain, or other natural devices to screen industrial buildings and outside storage areas, where such screening will not be a detriment to business operations.

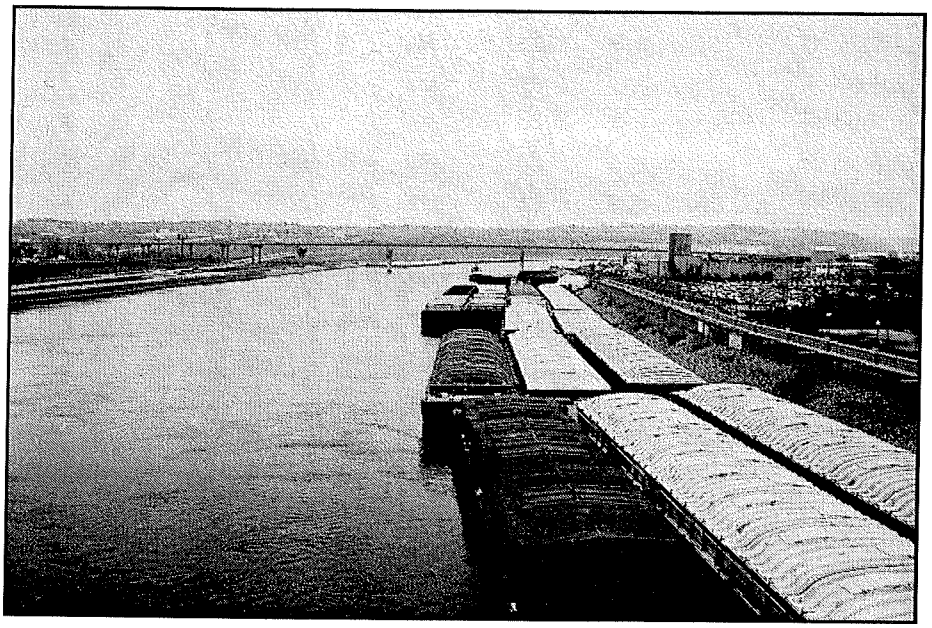


Figure Q
Barge Fleeting

Objective 5.2
Recognize the Mississippi as a working river and support the continued operation of commercial navigation facilities

The shipping industry is of crucial importance to Saint Paul, greater Minnesota, and the Upper Midwest. Located 1,800 miles inland from the Gulf of Mexico, the Saint Paul Port is a hub in the intermodal freight transportation system, where barge, rail, and truck traffic intersect. Agricultural products and other bulk materials are brought by rail and truck from throughout the Upper Midwest, and transferred to barges that travel to downstream river ports. Grain exports from Midwest producers make up nearly 90 percent of the cargo bound downstream. Approximately six percent of grain exported from the U.S. to world markets travels through the Saint Paul Port. Other materials are brought up the Mississippi River by barge and distributed to destinations throughout the region by rail and truck. At peak capacity, more than 16 million tons of commodities can be handled through the Saint Paul Port annually.

Located 1,800 miles inland from the Gulf of Mexico, the Saint Paul Port is a hub in the intermodal freight transportation system, where barge, rail, and truck traffic intersect.

There are both economic and environmental benefits to using barges to transport goods, rather than rail cars or trucks. Barges move freight a greater distance per gallon of diesel fuel than rail or truck. One ton of commodities carried by barge travels 514 miles per gallon of fuel, compared to only 202 miles by rail or 59 miles by truck. Barges also release fewer pollutants per gallon of fuel burned than rail or truck. Barges release only .42 pounds of pollutants per gallon of fuel burned, compared to .59 pounds released by rail cars and .75 pounds released by trucks. (Riverfront Action Strategies, Saint Paul Port Authority, January, 1999.)

Barges fleet in designated fleeting areas, as permitted by the DNR, Army Corps of Engineers, and U.S.Coast Guard. The permit issued by the Corps and DNR specifies the length and width of the fleeting area. Barge fleeting areas are permitted in Saint Paul's Floodway District (RC-1), subject to a special condition use permit, as approved by the Planning Commission. Designated fleeting areas are mapped, see Appendix F. In permitted areas, the Saint Paul river corridor currently has a total practical capacity for fleeting of 393 barges and a total design capacity of 574 barges (Figure R). Permitted fleeting areas are considered adequate to meet current and near-term fleeting needs and accommodate fluctuations in river transportation.

The volume of commercial river traffic has and will continue to fluctuate considerably over time in response to local, regional, national, and international needs and markets. At peak times, barge fleets fill fleeting areas to their maximum capacity. If a new fleeting area were desired, a permit would have to be procured through the above agencies.

The MNRRA Comprehensive Management Plan identified the need for a Surface Water Use Management Plan. Such a plan would provide guidance on suitable locations for additional barge fleeting and mooring areas; suitable locations for dredge material disposal sites; economic impact of surface water use; potential regulatory use controls and other measures for minimizing conflicts between commercial navigation and recreational boating use and among recreational uses; monitoring and evaluating river system surface use capacity, including considerations of physical, biological, social, and safety limits; evaluating the potential for bottom disturbance, sediment resuspension, and shoreline disturbance from barge activities and recreational boating; and developing alternatives to expanding existing or creating additional commercial fleeting areas, barge mooring areas, and recreational boating facilities. The City agrees that these questions should be better understood and should be evaluated region-wide. The Metropolitan Council has formed an advisory committee to further scope out many of the questions identified for the MNRRA Surface Water Use Management Plan. The U.S. Army Corps of Engineers will be the lead agency in completing such a plan, working with local governments and other affected state and federal agencies.

It is recommended that barge fleeting areas and marinas be separated by 200 feet for safety reasons. Two hundred feet is approximately the length of one barge, so separation by this distance permits visibility of smaller recreational craft. Empty barges ride high in the water (16-20 feet above the water line), so a tow boat operator may not otherwise see recreational boat traffic around marinas. There are two marinas currently in operation, Harriet Island Marina and Watergate Marina in Crosby Park. There

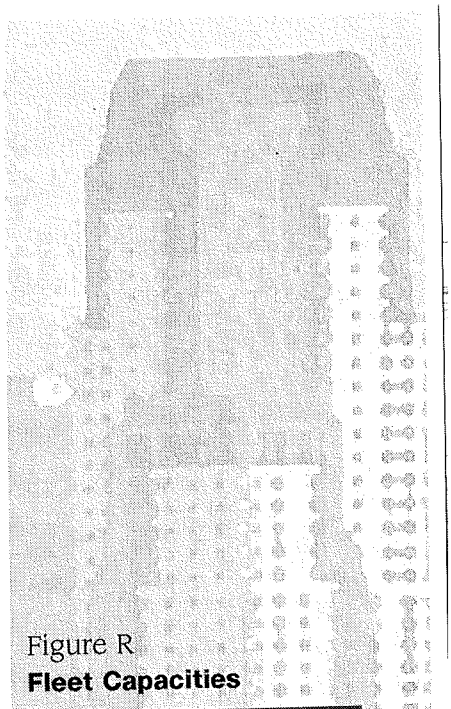


Figure R
Fleet Capacities

Fleet Capacities, Mississippi River in Saint Paul

River Mile*	Primary Fleets**	Design Capacity***	Practical Capacity***
840.2 L	High Bridge	21	15
839.1 R	Robert Street	15	9
838.5	L MidAmerica	30	21
838.4 R	Twin City Fleet	36	27
838 L	Warner Road	63	44
837.7 R	Hanger Fleet	15	9
837 R	Airport Fleet	60	45
836.4 R	Dakota Fleet	21	12
835.6 L	Beltline Fleet	27	18
835.1 L	Valley Line	30	24
834.3 L	Kaposia Fleet	39	24
834 L	Packing House	39	24
833.8 L	North Star	36	24
833.6 L	Red Rock Fleet	27	15
833.3 R	Pigseye West	54	39
	Secondary Fleets**		
841 L	Omaha Fleet	8	6
840 L	Harvest States	8	6
836 R	Southport	15	10
833.3 L	Pigseye East	9	6
833.2 L	North Star Steel	21	15
	TOTAL	574	393

Source: MnDOT Ports & Waterways Section

* The number (841, etc.) refers to mileage north of the confluence of the Mississippi and Ohio Rivers. The letter "L" or "R" refers to the left or right side of the river facing down river.

** Primary fleeting areas are where barge tows are disassembled and rebuilt, and undergo inspection and minor repairs. Secondary fleeting areas are where barges are stored after they leave a cleaning or repair facility and before they are brought to a terminal for loading.

*** The practical capacity of a fleet is 2/3 to 3/4 of its design capacity. There must be room in the fleet to maneuver so that an individual barge can be taken from the fleet.

are also boat launches at Hidden Falls Park and in Lilydale Park near Pickeral Lake.

Policies:

5.2.1 Barge Terminal #1, Red Rock, and Southport will remain the city's principal river port terminals. The City supports the Port Authority's policy of replacing non-river-related businesses with river-related businesses at Southport and Red Rock Industrial Districts, as leases expire. (The businesses at Barge Terminal #1 are all river-related.) Furthermore, the City concurs with the general MNRRA objective that riverfront industrial sites should be occupied by river-related businesses that meet environmental standards. River-related land uses are those with an economic or operational need for a river location.

5.2.2 A commercial landing for interstate cruise lines will be maintained at Lambert's Landing (Lower Landing Park), in conjunction with other activities at Lambert's Landing, e.g. loading of supplies. A landing for local excursion boats will be maintained at Harriet Island Marina.

5.2.3 The City will continue to regulate the impacts of navigation-related facilities (including terminals, barges, marinas, legal houseboat areas, excursion boats and permitted restaurant docking) on existing development, the natural environment, and the immediate neighborhood through its Special Condition Use Permit process.

5.2.4 The City will minimize water use conflicts and improve safety by separating commercial and recreational boat facilities, where practical.

A) If new or expanded barge fleeting sites are proposed, and if otherwise permitted by State and federal agencies, fleeting sites should be located adjacent to industrial and commercial land uses and at least 200 feet from any marina or boat launch.

B) New marinas or boat launches should be located at least 200 feet from any barge terminal or barge fleeting area.

5.2.5 The City strongly discourages temporary casual mooring, e.g. tying barges to trees in the corridor except in emergencies.

Objective 5.3 *Pursue cleanup and reclamation of polluted sites*

Much of the Mississippi River Corridor in Saint Paul has historically been used for industry, because the river was the first major transportation route. Polluted sites are concentrated where heavy manufacturing, rail yards, and other industrial activities were common. Other sources of contamination are landfills and underground storage tanks. The Metropolitan Council estimates that at least a third more land is polluted than is currently identified.

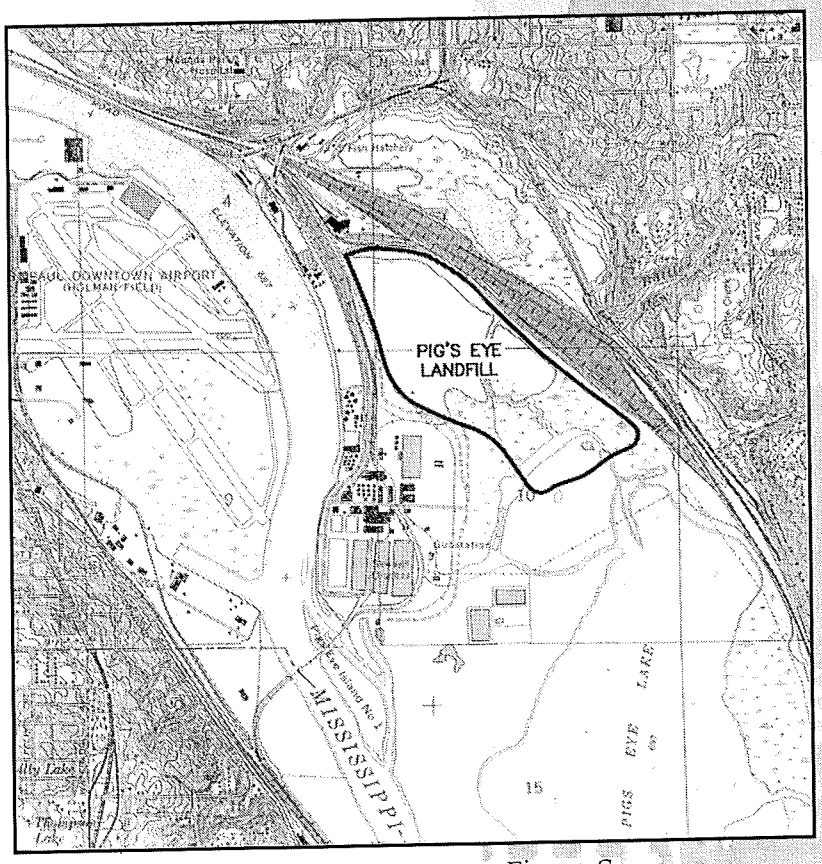


Figure S
Pig's Eye Dump Site

An area with significant contamination is Pig's Eye Dump, located in the flood plain of the Mississippi River just east of downtown Saint Paul and to the north of Pig's Eye Lake. At 319 acres, the site contains the largest dump in Minnesota. During its 16 years of operation (1956-1972), the dump received 8.3 million cubic yards of municipal, commercial, and industrial waste from Saint Paul and surrounding communities. During the summer of 1988, the site (covering approximately 300 acres) caught fire and burned intermittently for two months. In 1989, it was designated a Superfund site. The City has completed a Remedial Alternatives and Response Action Plan (RAP) which details remedial alternatives for the site. The RAP calls for plantings, covering much of the site with two feet of soil, and rerouting sections of Battle Creek. The City owns most of the site, and the site is designated as passive use parkland. The RAP was approved by the MPCA in May 2000. The State legislature has authorized two million to begin remediation, of a total remediation cost estimate of 9.1 million.

Funding for cleanup of polluted land is most readily available when the land will be redeveloped to yield jobs and increase the tax base. This has the effect of favoring industrial and commercial redevelopment projects. It can be difficult to find funds for cleanup of polluted land that is to be converted to green space or park land. Legal questions about ownership must also be resolved. To date, legislative initiatives have been proposed to address this need, but none have been passed. The Port Authority has donated over 1800 acres of land to the City, to be used for open space and recreation in perpetuity. Those lands now in park use include Crosby Lake, Pigs Eye Lake, and Pickeral Lake.

Policies:

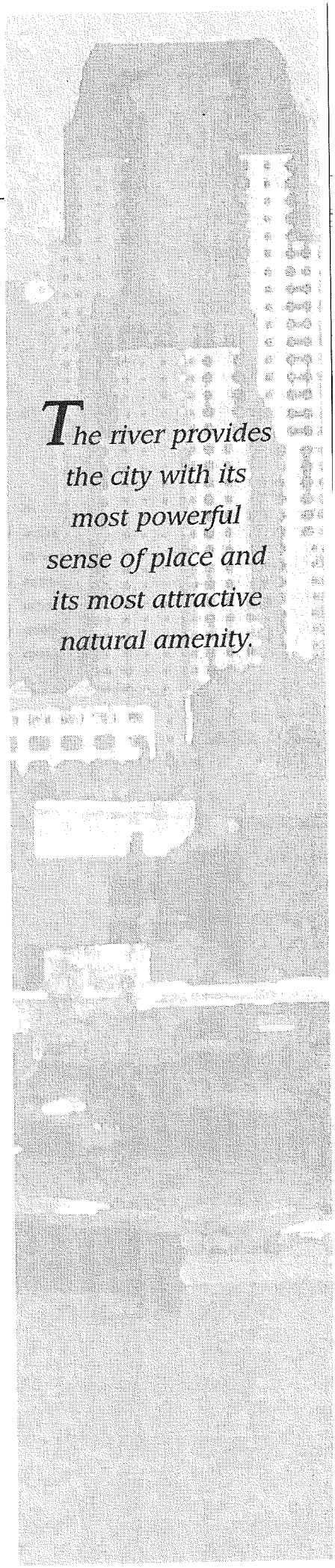
5.3.1 Working with the Port Authority, the City will seek opportunities to clean up polluted river corridor lands.

5.3.2 The City will monitor and support initiatives that will facilitate cleanup of polluted land to be reused as green space.

5.3.3 The City will balance open space use and industrial and commercial use of the Pig's Eye Lake area. Cleanup of Pig's Eye Dump should proceed as laid out in the Remedial Alternatives and Response Action Plan (RAP) approved by MPCA. Industrial uses along Childs Road and the railroad tracks will continue. Open land (which includes the Heron rookery at the southern tip of Pig's Eye Lake) will continue in environmentally protected status.

6.0 *Strategy 3:* **Enhance the City's Quality of Life by Reconnecting to the River**

The City has the opportunity to redefine the Mississippi River as the "front door" to the city, a deserving role for the city's most unique natural resource and a tremendous source of community pride, identity and vitality. The river provides the city with its most powerful sense of place and its most attractive natural amenity. Saint Paul can reclaim its heritage as a river city by reconnecting its downtown, neighborhoods and recreational areas to the river and establishing a better connection between its built and natural environments. Recreation opportunities, housing, and mixed-use development will increase in the corridor, creating urban neighborhoods with visual and physical access to the river. (Appendix F contains maps showing parks, trails, overlooks, and historic sites and districts.)



The river provides the city with its most powerful sense of place and its most attractive natural amenity.

Objective 6.1 *Enhance opportunities for recreational use of the riverfront by local visitors and tourists, utilizing parks, open space and physical access to the river*

The picturesque, natural environment of Saint Paul's river corridor provides many desirable open spaces for city residents and tourists to play and relax. Saint Paul's twenty nine miles of river shoreline is the longest stretch of riverfront of any municipality in the Twin Cities metropolitan area and represents one of the city's most significant public amenities. As riverfront industrial land has gradually been converted to parks, park land has become the single largest use of riverfront land in Saint Paul. Within the river corridor, several large regional and city river parks exist, including the following:

- Harriet Island Park
- Cherokee Park
- Crosby Farm Park
- Indian Mounds Park
- Battle Creek Park
- Kellogg Mall Park
- Lilydale Park
- Raspberry Island
- Hidden Falls Park
- Pigs Eye Lake Park
- Lower Landing Park
- Mississippi River Boulevard

Opportunities for further expansion and enhancement of river parks and open spaces exist. As stated in the City's Parks & Recreation Plan, the City will pursue opportunities and partnerships to acquire land specifically for

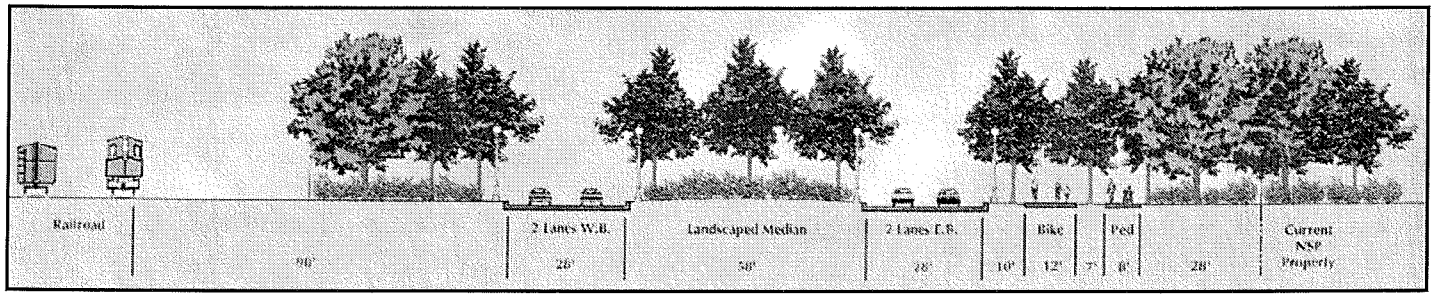
open space and natural resources protection according to any of the following criteria:

- Areas containing species included on the State or Federal list of endangered or threatened species;
- Areas representing significant landforms, native plant communities, sensitive habitat, or historical events;
- Areas that connect existing components of the open space network; and
- Areas adjacent to existing parkland/open space.

In addition to threatened and endangered species, the State of Minnesota classifies species of "special concern." (Listed in Appendix C). While this category does not have the same regulatory status as threatened or endangered species, areas that contain these species and their habitats should also be considered for preservation.

Riverfront redevelopment activities can provide opportunities for expansion and enhancement of the city's riverfront open space system as well. The Saint Paul Renaissance Project, sponsored by the Saint Paul Riverfront Corporation, marks a substantial effort towards this end. The Renaissance Project is an integrated network of public spaces, parks, trails, greenways, and connections that relinks Saint Paul's downtown and its neighborhoods to the Mississippi River. The network builds on investments currently underway and emanates from the *Saint Paul on the Mississippi Development Framework.*

Figure T
Shepard Road Streetscape Design



Within the river corridor, many of the existing adjacent open spaces are connected and established as regional parks, including: Harriet Island-Lilydale-Cherokee, Mississippi Gorge-Hidden Falls-Crosby Farm and Battle Creek-Pigs Eye. Potential expansions, connections and enhancements of the river corridor open space system include the restoration of the Lower Phalen Creek area, connecting the river and Swede Hollow Park, and a restoration of the Trout Brook Reach, with a trail connection to the Willard Munger Trail. Other enhancements of the river corridor open space system include development of a Pig's Eye Greenway, renovation of Raspberry

Island, a major renovation of Harriet Island Lilydale Regional Park, and new open space created by the realignment of Shepard Road. The realignment of Shepard Road just west of downtown will significantly increase public access to the river in that area of the river corridor.

Policies:

6.1.1 Large areas of open space that are currently undeveloped should preserve fish and wildlife resources, plant communities, and biological diversity. Some open space areas may be suitable for passive recreation (e.g. trails for hiking, biking, bird-watching); others, such as the Pig's Eye Lake area and the bluffs at Cherokee Park should be limited to preservation.

6.1.2 The City will continue to add to its riverfront open space system, making it more continuous and river-related.

6.1.3 The City will require dedication of river corridor parkland as part of river corridor land subdivisions or planned development approvals.

Objective 6.2 *Preserve and improve existing views to the river and bluffs, and develop new ones*

Saint Paul's river corridor, with its magnificent bluffs, cavernous gorge and wide river valley provides many unique and scenic views. Visual access to the river, the bluffs and the river corridor provides a sense of place for the general benefit of the public, both city residents and visitors. The various forms of public visual access to the river consist of scenic river views, extended view corridors, overlook points, observation platforms, bridge crossings, bridgeheads and bluff stairways. Many of the best views of the river exist at key blufftop sites, including Indian Mounds Park, Upper West Side, Kellogg Mall in downtown Saint Paul, and Mississippi River Boulevard. Opportunities exist to create additional river view points in some areas of the city. The neighborhoods in the Shepard Road/West Seventh Street corridor, Battle Creek, and Highwood currently have few established public view points to the river. Recently,

Figure U
Overlooking the river

with funds from multiple sources, blufftop property off Springside Drive in the Highwood neighborhood was acquired and dedicated for passive public views. Such actions support this objective and help to protect the bluffs themselves as described in Chapter 4.

The City is currently considering a policy to remove all billboards from the River Corridor. According to a 1999 inventory, fifteen billboards would be targeted for removal from the river corridor if such a policy with an associated ordinance is adopted.

Policies:

6.2.1 The City will work with the river corridor neighborhoods to identify additional river views or view corridors. River views and overlook points should be linked to the city's walking paths and trail system, whenever feasible.

6.2.2 All billboards should be removed from the River Corridor and not replaced. The City encourages efforts by neighboring communities to remove River Corridor billboards as well.

6.2.3 The City will encourage the placement of public utilities undeground.

From the Saint Paul Land Use Plan
Urban Villages:
A Theme with Variations

Policies: 5.1.1
The City, neighborhood organizations, developers and realtors should use the urban village principles listed below, which are condensed from the Charter of the Congress for the New Urbanism, for assessing neighborhoods and promoting the advantages of city living.

- Good neighborhoods are **compact and pedestrian-friendly.**
- Good neighborhoods have a **mixture of land uses.**
- Good neighborhoods have a **broad range of housing types.**
- Good neighborhoods are designed to **support mass transit** with appropriate land uses and densities within walking distance of public transportation.
- Good neighborhoods have **commercial, civic, and institutional activity embedded,** not isolated in remote, single-use complexes.
- Good neighborhoods have **schools within walking and short bicycling distance** for most children.
- Good neighborhoods have a **range of park facilities,** from tot-lots to village greens to ballfields to community gardens. (Large parks and conservation areas serve as boundaries between neighborhoods.)

Objective 6.3 *Provide a continuous, safe pedestrian and bicycle trail along both sides of the river, that is connected to the city and regional trail system*

Pedestrian and bicycle trails are an important way of connecting the city and the river. Such trails also provide environmental and transportation benefits. The City's Parks and Recreation Division is working towards a continuous trail system along both sides of the river with the potential to connect major parks, open spaces, historic sites, view points and public access areas in the river corridor. Implementation of the East Bank Mississippi River Regional Trail Corridor Master Plan will provide a continuous river trail through the city on the east bank (or north side) of the river. The East Bank Mississippi River Regional Trail is designed to link to other city trails, including the Saint Paul Grand Round Loop, Phalen Creek Trail and the Capitol Route Trail, and existing and proposed trails in neighboring jurisdictions. On the river's west bank, in areas near the Saint Paul Downtown Airport, and in the Pig's Eye Lake area, a river trail is not planned to be directly adjacent to the river for safety and environmental reasons. The west bank river trail is planned primarily as an off-road path, with some on-street bike lanes planned near the airport, and on bridges. At Lilydale Regional Park, the goal is to make the trail completely off-road if an opportunity arises in conjunction with the railroad.

Policies:

6.3.1 As designated in the Parks & Recreation Plan, the City will complete a continuous Mississippi River Trail as close as practical to the river along the entire length of both sides of the river, including bike lanes on bridge crossings.

6.3.2 Existing and new river trails will accommodate a variety of non-motorized recreational uses, including walking, jogging, biking, skating and ski touring. Bike and pedestrian paths will be separated from each other where physically possible.

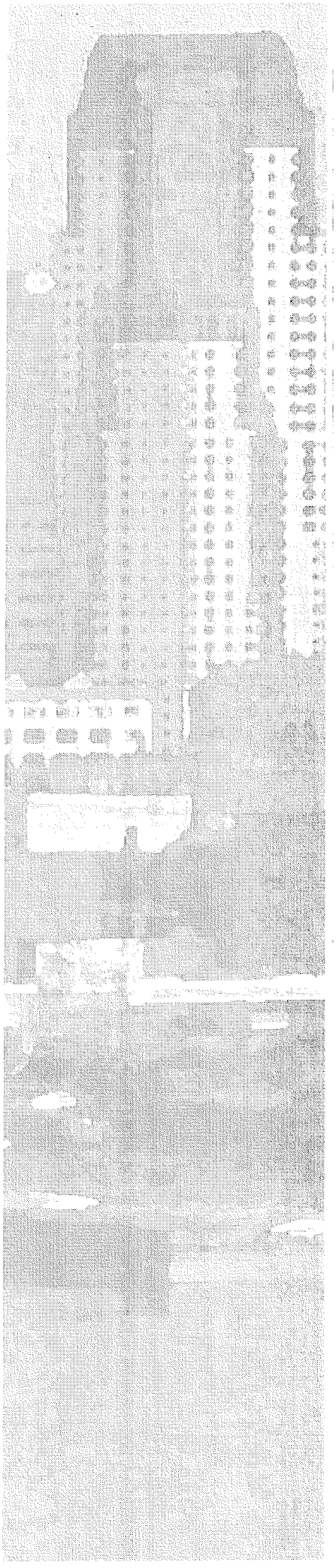
6.3.3 The City will coordinate development of the river trail with existing and proposed trails that connect to Saint Paul's river corridor, including city, regional and neighboring communities' trail systems.

6.3.4 The City will pursue easements or public acquisition for future river trail connections in new and existing developments in the river corridor. The City will pursue opportunities as appropriate to acquire future abandoned railroad right-of-ways and appropriate tax-forfeited parcels for acquisition and possible river trail development.

Objective 6.4 *Support new housing development in the river corridor, through creation of urban villages. Extend neighborhoods toward the river*

Especially near downtown, the opportunity exists to create new mixed-use river corridor neighborhoods that reconnect the city to the river. This is also an opportunity to create highly desirable housing that helps achieve the City's projected housing growth target for 2020. The *Saint Paul on the Mississippi Development Framework's* Ten Principles present a holistic approach for reestablishing river corridor neighborhoods. The *Saint Paul Land Use Plan* further articulates the City's vision of Urban Villages as the predominant model for neighborhood development. Strategic locations with highest potential for neighborhood development include Upper Landing/Irvine Park, the West Side River Flats, Lowertown, as well as the Koch-Mobil and Shepard-Davern sites.

The City recognizes that new development in the floodplain or within 300 feet of the river should have a relationship to the river, a need for a river location, and/or should enhance the river environment (discussed in more detail in chapter 5). It is appropriate to consider housing and neighborhoods river-enhancing, if careful site planning addresses public access and connections to the river, view corridors and vistas, use of native vegetation in landscaping, and natural resource and stormwater management. See chapter 7 for further discussion of policies for new development.



Policies:

6.4.1 In strategic river corridor locations adjacent to existing neighborhoods, the City supports redeveloping vacant and underused industrial land sites as new mixed-use urban village neighborhoods that help reconnect the city to the river.

6.4.2 Connections between the terrace neighborhoods and the river may be improved by adding a limited number of pedestrian routes (stairs, ramps, walkways) between the bluff elevations and the river flats.

Objective 6.5 *Encourage protection and restoration of river corridor cultural resources, including historic structures, culturally significant landscapes, and archaeological and ethnographic resources*

Saint Paul's Mississippi River Corridor, as the birthplace of the City of Saint Paul, contains a variety of important cultural and historical structures and sites. The river corridor's designated historical sites include early Native American river settlements and burial grounds, historic urban districts, river-related recreational buildings, stately public institution and transportation buildings, grand private homes, and architecturally unique bridges spanning the Mississippi River. Early economic activity in the river corridor included beer brewing, mushroom farming, and brick making.

Nationally designated historic sites in Saint Paul's River Corridor are listed on the National Register of Historic Places. (See Appendix B.) The National Register is administered by the State Historical Preservation Office (SHPO), which has ultimate responsibility for evaluating and nominating new sites to the National Register. Locally, Saint Paul's Heritage Preservation Commission (HPC), created in 1976, is a certified local government historic preservation program with responsibility for identifying and recommending historic buildings, sites and districts within the city. A historic survey and designation project for the entire city of Saint Paul is currently underway.

Currently, officially designated historic places consist of structures, sites, districts and objects only. A number of important archaeological sites and landscapes exist in the river corridor that do not contain historic structures. These sites and landscapes have been identified by SHPO; however only one site (Indian Mounds Park) has been designated historic on the National Register. A comprehensive inventory of potential local historic landscapes, archaeological and ethnographic sites is needed to ensure protection of all historic and cultural resources in the river corridor.

Opportunities exist for restoring historic sites in the river corridor as an element of riverfront development planning. The Minnesota Boat Club Boathouse on Raspberry Island, the Harriet Island Pavilion as part of the Harriet Island Master Plan and the various historic river caves are prime examples. Reconnecting the Irvine Park and Lowertown Historic Districts to the river and their historic roots as Saint Paul's upper landing and lower landing also provide key opportunities to restore the riverfront's historical resources. At the Upper Landing site, the Head House was one of the first agricultural transfer stations on the Mississippi River. The Head House should be studied to determine its potential for reuse, perhaps in conjunction with redevelopment plans. One of the buildings currently occupied by the U.S. Post Office at Kellogg Blvd. and Jackson Street (adjacent to Lambert's Landing) is an example of Art Deco style architecture. If this building or the Concourse of the Union Depot become available for reuse, this Plan supports reuse that is consistent with the vision for downtown and principles laid out in the *Saint Paul on the Mississippi Development Framework.*

Policies:

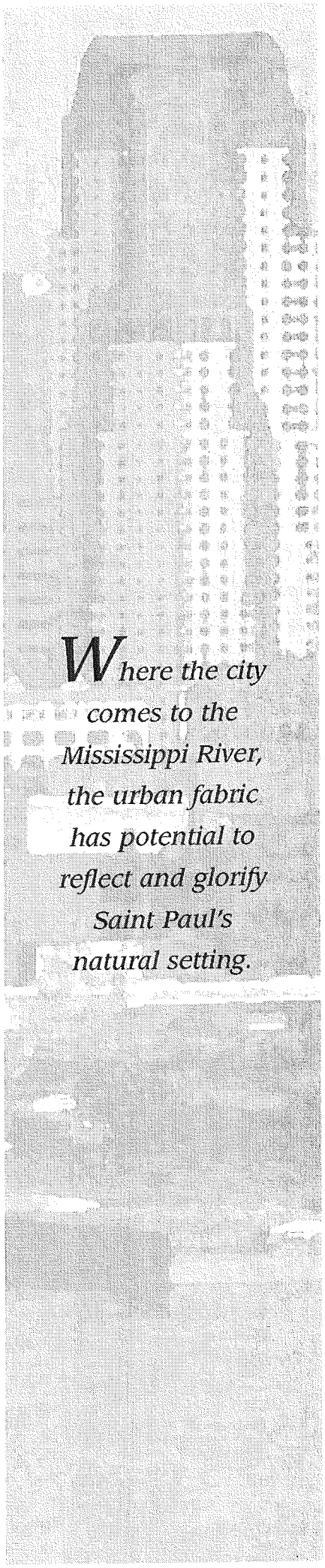
6.5.1 The City encourages the use of historic properties in public and private riverfront development plans, particularly where interpretation of historic themes is planned. Structures and landscapes listed on the National Register of Historic Places, and those designated as local sites should be preserved in their present condition, if that condition allows for satisfactory protection, maintenance, use, and interpretation.

6.5.2 The City encourages the expansion of open space land use where needed to preserve significant archaeological, landscape and ethnographic resources.

6.5.3 The City encourages economic activities that preserve and rehabilitate historic resources in the river corridor.

6.5.4 With the Saint Paul Heritage Preservation Commission (HPC), the City supports the creation of a Saint Paul Historic Preservation Plan that includes establishing a comprehensive inventory of all historic, archaeological, cultural and ethnographic structures and landscapes in the river corridor.

6.5.5 The City will work to restore the former connection of river corridor historic districts (Lowertown and Irvine Park) to the river, by encouraging development that is compatible with existing neighborhoods.



Where the city comes to the Mississippi River, the urban fabric has potential to reflect and glorify Saint Paul's natural setting.

7.0 *Strategy 4:* **Use Urban Design to Enhance the River Corridor's Built Environment**

The design of public and private spaces powerfully affects our perception of the quality and character of place. Where the city comes to the Mississippi River, the urban fabric has potential to reflect and glorify Saint Paul's natural setting. The river corridor's varied landforms and existing development patterns pose opportunities and challenges for new development to enhance the river valley by providing access to the river and reinforcing continuity in the existing urban fabric.

The *Saint Paul on the Mississippi Development Framework* has become the City's essential reference for guiding new development in and around the downtown riverfront. This chapter draws heavily from that work. The intention of this chapter is to support and reinforce the principles articulated in the *Framework* while considering the **entire** River Corridor and implications for all of its land typologies.

Urban Structure and Land Forms

The river corridor's urban structure is a multi-layered patchwork of movement systems, land uses, and built form. Movement is multi-modal, characterized by rail lines, major arterials, neighborhood streets and trails. West Seventh Street, or Old Fort Road, is especially significant because it is the city's longest arterial running parallel to the river. It is also a major growth corridor connecting to downtown. Shepard Road is another significant river road. It runs parallel to the river and West Seventh Street, and will soon be rebuilt as an improved and slower speed parkway east of Randolph. Currently, Shepard Road acts as an impediment to river access and experiences.

The north side of West Seventh Street is characterized by the ordinal grid. Generally, because of the change of land use from residential to industrial, this grid of streets is not continuous across West Seventh. It extends across into pockets of small residential areas, but because of the grid's spotty nature, residential neighborhoods south of West Seventh do not create a continuous urban fabric.

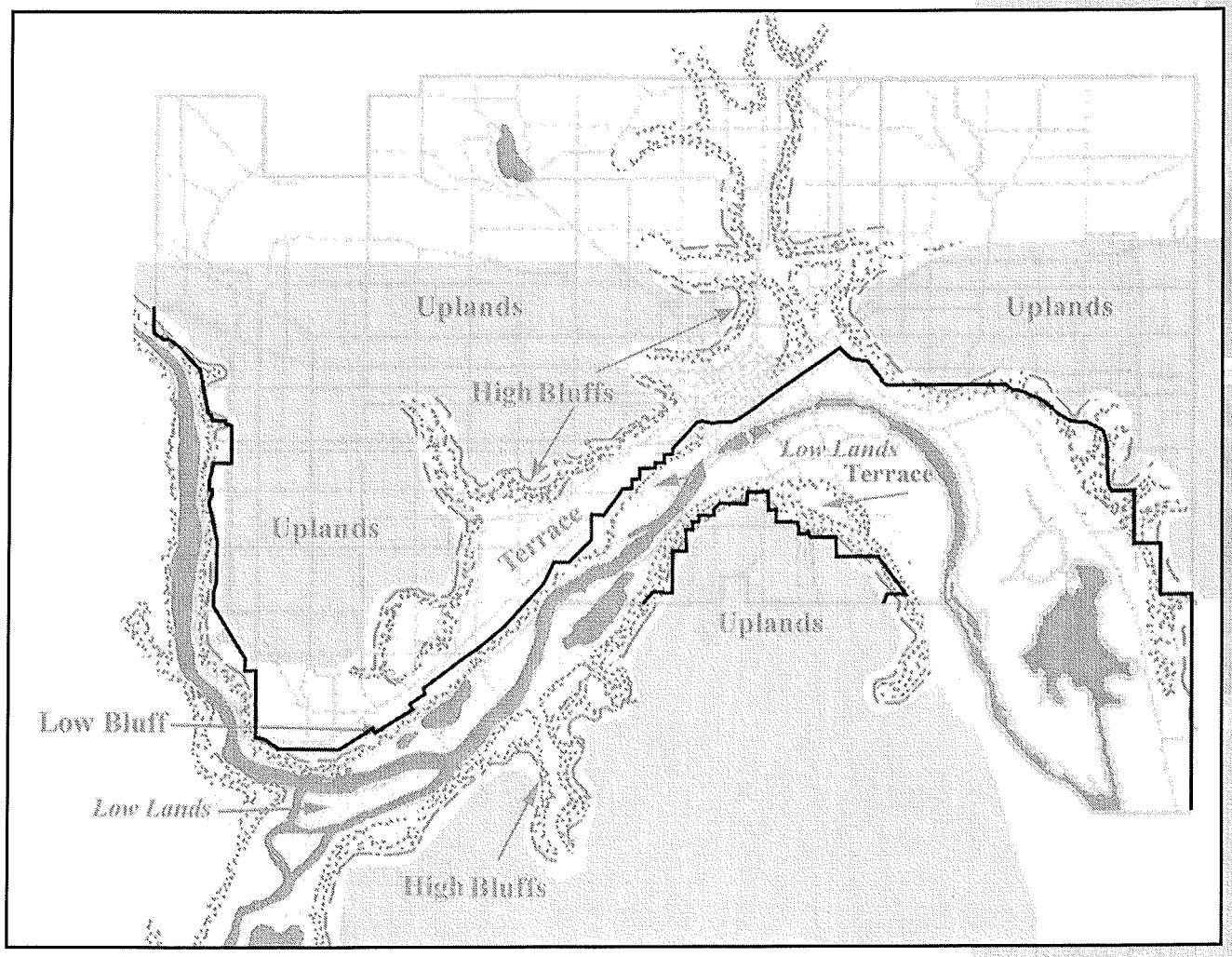
The Terrace and Lowlands are important locations that provide the opportunity for meaningful connections from the Uplands to the river. Currently, the Terrace along West Seventh Street is perceived as disconnected from the Upland neighborhoods of Saint Paul because so few streets traverse the bluff. In fact, the only connections are from the main streets of the Upland

grid (Snelling, Randolph, St. Clair, Grand/Ramsey, Fairview/Edgcumbe) that extend down the bluff as parkways or major river avenues. For the same reason, the Lowlands on the West Side also seem disconnected from the Uplands.

Topographically, the Terrace corridor is formed by the High Bluffs on both sides of the river. Atop the bluffs lie several high points and landmark buildings, providing a series of vistas visually connecting neighborhoods to each other. Natural reaches are formed where the bluffs are interrupted by the ravines. These reaches provide further opportunities to connect the Terrace and river valley to the Upland neighborhoods.

The map below shows the approximate location of the landforms that make up the river valley and its reaches in Saint Paul. The map also shows the boundary of the Critical Area, which contains the entire length of the river in Saint Paul. While the influence of the river valley clearly extends beyond the Critical Area boundary, **the policies in this Plan are understood to be limited to the Critical Area in Saint Paul.**

Figure V
River Valley and Critical Area boundary



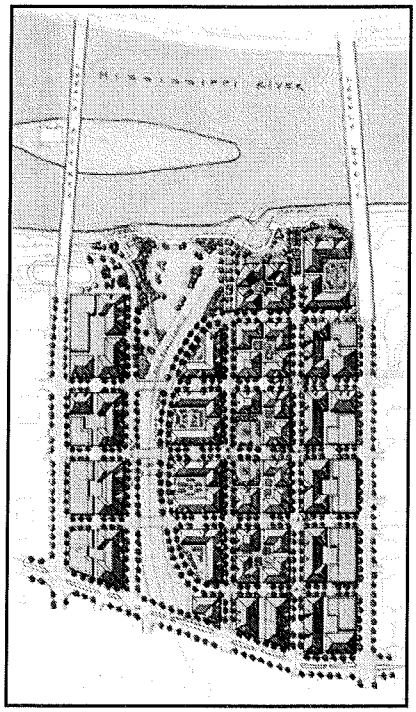
Objective 7.1 *Development of new streets, blocks, and neighborhoods in the river corridor should continuously reinforce connections with the natural environment of the river valley and the surrounding urban fabric*

The *street grid,* or pattern of streets, blocks, and open space forming public and private spaces, determines both the movement patterns and development patterns of a district. These development patterns provide an important opportunity to connect with and experience the river. The best example of this in Saint Paul is in the West Side blufftop neighborhoods west of Wabasha/Humboldt, where blocks are small and connect regularly (at least every 400 feet) with a riverview street, park or sidewalk. In other areas, particularly the West Side Lowlands, redeveloped industrial "superblocks" have the effect of isolating blufftop neighborhoods from the river. The policies below do not preclude industrial redevelopment on industrially-zoned land. However, other redevelopment should consider the opportunity to reestablish meaningful connections to the river.

Policies:

7.1.1 In the Lowlands, new urban villages (as defined in Objective 6.4) should establish an urban street grid that provides access to the river's edge. The City supports utilizing historic street patterns when re-creating street grids. If a historic grid does not exist, new urban villages should establish a fine-grained system of blocks and streets. When feasible, new development should also assure urban continuity by integrating all new street and block patterns into existing traditional patterns.

Figure W
General Development Concept for West Side Flats



7.1.2 The Terrace along West Seventh Street is a major corridor that should have better street connections across West Seventh. The City supports creating new block and street patterns south of West Seventh Street that create continuity across West Seventh. New block and street patterns on the Terrace should maximize connections to the bluff edge to enhance the sense of proximity to the river.

7.1.3 In Upland areas such as the Gorge, the City encourages preserving and enhancing the existing modified grid pattern of streets and blocks. In portions of Battle Creek and Highwood, development form follows a suburban or exurban pattern with cul-de-sacs and meandering roads that follow topography. In these neighborhoods without a connected street system, the City supports creating a connected system as redevelopment or major subdivision occurs, to the extent that it is compatible with topography.

7.1.4 Infill development in the Uplands should be scaled and designed to be compatible with and reinforce the existing physical fabric.

7.1.5 Street design should accomodate all modes of movement (bicycles, pedestrians and cars). Streets and other public rights-of-way should provide physical and visual connections between river valley neighborhoods and the river's edge.

7.1.6 On urban infill and redevelopment sites in the river corridor, the City encourages underground parking wherever possible, to support "traditional" urban development patterns and to minimize impervious surface.

7.1.7 New and reconstructed bridges or other "gateways" should be designed to be attractive and inviting and maximize the sense of connection to the river. This can be accomplished with signage, landscaping treatments, ornamental lighting and railings, comfortable sidewalks, and special architectural elements. The Wabasha Bridge and Marshall Avenue Bridge are good examples. New river crossings should be minimized, and new and reconstructed bridges should be located in the same corridor as the structure they replace.

7.1.8 The City should connect new and existing neighborhoods to the river by greening key streets that connect to the riverfront or river parkways.

7.1.9 The Corridor shall not be used as a convenient highway right-of-way. New or modified transportation facilities shall complement the planned land and water uses and shall not stimulate incompatible development.

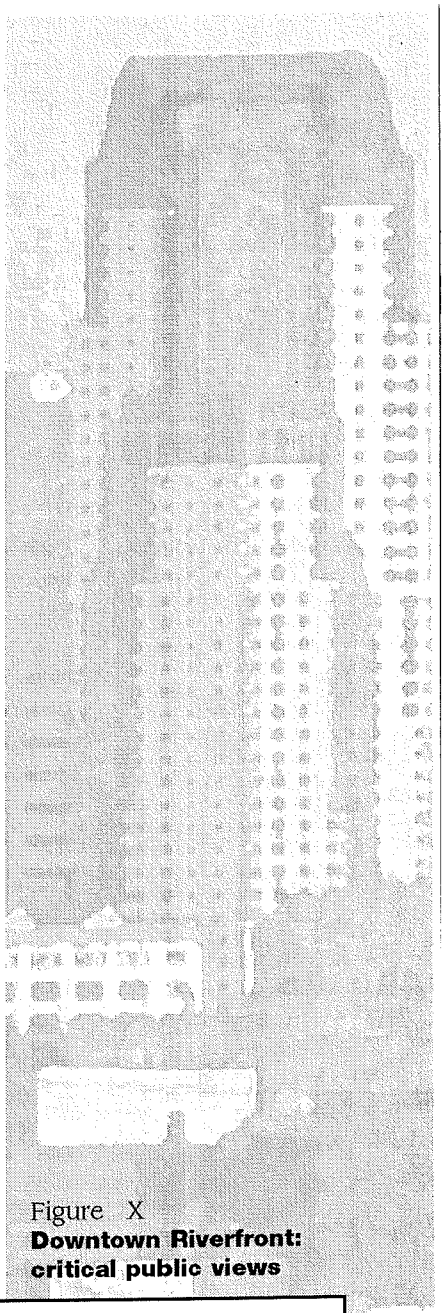
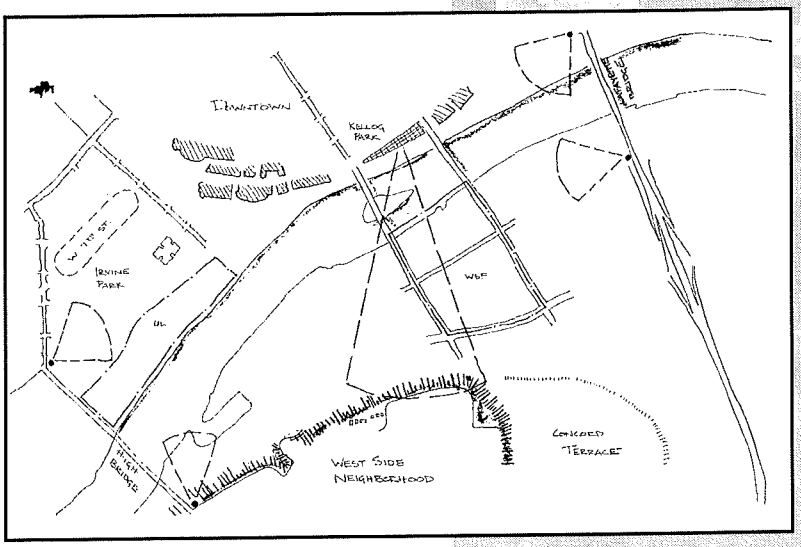


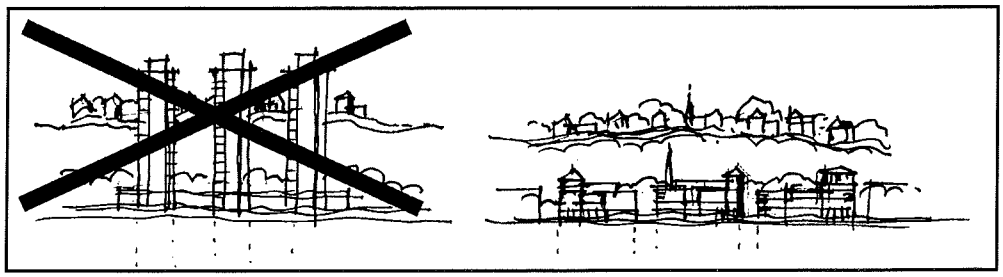
Figure X
Downtown Riverfront: critical public views

Objective 7.2 ***Consistent with an urban setting, the design of new buildings should reflect the river corridor's natural character and respond to topography by preserving critical public views***



Built form and building envelopes are a function of height, density and floor plate size. In the river corridor, building scale becomes very important as it relates to topography, views and the surrounding urban fabric. Recently, the City has become much more attentive to this, and now encourages buildings whose scale responds to the surrounding neighborhood context, topography and

Figure Y
New building scale should be sensitive to topography



the public realm. In general, it is important to preserve public views both of the river from the city and neighborhoods, and from the river back to the city. However, Saint Paul is an urban condition. Occasionally, it is permissible and even desirable to allow selective exceptions for medium-scaled landmarks.

Policies:

7.2.1 In Lowland areas, new development should employ building envelopes that heighten the experience of the river corridor by preserving public views to the top of the High Bluff. Public views from the Uplands or Terrace to the water edge of the opposite side of the river should be maximized.

7.2.2 Along urban growth corridors such as West Seventh Street, building envelope standards should be used that recognize not only the importance of the river as a scenic waterway and the corridor as a natural resource, but also the needs and appropriateness of massing and density in an urban environment.

7.2.3 In redevelopment areas along the West Seventh Street Terrace, the street hierarchy of the grid should be reinforced by creating building envelope standards that recognize the importance of locating taller buildings on wider streets and shorter buildings on narrower streets.

7.2.4 On the West Seventh Street and Concord Street Terraces, the City supports designing buildings with equal consideration given to their visibility from the river and to their visibility from the Uplands. The City supports maintaining building heights that maximize public views of the high bluff lines from the high water mark on the opposite side of the river. Planning for Terrace redevelopment sites should be careful to consider views of the Terrace from Fort Snelling as referenced in the Design Criteria for the Shepard-Davern zoning overlay.

7.2.5 Building design should add vitality to the street and sidewalk by providing street-level windows and active street-level uses, semi-public spaces in front of buildings, and front doors facing the street.

7.2.6 In Upland areas, the general character of the existing silhouette of

lower-profile buildings along the edge should be maintained. Development should also respect the mature tree canopy at the bluff edge of the Uplands with buildings forms that do not dominate the canopy's natural height. However, occasional, modest exceptions to the silhouette with medium-scaled landmark buildings are allowed.

7.2.7 The City supports the use of "green," or energy efficient building techniques in new developments.

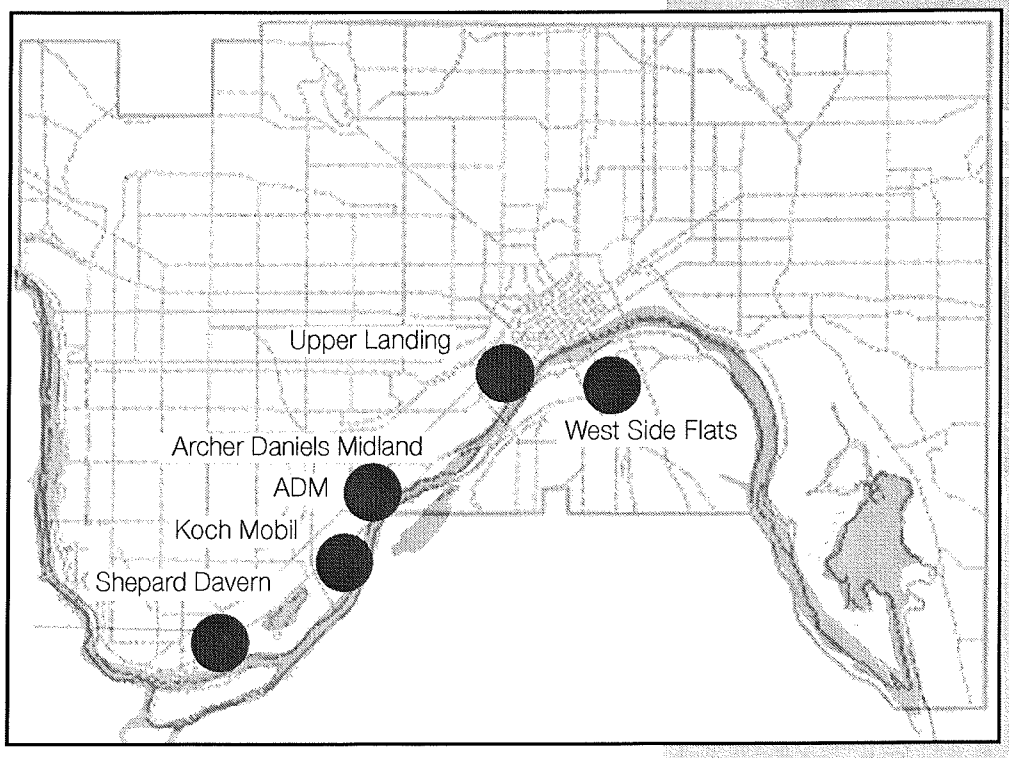
7.3 *Design Study for River Corridor Redevelopment Sites*

As described in the Setting Chapter, to complete this River Corridor Plan, Saint Paul PED, along with the Saint Paul Design Center and the Riverfront Corporation sponsored a design study to examine selected redevelopment sites. The study's goals were to consider the scale of new development, and to create design guidelines that met the spirit and intent of MNRRA and Critical Area requirements. Ideally, new development should provide greater public access to the river, preserve significant public views, improve stormwater and the urban forest on site, and reinforce and complement the surrounding urban fabric.

Illustrations of how these guidelines might be applied can be found in Appendix A.

On the following pages are *suggested* guidelines for the West Side Flats, Upper Landing, Koch-Mobil and ADM sites, and the Shepard Davern area. The individual guidelines should not be viewed as mandates, and it is unlikely that any project will be able to fulfill every provision. Rather, collectively they provide a vision for redevelopment that enhances the river corridor, respects this precious amenity, and strikes a balance between economic development and resource protection. This list is **not** exhaustive. These suggested guidelines will be used as the basis for the next step in the regulatory process (see Section 8.1.8).

Figure Z
River Corridor Redevelopment Sites



SUGGESTED DESIGN GUIDELINES FOR LOWLAND REDEVELOPMENT SITES

Site: **WEST SIDE FLATS**
Location: Between Robert and Wabasha, Mississippi River and Plato

Access and Connections
- Extend adjacent streets into and through the redevelopment site.
- Preserve the rail corridor as a potential greenway corridor.

Views and Vistas
- Preserve views of the West Side Bluffs from Kellogg Park.
- Ensure views of the riverfront by orienting streets perpendicular to the river.

Development Pattern
- Create a concentration of taller buildings and activity and the intersection of Plato and Robert.
- Create small blocks, bound by public right-of-way, that can be developed incrementally and in response to market conditions.

Natural Resources
- Provide continuous public open space along the river's edge.
- Extend landscaped 'Green Fingers' into new development blocks connecting with public open space along the river.
- Encourage preservation of existing native landscapes; encourage plantings of native materials in naturalized massings to enhance or create natural habitats.

Stormwater
- Integrate stormwater management elements with natural habitats, public open space areas and park/recreation opportunities.
- Reduce the rate and improve the quality of stormwater discharge.

Urban Forest
- Reintroduce the 'urban forest' within/around redevelopment areas.

Public Amenities
- Support a mix of active/passive recreational use with paths, overlooks, seating areas, courts/fields.
- Provide visible/accessible connections to neighborhood and regional parks, trails and open space systems.

Site: **UPPER LANDING**
Location: Between the High Bridge and Chestnut Ave., Mississippi River and Irvine Park Neighborhood

Access and Connections
- Provide multiple connections to Shepard Road, an urban boulevard.

Views and Vistas
- Provide an anchoring public space that celebrates the Chestnut Street / Cathedral axis and arrival to the river.
- Provide view corridors through the site from potential lower bluff overlooks (not in redevelopment sites) to the river.

Development Pattern
- Create small blocks that can be developed incrementally and in response to market conditions.
- Create a series of linking public and private spaces oriented to both the river and to Shepard Road as well as other significant spaces, views and landmarks, such as the High Bridge and downtown.

Natural Resources
- Provide continuous public open space along the river's edge.
- Extend landscaped 'Green Fingers' into new development blocks connecting with public open space along the river.
- Encourage preservation of existing native landscapes; encourage plantings of native materials in naturalized massings to enhance or create natural habitats.

Stormwater
- Integrate stormwater management elements with natural habitats, public open space areas and park/recreation opportunities.
- Reduce the rate and improve the quality of stormwater discharge.

Urban Forest
- Reintroduce the 'urban forest' within/around redevelopment areas.

Public Amenities
- Support a mix of active/passive recreational use with paths, overlooks, seating areas, courts/fields.
- Provide visible/accessible connections to neighborhood and regional parks, trails and open space systems.

SUGGESTED DESIGN GUIDELINES FOR TERRACE REDEVELOPMENT SITES

Site: **KOCH MOBIL (Also ADM site)**
Location: Between Randolph and West 7th; W. 7th and Mississippi River

Access and Connections
- Extend existing streets into and through the redevelopment site.
- Extend Victoria Street through the site to join Montreal Avenue.
- Create a "Bluff Drive" as a local residential street atop the lower bluff park that connects West 7th to the River Valley.

Views and Vistas
- Create multiple views of the river valley where streets intersect the bluff drive.

Development Patterns
- Organize street and block development around a wide street or linear park that connects West 7th to the River Valley.

Natural Resources
- Provide a continuous new public edge along blufftop with native landscapes, pedestrian pathways and developed overlooks.
- Extend landscaped "green fingers" into new development areas along new streets and public pathways.

Stormwater
- Capture runoff on existing and newly

developed sites and begin water treatment, infiltration process (parking lots, rooftops, terraces).
- Integrate final treatment, infiltration and detention systems into the public edge behind the blufftop and into the pattern of parks and squares, streets and public pathways.
- Provide surface system of catchment areas, swales, infiltration and detention areas.

Urban Forest
- Install canopy trees on all new streets; infill canopy trees on existing streets.
- Develop natural forest along bluff top and bluff face with groves of native trees, grasses and other plantings.

Public Amenities
- Link public edge to new parks, squares and to existing neighborhoods and regional parks and trails with landscaped streets and public pathways.

Site: SHEPARD DAVERN

Location: Between West 7th and Shepard Rd.; Between Davern and Alton Streets

Access and Connections
- Extend existing streets into and through the redevelopment site.
- Consider creating a direct connection between St. Paul Pkwy. and Alton Street.
- Provide mid-block pedestrian connections between neighborhood and Shepard Road.

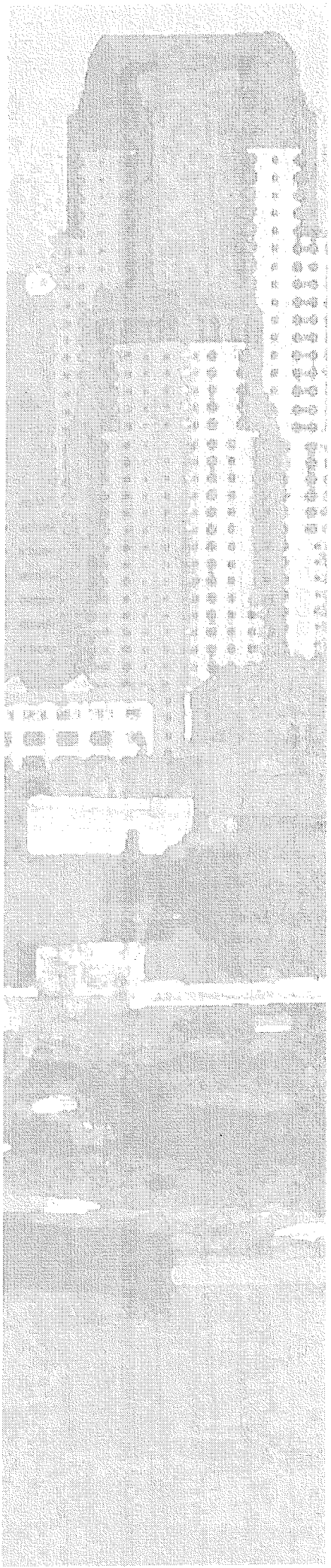
Views and Vistas
- Preserve natural views from the River to the high bluff by setting buildings all buildings back from the low bluff and by providing generous tree planting on Shepard Road.

Development Pattern
- Provide neighborhood green public spaces on which new residential development can be focused.
- Enhance existing public edge with native landscapes (oak savanna and prairie), improved paths and developed overlooks.
- Naturalize Shepard Road landscape with prairie and informally arranged groves of trees.
- Extend landscaped 'Green Fingers' into new development blocks connecting with public open space along the river.

Stormwater
- Develop integrated, comprehensive surface stormwater 'treatment train' with swales, wetlands and ponds to address water quantity/quality issues.
- Integrate stormwater management elements with natural habitats, public open space areas and park/recreation opportunities.

Urban Forest
- Infill canopy trees on existing and redeveloped street grid.
- Provide natural groves of native understory and canopy trees along Shepard Road and the public edge along the blufftop.

Public Amenities
- Enhance continuous public edge along bluff top with new access stairs to Crosby Park, new overlooks, sitting areas, information kiosks, bike racks and other amenities.
- Link public edge to neighborhood parks and squares and regional trail systems along landscaped streets and public pathways.
- Provide improved crossings of Shepard Road with enhanced crosswalks, signalized crossings and other amenities.



8.0 Implementation

8.1 Zoning Code Revisions

There will be significant zoning text amendments related to implementation of this Plan. This Plan is unrelated to the Mississippi River Floodway Study by FEMA, which will yield changes in the floodway delineation for the City's zoning map. However, those changes (which will include changes to the river corridor overlay Floodway and Flood Fringe districts) will inform the process of making river corridor zoning code and overlay map revisions. The main zoning recommendations from this River Corridor Plan are:

1. Review and amend current River Corridor overlay zoning districts and map. Currently, river corridor overlay zoning consists of four districts, with two distinct functions. The districts labeled RC-1 and RC-2 together protect the floodplain. The districts labeled RC-3 (Urban Open District) and RC-4 (Urban Diversified District) are intended to guide the character of development, but are confusing and contribute little to the overlay. Underlying zoning districts determine land use. General standards for environmental protection apply to the whole river corridor, regardless of the overlay districts. Consider splitting the current River Corridor overlay into two: a "floodplain overlay" consisting of districts RC-1 and RC-2 which governs the floodplain, and a single district, "Mississippi River Critical Area" or "MRCA," combining RC-1, RC-2, RC-3 and RC-4, and addressing Critical Area requirements.

2. Add requirement of 200-foot spacing between marinas or boat launches and barge fleeting areas.

3. Add criteria for new uses in the floodplain or within 300 feet of the ordinary high water mark: having an economic or operational need for a river location; supporting, as follows the attractiveness of surrounding neighborhoods; sustaining the economic vitality of riverfront improvements; offering public access to and along the river; maintaining views of the river; cleaning up polluted areas on the site; and meeting or exceeding natural resource policies in this Plan. (These criteria do not all have to be met for a land use to be considered to have a need for a river location, a relationship to the river, and/or to enhance the river environment. However, new development should meet as many of these criteria as possible.)

4. The current primary zoning districts RCR-1, RCC-1 and RCI-1 are not particularly effective in terms of standards, and are in some cases inconsistent with the City Land Use Plan's vision for mixed-use urban villages. This Plan sup-

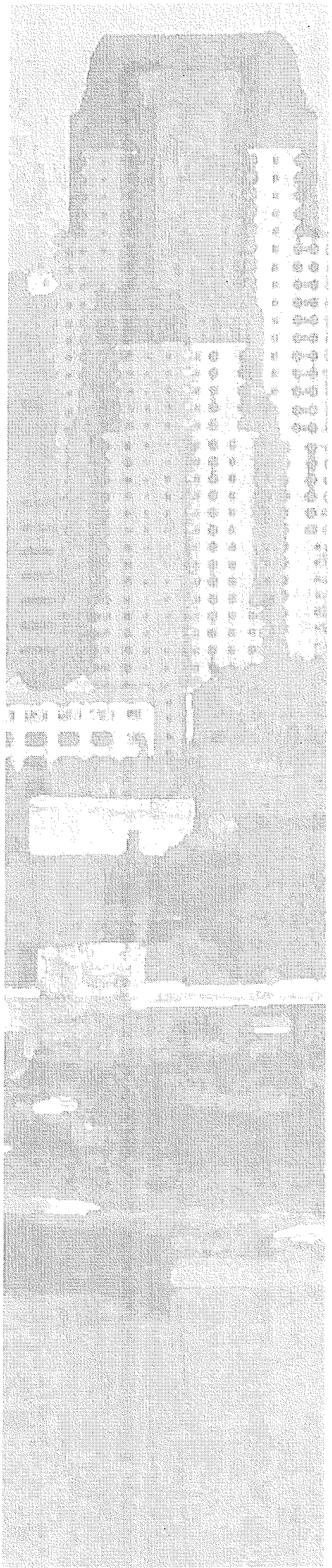
ports redefining these zoning districts to meet current development concepts.
5. Together with the Department of Natural Resources, review/amend River Corridor section of the Zoning Code (Chapter 65) for other necessary changes. In addition, staff will work to clarify and streamline language wherever possible.

6. Create zoning definitions for toe, top, and face of bluff.

7. Consider creating **additional** criteria, **beyond** the existing river corridor modification (zoning) criteria, to apply to river corridor modification requests for development on slopes exceeding 12 or 18%, or within the bluff impact area (40' from the bluff line). The intent is not to encourage river corridor modifications, but to provide the Planning Commission with further guidance when considering modification requests. Such criteria may address, but are not limited to, the following factors:

- Retain the natural slope lines of the site, as seen in profile. Restore the vegetation lines which convey the slope lines. Roof pitch should match slope angle.
- Screen new buildings.
- Slopes facing the river should look natural to the greatest extent possible.
- Stagger or step building units according to the topography.
- Plan buildings, drives and parking areas, and landscaping to acknowledge the natural contour line of the site.
- Provide parking on the uphill side behind buildings.
- Lot coverage.
- Location of building on lot.
- Regulate building design, e.g. materials, bulk, shape, height, color.
- Areas with a certain pitch of slope (e.g. greater than 12% and less than 18%) shall not have an impervious surface coverage greater than a certain percentage (e.g. greater than 25%).
- Encourage elevated structures & retaining walls.
- No increase in runoff from the site (from rainfall, septic systems, irrigation).
- Minimal removal of deep-rooted woody vegetation.

8. With recommendations from the 2000 River Corridor Design Study, the City, working with the Saint Paul Design Center, will develop design guide-



lines for major river corridor redevelopment sites where no guidelines have yet been written. The design guidelines will be sensitive to the purposes of this Plan, and will clarify how the form and scale of development can incorporate topography, protection of sensitive natural resources, and public enjoyment of the river. It is expected that such guidelines will be implemented through a variety of zoning tools, including the City's Urban Village Zoning project, site-specific guidelines, and possibly through design districts (a concept that is currently being developed). The Shepard-Davern redevelopment area already has created design guidelines through a 1999 Small Area Plan. **Appendix A** shows illustrations for the five redevelopment sites based on the work of the Design Study.

9. The height of new and expanded structures shall minimize interference with views of and from the river, as addressed in Section 7.2. The City will work with DNR during the ordinance amendment phase to develop height regulations that meet the standards and purposes of Executive Order 79-19, and city plans and ordinances.

Current state law provides that zoning must be consistent with the new Comprehensive Plan within six months of the Plan's adoption, which puts the zoning deadline in 2002. Given the extent of likely river corridor zoning text amendments, and the already numerous zoning changes from the Land Use Plan, it will likely take the City longer to complete the zoning changes that are proposed in this plan.

8.2 Site Plan Review Guidelines

Site plan review is the mechanism by which the City ensures that new development conforms to stated guidelines. Site plan review guidelines will be reviewed and amended if necessary to implement the River Corridor Plan's objectives and policies and ensure implementation of the Executive Order 79-19 site plan required guidelines. A review of guidelines would reevaluate provisions for public access to the river, connections to existing and proposed trails, view corridors, use of native vegetation in landscaping, clustering of structures to improve scenic quality, and measures to address adverse environmental impacts of new development. The City will work with the Department of Natural Resources to determine if amendments to site plan review guidelines are necessary to ensure Executive Order 79-19 implementation. This will occur during the Ordinance revision process which will follow adoption of this Plan.

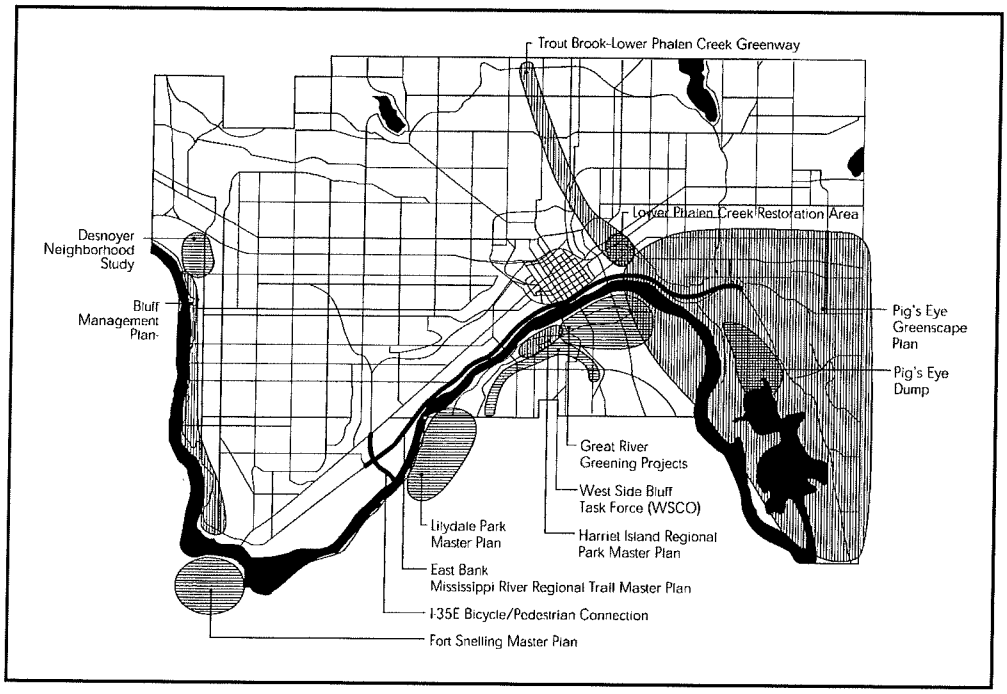


Figure AA
River Corridor Open Space and Greenway Projects

8.3 Park & Trail System Development

The City *Parks & Recreation Plan* (1996) includes an implementation plan for park resource protection, park land acquisition, scenic overlook clearance, environmental education and interpretive programs, and development of trails. Park plans include completion of the regional Mississippi River Trail on both sides of the river, connecting to trail segments in adjacent municipalities.

Other open space and greenway projects in or near the river corridor are shown, see Figure AA.

8.4 Heritage Preservation

Opportunities exist for the preservation and/or enhancement of the historic character of the river:

- Enhance visitor access and historical interpretation of Rumtown (across from Fort Snelling, on the riverfront) and Fountain Cave (currently marked with a historical marker at Shepard Road and Randolph Avenue).

- Implement Saint Paul Gateway Design Project (Route 5 entry into the city), reuse of the old stone bridge abutment at Gannon and Shepard Road, historic streetscape improvements to the Shepard-Davern area.

- Connect Irvine Park and Lowertown Historic Districts to the riverfront.

- The historic Intercity Bridge (more commonly known as the Ford Bridge) is scheduled to be redecked and resurfaced beginning in spring 2000. Enhance pedestrian and bicycle access and amenities as part of construction. Include wide sidewalks, ornamental lighting and railings, bike lanes, and viewing decks with benches (similar to those added to the Marshall Avenue Bridge).

- Install signage at the scenic overlook by the Ford Motor Company to explain the historic significance of the Ford Bridge and the importance of the Lock & Dam No.1. The sign should indicate that a visitors' center is across the Ford Bridge.

8.5 Notification Procedure

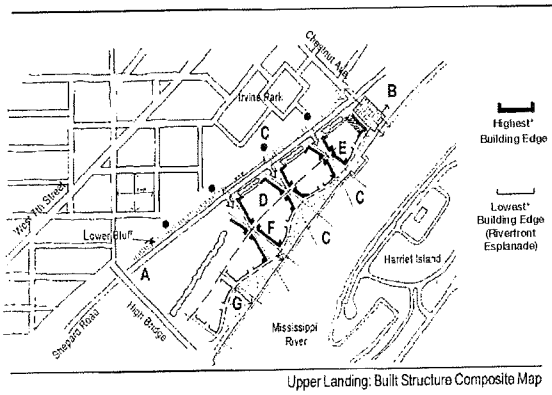
The City shall notify DNR of all developments requiring discretionary action or a public hearing at least 30 days prior to taking action on the application. Capital improvements and public facilities programs sited within the Corridor shall be consistent with this plan.

9.0 Appendices

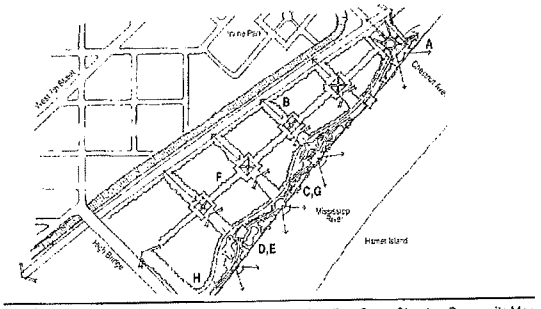
Appendix A. Design Study Illustrations for Redevelopment Sites

Below are examples of the possible application of suggested design guidelines for major river corridor redevelopment sites, described at the end of Chapter 6. The drawings are for illustrative purposes only.

5 REDEVELOPMENT SITES



Upper Landing: Built Structure Composite Map



Upper Landing: Green StructureComposite Map

* The terms "Highest", "Medium", and "Lowest" correspond to this individual site, and should not be interpreted as a uniform standard.

Site: UPPER LANDING
Typology: Low Lands
Location: Between the High Bridge and Chestnut Avenue; Mississippi River and Irvine Park Neighborhood

Guidelines:

A: Access and Connections: Provide multiple connections to Shepard Road, an urban boulevard

B: Views and Vistas: Provide an anchoring public space that celebrates the Chestnut Street / Cathedral axis and arrival to the river.

C: Views and Vistas: Provide view corridors through the site from potential lower bluff overlooks (not in redevelopment site) to the river.

D: Development Pattern: Create small blocks that can be developed incrementally and responsively to market conditions.

E: Development Pattern: Create a series of linking public and private spaces oriented to both the river and to Shepard Road as well as other significant spaces, views and landmarks such as the High Bridge and downtown.

F: Built Form: Create required *building edges* to define public streets and space as indicated on Built Structure Composite Map

A. Natural Resources: Provide continuous public open space along river's edge.

B. Natural Resources: Extend landscaped '*Green Fingers*' into new development blocks connecting with public open space along the river.

C. Natural Resources: Encourage preservation of existing native landscapes; encourage plantings of native materials in naturalized massings to enhance or create natural habitats.

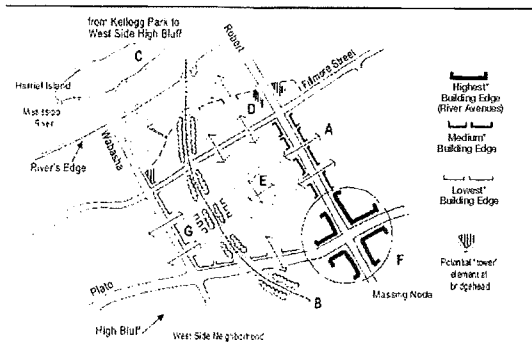
D. Stormwater: Integrate stormwater elements with natural habitats, public open space areas and park / recreation opportunities.

E. Stormwater: Reduce the rate and improve the quality of stormwater discharge.

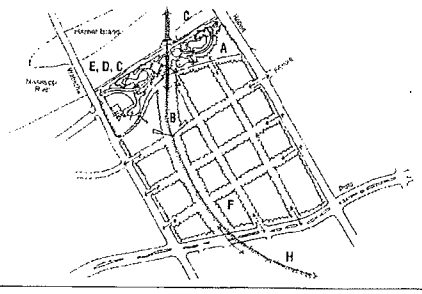
F. Urban Forest: Reintroduce the 'urban forest' within/around redevelopment areas.

G. Public Amenities: Support a mix of active / passive recreational use with paths, overlooks, seating areas, courts/fields.

H. Public Amenities: Provide visible/accessible connections to neighborhood and regional parks, trails and open space systems.



West Side Flats: Built Structure Composite Map



West Side Flats: Green Structure Composite Map

* The terms "Highest", "Medium", and "Lowest" correspond to this individual site, and should not be interpreted as a uniform standard.

Site: WEST SIDE FLATS
Land Classification: Low Lands
Location: Between Robert and Wabasha; Mississippi River and Plato
Guidelines:

A: Access and Connections: Extend adjacent streets into and through the redevelopment site

B: Access and Connections: Preserve the rail corridor as a potential greenway corridor.

C: Views and Vistas: Preserve views of the West Side Bluffs from Kellogg Park

D: Ensure views of the riverfront by orienting streets perpendicular to the river.

E: Development Patterns: Create small blocks, bound by public right of way, that can be developed incrementally and responsively to market conditions.

F: Development Pattern: Create a concentration of taller buildings and activity and the intersection of Plato and Robert.

G: Built Form: Provide required *building edges* to define public streets and spaces as indicated on Built Structure Composite Map.

A. Natural Resources: Provide continuous public open space along river's edge.

B. Natural Resources: Extend landscaped *'Green Fingers'* into new development blocks connecting with public open space along the river.

C. Natural Resources: Encourage preservation of existing native landscapes; encourage plantings of native materials in naturalized massings to enhance or create natural habitats.

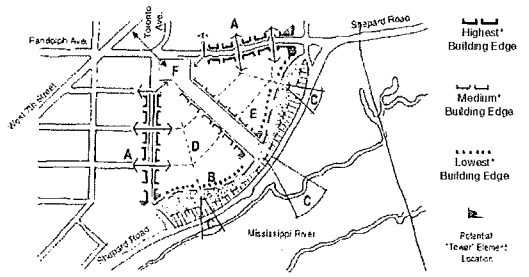
D. Stormwater: Integrate stormwater elements with natural habitats, public open space areas and park / recreation opportunities.

E. Stormwater: Reduce the rate and improve the quality of stormwater discharge.

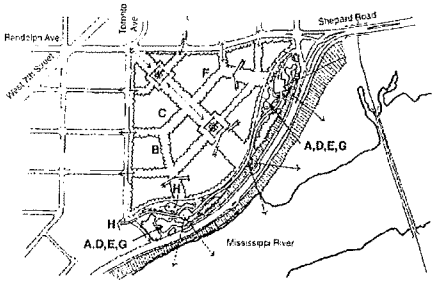
F. Urban Forest: Reintroduce the 'urban forest' within/around redevelopment areas.

G. Public Amenities: Support a mix of active / passive recreational use with paths, overlooks, seating areas, courts/fields.

H. Public Amenities: Provide visible/accessible connections to neighborhood and regional parks, trails and open space systems.



ADM: Built Structure Composite Map



ADM: Green Structure Composite Map

* The terms "Highest", "Medium", and "Lowest" correspond to this individual site, and should not be interpreted as a uniform standard.

Site: ADM
Land Classification: Terrace
Location: Between Randolph Ave., Toronto Ave. and Shepard Rd.
Guidelines:

A: Access and Connections: extend existing streets into and through the redevelopment site.

B: Access and Connections: Create a *"Bluff Drive"* as a local residential street atop the lower bluff

C: Views and Vistas: Create multiple views of the river valley where streets intersect the bluff drive.

D: Development Patterns: Organize street and block development around a wide street or linear park which connects West 7th to the River Valley.

E: Built Form: Provide required *building edges* to define public streets and spaces as indicated on Built Structure Composite Map.

A: Natural Resources: Provide continuous new public edge along blufftop with native landscapes, pedestrian pathways and developed overlooks.

B: Natural Resources: Extend landscaped *"green fingers"* into new development areas along new streets and public pathways.

C: Stormwater: Capture runoff on existing and newly developed sites and begin water treatment infiltration process (parking lots, rooftops, terraces).

D: Stormwater: Provide surface system of catchment areas, swales, infiltration and detention areas.

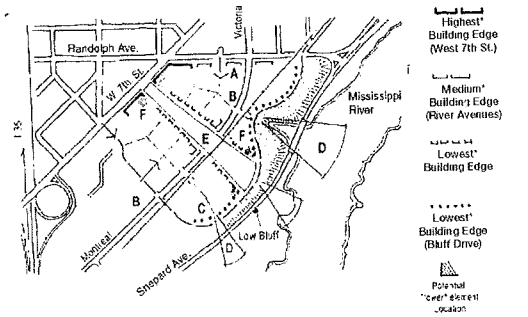
E: Stormwater: Integrate final treatment, infiltration and detention system into public edge behind blufftop and into the pattern of parks and squares, streets and public pathways.

F: Urban Forest: Install canopy trees on all new streets, infill canopy trees on existing streets.

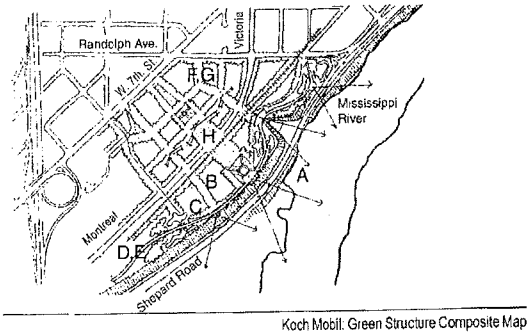
G: Urban Forest: Develop natural forest along bluff top and bluff face with groves of native trees, grasses and other plantings.

H: Public Amenities: Link public edge to new parks, squares and to existing neighborhoods and regional parks and trails with landscaped streets and public pathways.

note: it is possible the souther portion of the site will remain industrial for the foreseeable future. Future land uses will be directed by the Comprehensive Plan (per State law) and by property owner, not by this document



Koch Mobil: Built Structure Composite Map



Koch Mobil: Green Structure Composite Map

* The terms "Highest", "Medium", and "Lowest" correspond to this individual site, and should not be interpreted as a uniform standard.

Site: KOCH MOBIL
Land Classification: Terrace
Location: Between Randolph and West 7th;
West 7th and Mississippi River

Guidelines:

A: Access and Connections: extend existing streets into and through the redevelopment site.

B: Access and Connection. extend Victoria Avenue through the site to join Montreal Avenue

C: Access and Connections: Create a "*Bluff Drive*" as a local residential street atop the lower bluff

D: Views and Vistas: Create multiple views of the river valley where streets intersect the *bluff drive*.

E: Development Patterns: Organize street and block development around a wide street or linear park which connects West 7th to the River Valley.

F: Built Form: Provide required *building edges* to define public streets and spaces as indicated on Built Structure Composite Map.

A: Natural Resources: Provide continuous new public edge along blufftop with native landscapes, pedestrian pathways and developed overlooks.

B: Natural Resources: Extend landscaped "*green fingers*" into new development areas along new streets and public pathways.

C: Stormwater: Capture runoff on existing and newly developed sites and begin water treatment, infiltration process (parking lots, rooftops, terraces).

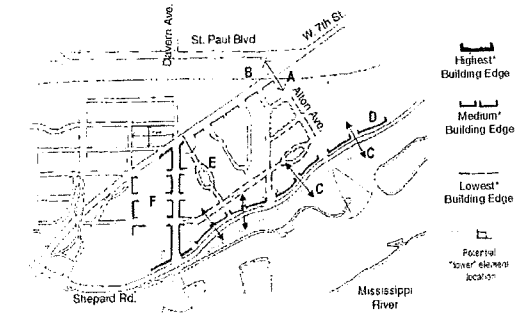
D: Stormwater: Provide surface system of catchment areas swales, infiltration and detention areas.

E: Stormwater: Integrate final treatment, infiltration and detention system into public edge behind blufftop and into the pattern of parks and squares, streets and public pathways.

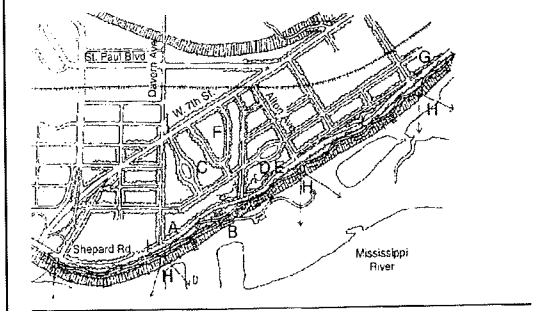
F: Urban Forest: Install canopy trees on all new streets; infill canopy trees on existing streets.

G: Urban Forest: Develop natural forest along bluff top and bluff face with groves of native trees, grasses and other plantings.

H: Public Amenities: Link public edge to new parks, squares and to existing neighborhoods and regional parks and trails with landscaped streets and public pathways.



Shepard Davern: Built Structure Composite Map



Shepard Davern: Green Structure Composite Map

* The terms "Highest", "Medium", and "Lowest" correspond to this individual site, and should not be interpreted as a uniform standard.

Site: SHEPARD DAVERN
Land Classification: Terrace
Location: Between West 7th and Shepard Rd.;
Between Davern Avenue and Alton Avenue

Guidelines:

A: Access and Connections extend existing streets into and through the redevelopment site.

B: Access and Connections : Consider creating a direct connection between St. Paul Pkwy. and Alton Ave.

C: Access and Connections: provide mid-block pedestrian connections between neighborhood and Shepard

D: Views and Vistas : preserve natural views from the River to the high bluff by setting buildings all buildings back from the low bluff and by providing generous tree planting on Shepard Road

E: Development Pattern: Provide neighborhood green public spaces on which new residential development can be focused.

F: Built Form: Provide required *building edges* to define public streets and open spaces as indicated on Built Structure Composite Map. Specific building heights in critical area should be analyzed by viewshed analysis.

A: Natural Resources: Enhance existing public edge with native landscapes (oak savanna and prairie), improved paths and developed overlooks.

B: Natural Resources: Naturalize Shepard Road landscape with prairie and informally arranged groves of trees.

C: Natural Resources: Extend landscaped "*Green Fingers*" into new development blocks connecting with public open space along the river.

D: Stormwater: Develop integrated, comprehensive surface stormwater 'treatment train' with swales, wetlands and ponds to address water quantity / quality issues.

E: Stormwater: Integrate stormwater elements with natural habitats, public open space areas and park / recreation opportunities.

F: Urban Forest: Infill canopy trees on existing and re-developed street grid.

G: Urban Forest: Provide natural groves of native understory and canopy trees along Shepard Road and the public edge along the blufftop.

H: Public Amenities: Enhance continuous public edge along bluff top with new access stairs to Crosby Park, new overlooks, sitting areas, information kiosks, bike racks and other amenities.

I: Public Amenities: Link public edge to neighborhood parks and squares and regional trail systems along landscaped streets and public pathways.

J: Public Amenities: Provide improved crossings of Shepard Road with enhanced crosswalks, signalized crossings, safe zones and other amenities.

Appendix B. Historical and Archeological Sites/Structures

National Register of Historic Places and Districts in the River Corridor

- Minnesota Boat Club Boathouse (on Navy/Raspberry Island)*
- Harriet Island Pavillion
- St. Paul Union Depot
- Holman Field Administration Building (St. Paul Downtown Airport)
- Robert Street Bridge (crossing the Mississippi between downtown and the West Side)
- Colorado Street Bridge (on the West Side, South Wabasha Street near Terrace Park)
- Intercity Bridge (Ford Parkway crossing over the Mississippi)
- Mendota Road Bridge (on West Side, Water Street crossing the Pickerel Lake Outlet in Lilydale Park)
- Irvine Park Historic District*
- Lowertown Historic District*
- Summit Avenue West Heritage Preservation District*
- Giesen-Hauser House (in Mounds Park, 827 Mound Street)
- Alexander Ramsey House (in Irvine Park, 265 South Exchange Street)*

*Site is also a Local Heritage Preservation Site.

Significant Archaeological Sites (identified by State Historic Preservation Office)

- Indian Mounds Park (determined eligible for National Register but not yet officially listed)
- Harriet Island
- Pike Island
- Pigs Eye Lake
- Fountain Cave
- Carver's Cave
- Rumtown
- Meeker Island Lock & Dam (determined eligible for National Register but not yet officially listed)

MINNESOTA HISTORICAL SOCIETY

February 14, 2001

Mr. Jack P. Maloney
580 Otis Avenue
St. Paul, MN 55014

Dear Mr. Maloney:

The Minnesota State Historic Preservation Office (SHPO) is in receipt of your letter dated 2/2/01 requesting an opinion from our office as to the National Register of Historic Places eligibility of the Meeker Island Lock in St. Paul. As you know, the Meeker Island Lock was part of an early 20th century attempt to bring regular water transportation to Minneapolis. The Corps of Engineers initial plan involved two locks and dams, one near Fort Snelling to be called Lock and Dam #1 and the other to be just above the Lake Street bridge (near Meeker Island) to be called Lock and Dam #2.

Work started on Lock and Dam #2 in 1899 and was completed in 1907. This was the first lock and dam on the Mississippi River. The steamboat *Itura* was the first vessel to pass through the lock on May 19, 1907. Work was started on Lock and Dam #1 in 1903, but in 1910 hydroelectricity advocates succeeded in convincing the Corps to build a high dam at Lock and Dam #1. This eliminated the need for the Meeker Island structure, so the top five feet of Dam #2 were demolished in 1912 and the lock chamber was abandoned. Lock and Dam #1 was completed in 1917. Lock #2 on the east side of the river is still visible from the Lake Street bridge.

The significance of Lock and Dam #2 is clear. Not only was it the first lock and dam on the Mississippi River, but it was an important part of the power struggle between the cities of Minneapolis and St. Paul regarding the development of hydroelectricity and which city would be the head of navigation. It is eligible under National Register Criterion A in the areas of Engineering and Transportation. The fact that the lock chamber survives virtually intact and the base of dam exists on the riverbed suggests that the site retains sufficient integrity to convey its significance. There is also the possibility that remnants of the access road and the dam construction camp exist as contributing elements.

Unfortunately, our office does not have the staffing resources to prepare the National Register nomination at this time. If you wish to immediately pursue nomination of the property, it will be necessary for you to supply us with a completed National Register form and any required supporting documentation. You may wish to retain the services of a consultant to complete the nomination. A list of consultants is attached. Please note that inclusion on this list does not imply endorsement.

345 KELLOGG BOULEVARD WEST / SAINT PAUL, MINNESOTA 55102-1906 / TELEPHONE: 651-296-6126

You may also ask to have this property added to a list of properties for which nominations will be prepared by this office when there are sufficient resources. I cannot give you an exact time when this might occur. It may take several years from being added to the list of possible nominations to the presentation of a completed nomination to the State Review Board.

For now, the Minnesota SHPO considers the Meeker Island Lock and Dam to be eligible to the National Register of Historic Places.

Sincerely,

Scott Anfinson
National Register Archaeologist, MnSHPO

Cc: Martha Faust, St. Paul PED

Minnesota Department of Natural Resources

Natural Heritage and Nongame Research Program, Box 25
500 Lafayette Road
St. Paul, Minnesota 55155-40

Phone: (651) 296-8279 Fax: (651) 296-1811 E-mail: jan.steier@dnr.state.mn.us

June 7, 1999

Virginia Burke
City of St. Paul
Department of Planning & Econ. Devel.
1300 City Hall Annex
25 West 4th Street
St. Paul, MN 55102

Re: Request for Natural Heritage information for vicinity of Mississippi River Corridor, Critical Area Plan; Hennepin, Ramsey, and Dakota Counties; T28N R23W S.5,8,17,20,21,22,23,14,12,11,1, T29N R23W S.32, T28N R22W S.3-7,9-11,14-16,22,23, T29N R22W S.32.
NHNRP Contact #: ES990749

Dear Ms. Burke,

The Minnesota Natural Heritage database has been reviewed to determine if any rare plant or animal species or other significant natural features are known to occur within an approximate one-mile radius of the area indicated on the map enclosed with your information request. Based on this review, there are 55 known occurrences of rare species or natural communities in the area searched (for details, see enclosed database printout and explanation of selected fields).

The Natural Heritage database is maintained by the Natural Heritage and Nongame Research Program, a unit within the Section of Ecological Services, Department of Natural Resources. It is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, natural communities, and other natural features. Its purpose is to foster better understanding and protection of these features.

Because our information is not based on a comprehensive inventory, there may be rare or otherwise significant natural features in the state that are not represented in the database. A county-by-county survey of rare natural features is now underway, and has been completed for Hennepin, Ramsey and Dakota Counties. Our information about natural communities is, therefore, quite thorough for those counties. However, because survey work for rare plants and animals is less exhaustive, and because there has not been an on-site survey of all areas of the counties, ecologically significant features for which we have no records may exist on the project area.

The enclosed results of the database search are provided in two formats: index and full record. To control the release of locational information which might result in the damage or destruction of a rare element, both printout formats are copyrighted.

The index provides rare feature locations only to the nearest section, and may be reprinted, unaltered, in an Environmental Assessment Worksheet, municipal natural resource plan, or internal report compiled by your company for the project listed above. If you wish to reproduce the index for any other purpose, please contact me to request written permission. Copyright notice for the index should include the following disclaimer:

"Copyright (year) State of Minnesota, Department of Natural Resources. This index may be

reprinted, unaltered, in Environmental Assessment Worksheets, municipal natural resource plans, and internal reports. For any other use, written permission is required."

The full-record printout includes more detailed locational information, and is for your personal use only. If you wish to reprint the full-record printouts for any purpose, please contact me to request written permission.

Please be aware that review by the Natural Heritage and Nongame Research Program focuses only on rare natural features. It does not constitute review or approval by the Department of Natural Resources as a whole. Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources.

Sincerely,

Jan Steier

Jan Steier
Environmental Review Assistant

encl: Database search results
Rare Feature Database Print-Outs: An Explanation of Fields

MISSISSIPPI RIVER CORRIDOR, CRITICAL AREA PLAN; HENNEPIN AND DAKOTA COUNTIES

Minnesota Natural Heritage Database — WITH IN:T28N R23W, T29N R23W, T28N R22W, T29N R22W. — 22:48 Thursday, MAY 27, 1999 — 1

Element Occurrence Records — MnDNR, Natural Heritage and Nongame Research Program — Copyright 1999 State of Minnesota DNR

TWP	RNG	PRIMARY SECTION	FED STATUS	MN STATUS	S RANK	ELEMENT and OCCURRENCE NUMBER	MANAGED AREA
T028N	R22W	02		THR		BESSEYA BULLII (KITTEN-TAILS) #9	BATTLE CREEK REGIONAL PARK
T028N	R22W	02			S2	OAK FOREST (CENTRAL) MESIC SUBTYPE #10	BATTLE CREEK REGIONAL PARK
T028N	R22W	03		THR		BESSEYA BULLII (KITTEN-TAILS) #10	BATTLE CREEK REGIONAL PARK
T028N	R22W	03		THR		BESSEYA BULLII (KITTEN-TAILS) #59	BATTLE CREEK REGIONAL PARK
T028N	R22W	03		THR		BESSEYA BULLII (KITTEN-TAILS) #65	BATTLE CREEK REGIONAL PARK
T028N	R22W	03			S2	DRY PRAIRIE (CENTRAL) SAND-GRAVEL SUBTYPE #9	BATTLE CREEK REGIONAL PARK
T028N	R22W	03			S2	OAK FOREST (CENTRAL) MESIC SUBTYPE #9	BATTLE CREEK REGIONAL PARK
T028N	R22W	11			S2	DRY PRAIRIE (CENTRAL) SAND-GRAVEL SUBTYPE #8	BATTLE CREEK REGIONAL PARK
T028N	R22W	13				COLONIAL WATERBIRD NESTING SITE #936	
T028N	R22W	15	LT	SPC		HALIAEETUS LEUCOCEPHALUS (BALD EAGLE) #573	BATTLE CREEK REGIONAL PARK
T028N	R22W	16			S2	OAK FOREST (SOUTHEAST) MESIC SUBTYPE #204	KAPOSIA PARK
T028N	R22W	20		THR		EMYDOIDEA BLANDINGII (BLANDING'S TURTLE) #621	
T028N	R22W	22				COLONIAL WATERBIRD NESTING SITE #90	PIGS EYE ISLAND HERON ROOKERY SNA
T028N	R22W	22			S2	FLOODPLAIN FOREST #25	PIGS EYE ISLAND HERON ROOKERY SNA
T028N	R22W	22	LT	SPC		HALIAEETUS LEUCOCEPHALUS (BALD EAGLE) #1291	PIGS EYE ISLAND HERON ROOKERY SNA
T028N	R22W	22	LT	SPC		HALIAEETUS LEUCOCEPHALUS (BALD EAGLE) #1529	PIGS EYE ISLAND HERON ROOKERY SNA
T028N	R22W	23		THR		HALIAEETUS LEUCOCEPHALUS WINTER ROOST SITE #6	PIGS EYE ISLAND HERON ROOKERY SNA
T028N	R22W	24		SPC		SCIRPUS CLINTONII (CLINTON'S BULRUSH) #6	
T028N	R22W	26		SPC		CYCLEPTUS ELONGATUS (BLUE SUCKER) #68	
T028N	R22W	26		THR		EMYDOIDEA BLANDINGII (BLANDING'S TURTLE) #664	
T028N	R23W	05		END		CAREX FORMOSA (HANDSOME SEDGE) #2	MISSISSIPPI NATL RIVER & RECREATION AREA
T028N	R23W	12				BAT CONCENTRATION #28	LILYDALE-HARRIET ISLAND REGIONAL PARK
T028N	R23W	12			S2	DRY PRAIRIE (CENTRAL) SAND-GRAVEL SUBTYPE #7	LILYDALE-HARRIET ISLAND REGIONAL PARK
T028N	R23W	12		SPC		MYOTIS SEPTENTRIONALIS (NORTHERN MYOTIS) #7	LILYDALE-HARRIET ISLAND REGIONAL PARK
T028N	R23W	14		THR		EMYDOIDEA BLANDINGII (BLANDING'S TURTLE) #509	LILYDALE-HARRIET ISLAND REGIONAL PARK
T028N	R23W	17			S3	BLACK ASH SWAMP SEEPAGE SUBTYPE #10	MINNEHAHA REGIONAL PARK
T028N	R23W	17		END		CAREX FORMOSA (HANDSOME SEDGE) #1	HIDDEN FALLS-CROSBY REGIONAL PARK
T028N	R23W	17		END		CAREX PLANTAGINEA (PLANTAIN-LEAVED SEDGE) #1	MINNEHAHA REGIONAL PARK
T028N	R23W	17		SPC		CYCLEPTUS ELONGATUS (BLUE SUCKER) #49	
T028N	R23W	17	LE	THR		FALCO PEREGRINUS (PEREGRINE FALCON) #63	
T028N	R23W	17		THR		HUPERZIA POROPHILA (ROCK CLUBMOSS) #3	MINNEHAHA REGIONAL PARK
T028N	R23W	17			S3	MOIST CLIFF (SOUTHEAST) #14	MINNEHAHA REGIONAL PARK
T028N	R23W	17		THR		POLYODON SPATHULA (PADDLEFISH) #7	MISSISSIPPI GORGE REGIONAL PARK
T028N	R23W	17		END		QUADRULA NODULATA (WARTYBACK MUSSEL) #16	FORT SNELLING STATE PARK
T028N	R23W	18		THR		EMYDOIDEA BLANDINGII (BLANDING'S TURTLE) #423	MINNEHAHA REGIONAL PARK
T028N	R23W	18		SPC		MICROTUS OCHROGASTER (PRAIRIE VOLE) #14	MINNEHAHA REGIONAL PARK
T028N	R23W	20		THR		ACTINONAIAS LIGAMENTINA (MUCKET MUSSEL) #6	MINNEHAHA REGIONAL PARK
T028N	R23W	20			S3	BLACK ASH SWAMP SEEPAGE SUBTYPE #9	FORT SNELLING STATE PARK
T028N	R23W	20		SPC		LIGUMIA RECTA (BLACK SANDSHELL MUSSEL) #19	MISSISSIPPI NATL RIVER & RECREATION AREA
T028N	R23W	20			S1	MESIC OAK SAVANNA (CENTRAL) #1	FORT SNELLING STATE PARK
T028N	R23W	20			S2	MESIC PRAIRIE (CENTRAL) #5	
T028N	R23W	22		THR		ACTINONAIAS LIGAMENTINA (MUCKET MUSSEL) #96	MISSISSIPPI NATL RIVER & RECREATION AREA
T028N	R23W	22		END		ARCIDENS CONFRAGOSUS (ROCK POCKETBOOK MUSSEL) #12	MISSISSIPPI NATL RIVER & RECREATION AREA
T028N	R23W	22		THR		EMYDOIDEA BLANDINGII (BLANDING'S TURTLE) #699	HIDDEN FALLS-CROSBY REGIONAL PARK
T028N	R23W	22			S3	FLOODPLAIN FORESST SILVER MAPLE SUBTYPE #8	FORT SNELLING STATE PARK
T028N	R23W	22		END		FUSCONAIA EBENA (EBONYSHELL MUSSEL) #9	MISSISSIPPI NATL RIVER & RECREATION AREA
T028N	R23W	22		END		LAMPSILIS TERES (YELLOW SANDSHELL MUSSEL) #13	MISSISSIPPI NATL RIVER & RECREATION AREA
T028N	R23W	22				MUSSEL SAMPLING SITE #143	MISSISSIPPI NATL RIVER & RECREATION AREA

Minnesota Natural Heritage Database
Element Occurrence Records

MISSISSIPPI RIVER CORRIDOR, CRITICAL AREA PLAN; HENNEPIN AND DAKOTA COUNTIES
WITH IN:T28N R23W, T29N R23W, T28N R22W, T29N R22W.
MnDNR, Natural Heritage and Nongame Research Program

22:48 Thursday, MAY 27, 1999 2

TWP	RNG	PRIMARY SECTION	FED STATUS	MN STATUS	S RANK	ELEMENT and OCCURRENCE NUMBER	MANAGED AREA
T028N	R23W	22		THR		QUADRULA METANEVRA (MONKEYFACE MUSSEL) #26	MISSISSIPPI NATL RIVER & RECREATION AREA
T028N	R23W	22		END		QUADRULA NODULATA (WARTYBACK MUSSEL) #13	MISSISSIPPI NATL RIVER & RECREATION AREA
T028N	R23W	23		THR		ELLIPSARIA LINEOLATA (BUTTERFLY MUSSEL) #26	MISSISSIPPI NATL RIVER & RECREATION AREA
T028N	R23W	23		THR		QUADRULA METANEVRA (MONKEYFACE MUSSEL) #33	MISSISSIPPI NATL RIVER & RECREATION AREA
T028N	R23W	28		THR		EMYDOIDEA BLANDINGII (BLANDING'S TURTLE) #7	FORT SNELLING STATE PARK
T028N	R23W	28	LE	THR		FALCO PEREGRINUS (PEREGRINE FALCON) #64	FORT SNELLING STATE PARK
T029N	R22W	31	LE	THR		FALCO PEREGRINUS (PEREGRINE FALCON) #44	

RECORDS PRINTED = 55

Rare Features Database Print-outs: An Explanation of Fields

The Rare Features database is part of the Natural Heritage Information System,
and is maintained by the Natural Heritage and Nongame Research Program,
a unit within the Section of Ecological Services,
Minnesota Department of Natural Resources (DNR).

Field Name: [Full (non-abreviated) field name, if different]. Further explanation of field.

-C-

CBS Site: [County Biological Survey site number]. In each county, the numbering system begins with 1.
CLASS: A code which classifies features by broad taxonomic group: NC = natural community; SA = special animal; SP = special plant; GP = geologic process; GT = geologic time; OT = other (e.g. colonial waterbird colonies, bat hibernacula).
Cty: [County]. Minnesota counties (ordered alphabetically) are numbered from 1 (Aitkin) to 87 (Yellow Medicine).
CURRENT STATUS: Present protection status, from 0 (owner is not aware of record) to 9 (dedicated as a Scientific and Natural Area).

-D-

DNR Region: 1=NW, 2=NE, 3=E Central, 4=SW, 5=SE, 6= Minneapolis/St. Paul Metro.
DNR Quad: [DNR Quadrangle code]. DNR-assigned code of the U.S. Geologic Survey topographic map on which the rare feature occurs.

-E-

ELEMENT or Element: See "Element Name (Common Name)"
Element Name (Common Name): The name of the rare feature. For plant and animal species records, this field holds the scientific name, followed by the common name in parentheses; for all other elements (such as plant communities, which have no scientific name) it is solely the element name.
EO RANK: [Element Occurrence Rank]. An evaluation of the quality and condition of natural communities from A (highest) to D (lowest).
EO Size: [Element Occurrence Size]. The size in acres (often estimated) of natural communities.

-F-

FED STATUS: [Federal Status]. Status of species under the Federal Endangered Species Law: LE=endangered, LT=threatened, C=species which have been proposed for federal listing.
Federal Status: See "FED STATUS"
Forestry District: The Minnesota DNR's Division of Forestry district number.

-G-

GLOBAL RANK: The abundance of an element globally, from G1 (critically imperiled due to extreme rarity on a world-wide basis) to G5 (demonstrably secure, though perhaps rare in parts of its range). Global ranks are determined by the Conservation Science Division of The Nature Conservancy.

-I-

INTENDED STATUS: Desired protection status. See also "CURRENT STATUS." If a complete list of protection status codes is needed, please contact the Natural Heritage Program.

-L-

LAST OBSERVED or Last Observed Date or Last Observation: Date of the most recent record of the element at the location.
Latitude: The location at which the occurrence is mapped on Natural Heritage Program maps. NOTE: There are various levels of precision in the original information, but this is not reflected in the latitude/longitude data. For some of the data, particularly historical records, it was not possible to determine exactly where the original observation was made (e.g. "Fort Snelling", or "the south shore of Lake Owasso"). Thus the latitude/longitude reflect the mapped location, and not necessarily the observation location.
Legal: Township, range and section numbers.
Long: [Longitude]. See NOTE under "Latitude"

-M-

MANAGED AREA or Managed Area(s): Name of the federally, state, locally, or privately managed park, forest, preserve, etc., containing the occurrence, if any. If this field is blank, the element probably occurs on private land. If "(STATUTORY BOUNDARY)" occurs after the name of a managed area, the location may be a private inholding within the statutory boundary of a state forest or park.
Map Sym: [Map Symbol].

MN STATUS: [Minnesota Status]. Legal status of plant and animal species under the Minnesota endangered species law: END=endangered, THR=threatened, SPC=special concern, NON= no legal status, but rare and may become listed if declines continue. This field is blank for natural communities and colonial waterbird nesting sites, which have no legal status in Minnesota, but are tracked by the database.

-N-

NC Rank: [Natural Community Rank].

-O-

Occ #: [Occurrence Number]. The occurrence number, in combination with the element name, uniquely identifies each record.

OCCURRENCE NUMBER: See "Occ #"

OF OCCURS: The number of records existent in the database for each element within the area searched.

Ownership: Indicates whether the site is publicly or privately owned; for publicly owned land, the agency with management responsibility is listed.

-P-

Precision: Precision of locational information of occurrence: C (confirmed) = known within 1/4 mile radius, U (unconfirmed) = known within 1/2 mile, N (non-specific) = known within 1 mile, G (general) = occurs within the general region, X (unmappable)=location is unmappable on USGS topographic quadrangles (often known only to the nearest county), O (obscure/gone)=element no longer exists at the location.

PS: [Primary Section]. The section containing all or the greatest part of the occurrence.

-Q-

Quad Map: See "DNR Quad"

-R-

Rec #: [Record number].

RNG or Rng: [Range number].

-S-

SECTION or Section: [Section number(s)]. Some records are given only to the nearest section (s), but most are given to the nearest quarter-section or quarter-quarter-section (e.g., SWNW32 denotes the SW1/4 of the NW1/4 of section 32). A "0" is used as a place holder when a half-section is specified (e.g., 0N03 refers to the north 1/2 of section 3). When a occurrence crosses section boundaries, both sections are listed, without punctuation (e.g., the NE1/4 of section 19 and NW1/4 of section 20 is displayed as "NE19NW20").

Site: A name which refers to the geographic area within which the occurrence lies. If no name for the area exists (a locally used name, for example), one is assigned by the County Biological Survey or the Natural Heritage Program.

Source: The collector or observer of the rare feature occurrence.

S RANK: [State Rank]. A rank assigned to the natural community type which reflects the known extent and condition of that community in Minnesota. Ranks range from 1 (in greatest need of conservation action in the state) to 5 (secure under present conditions). A "?" following a rank indicates little information is available to rank the community. Communities for which information is especially scarce are given a "U", for "rank undetermined". The ranks do not represent a legal status. They are used by the Minnesota Department of Natural Resources to set priorities for research, inventory and conservation planning. The state ranks are updated as inventory information becomes available.

State Status: See "MN STATUS"

-T-

TWP or Twp: [Township number].

-V-

Verification: A reflection of the reliability of the information on which the record is based. The highest level of reliability is "verified," which usually indicates a collection was made or, in the case of bird records, nesting was observed. Plant records based on collections made before 1970 are unverified.

Voucher: The museum or herbarium where specimens are maintained, and the accession number assigned by the repository. In the case of bald eagles, this is the breeding area number.

-W-

Wildlife Area: The Minnesota DNR's Section of Wildlife administrative number.

Data Security

Locations of some rare features must be treated as sensitive information because widespread knowledge of these locations could result in harm to the rare features. For example, wildflowers such as orchids and economically valuable plants such as ginseng are vulnerable to exploitation by collectors; other species, such as bald eagles, are sensitive to disturbance by observers. For this reason, we prefer that publications not identify the precise locations of vulnerable species. We suggest describing the location only to the nearest section. If this is not acceptable for your purposes, please call and discuss this issue with the Environmental Review Specialist for the Heritage and Nongame Research Program at 651/296-8319.

Revised 02/99

Minnesota Land Cover Classification System

fact sheet

The Minnesota Land Cover Classification System (MLCCS) has been designed for use in the metropolitan area by a collaborative effort of federal, state, and local units of government as well as non-profit organizations. The MLCCS integrates a new classification system of cultural features with a combination of existing land cover classification systems for natural and semi-natural areas. The system is unique in that it categorizes cultural, urban and built-up areas strictly in land cover terms, identifying these areas in terms of imperviousness and vegetative cover. For natural areas the system fully incorporates the Minnesota Natural Heritage native plant community types (Minnesota's Native Vegetation: A Key to Natural Communities, version 1.5) and the recently developed National Vegetation Classification Standard (NVCS). The NVCS was developed in partnership with The Nature Conservancy and the nationwide state Natural Heritage programs, and has been adopted as the standard for federally funded projects. The MLCCS is a five level hierarchical design, permitting a gradient degree of refinement relevant to any land cover mapping project. It is comprehensive and systematic, is applicable at any scale, and is suitable for monitoring and mapping purposes of any identified land cover found in the metro area.

By the summer of 2000, the MLCCS will have been applied to: The Critical Area /Mississippi National River and Recreation Area (MNRRA) corridor, the Minnesota River Corridor in the Twin Cities, several trout stream watersheds, and large portions of Dakota County. Additionally, the Metro Greenways program has begun encouraging its use by local units of government for developing Greenway plans, and MetroGIS has endorsed the MLCCS as a 'best practice' land cover classification system for use in the Metro area. The MLCCS data collected for the current pilot projects is being used for identifying sites for ecological restoration, municipal growth planning, habitat protection, and Metro Greenways planning.

The MLCCS can be used for creating a GIS-based land cover inventory. Polygons of various sizes (down to one acre) are identified by their predominant cover. For each polygon, modifiers may be added to further define the characteristics of the site. Possible modifier codes include imperviousness, land use, vegetation disturbances or management, natural quality, tree species, forestry (e.g., percent canopy and DBH), and water regimes.

Typical data needed to interpret land cover using the MLCCS includes County Biological Surveys, County Soil Surveys, National Wetland Inventory, Color Infrared photos and Digital Orthophoto Quadrangles. This base information is usually sufficient to identify polygons to the third level of the MLCCS codes. Field inspection by ecologists is usually required for modifier attributes and to identify natural community types in the forth and fifth levels of the MLCCS. Field inspection is also used to confirm and refine polygon delineation.

Metro standards being used in the MLCCS are:

* Identification to the forth level
* Minimum mapping unit: two acres (one acre for native species dominated communities)
* Minimum mapping width: 50 feet
* Modifier codes for: Basic land use, natural community vegetation disturbances and identification of invasive species

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3/24/2000

Appendix D. Water Management and Regulation

Water Management and Regulation is complex, multi-leveled and overlapping. This is a brief overview of the entities that are responsible for water management in Saint Paul:

The **United States Environmental Protection Agency (EPA)** establishes standards for water quality management, drinking water safety, solid and hazardous waste disposal, toxic substance management, air quality control, and general environmental quality review. Enforcement is delegated to the Minnesota Pollution Control Agency.

Saint Paul is working with the **Minnesota Pollution Control Agency (MPCA)** on a stormwater discharge permit under the Federal Clean Water Act. The City currently has a draft permit which involves development of a stormwater management and monitoring program. The MPCA also administers the construction site sediment and erosion control permit. Permit coverage is required for any project which disturbs five or more acres. This permit has permanent water quality ponding requirements for a project which creates one acre or more of impervious surface.

The **Minnesota Department of Agriculture** implements state laws that prevent surface and groundwater pollution from pesticide and fertilizer application.

The **Minnesota Department of Natural Resources (DNR)** requires a permit for any project constructed below the ordinary high water mark, which alters the course, current, or cross-section of protected waters or wetlands.

The **Minnesota Board of Water and Soil Resources (BWSR)** is a state agency dedicated to helping local governments (counties, soil and water conservation districts, watershed management organizations and watershed districts) manage natural resources.

The **Ramsey County Soil and Water Conservation District (RSWCD)** is a local unit of government that helps direct and manage natural resource programs. The RSWCD is working closely with Ramsey County and the BWSR on the development of the newly formed Capitol Region Watershed District's watershed management plan.

Saint Paul is within the jurisdictions of the following watershed management organizations, which develop and implement comprehensive watershed plans:

- Capitol Region Watershed District
- Ramsey-Washington Metro Watershed District
- Lower Mississippi River Watershed Management Organization
- Middle Mississippi River Watershed Management Organization

Saint Paul's local water management plan will be completed two years after the completion of the last watershed management plan. The Middle Mississippi River WMO completed its plan in April, 2000, so Saint Paul will complete the local water management plan by April 2003. The City's local water management plan will address the individual plans of each watershed management organization as well as the stormwater discharge permit. The City water management plan will also focus on improving the quality of stormwater runoff into the Mississippi River.

The City of Saint Paul site plan review process includes stormwater management requirements that limit the rate of runoff from new development to the equivalent from a residential area and requires storage for the 100-year rainfall. All projects that go through site plan review are required to provide for erosion and sediment control as specified in the Ramsey County Sediment and Erosion Control Handbook. Saint Paul also is responsible for administering Minnesota's Wetland Conservation Act.

Appendix E. Public Participation

February - April, 1999

Release Issue Paper "Framing the Discussion", convene two Stakeholder Focus Groups.

February, 1999 - December, 1999

Comprehensive Planning Committee* meetings

January - April, 2000

Design Study, convene Intergovernmental Working Group to assist.

June - July, 2000

Comprehensive Planning Committee* meetings

August 25, 2000

Planning Commission releases Draft River Corridor Plan for public review and comment.

August 25, 2000 - October 24, 2000

Public Review Period

October 20, 2000

Public Hearing at Planning Commission

November - December, 2000

Comprehensive Planning Committee* meetings

December 15, 2000

Planning Commission adopts Mississippi River Corridor Plan.

* Comprehensive Planning Committee of the Saint Paul Planning Commission

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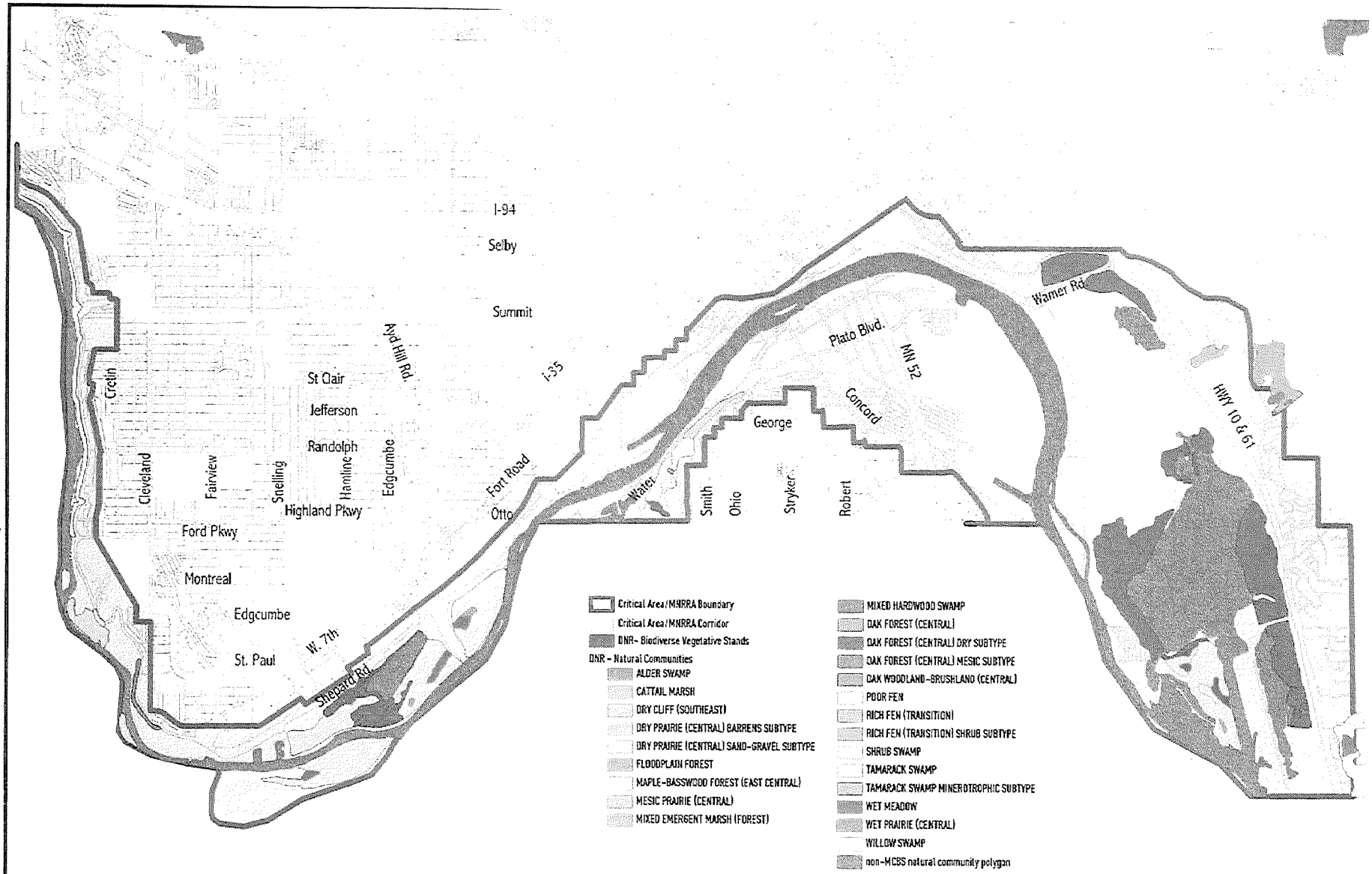

CITY OF SAINT PAUL

Department of Planning and Economic Development

MFRA McCombs Frank Roos Associates, Inc.

Sources: City of Saint Paul, FEMA, NWI, McCombs Frank Roos Associates

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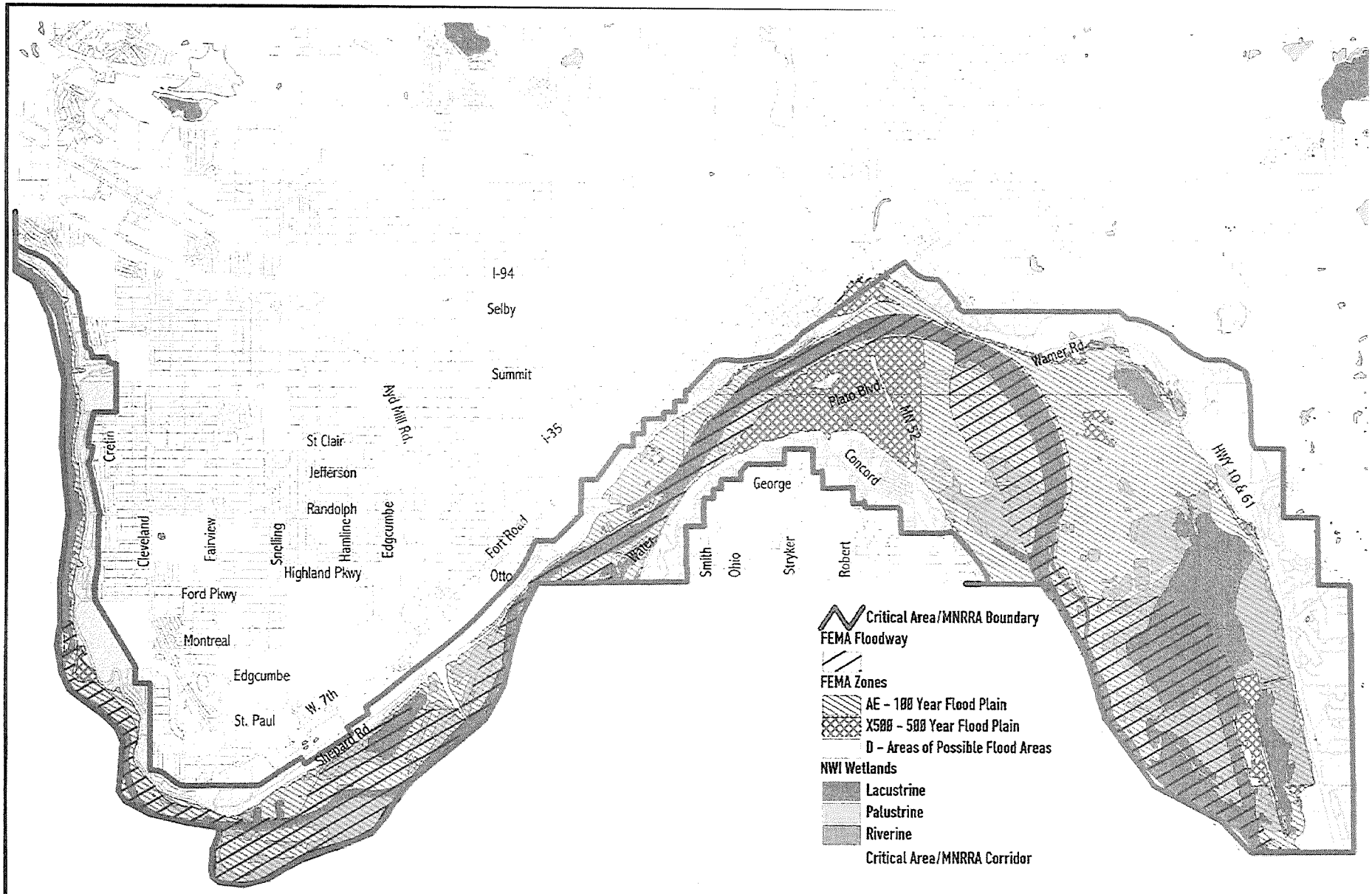
Significant Vegetative Stands



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Sources: City of Saint Paul, FEMA, NWI, McCombs Frank Roos Associates

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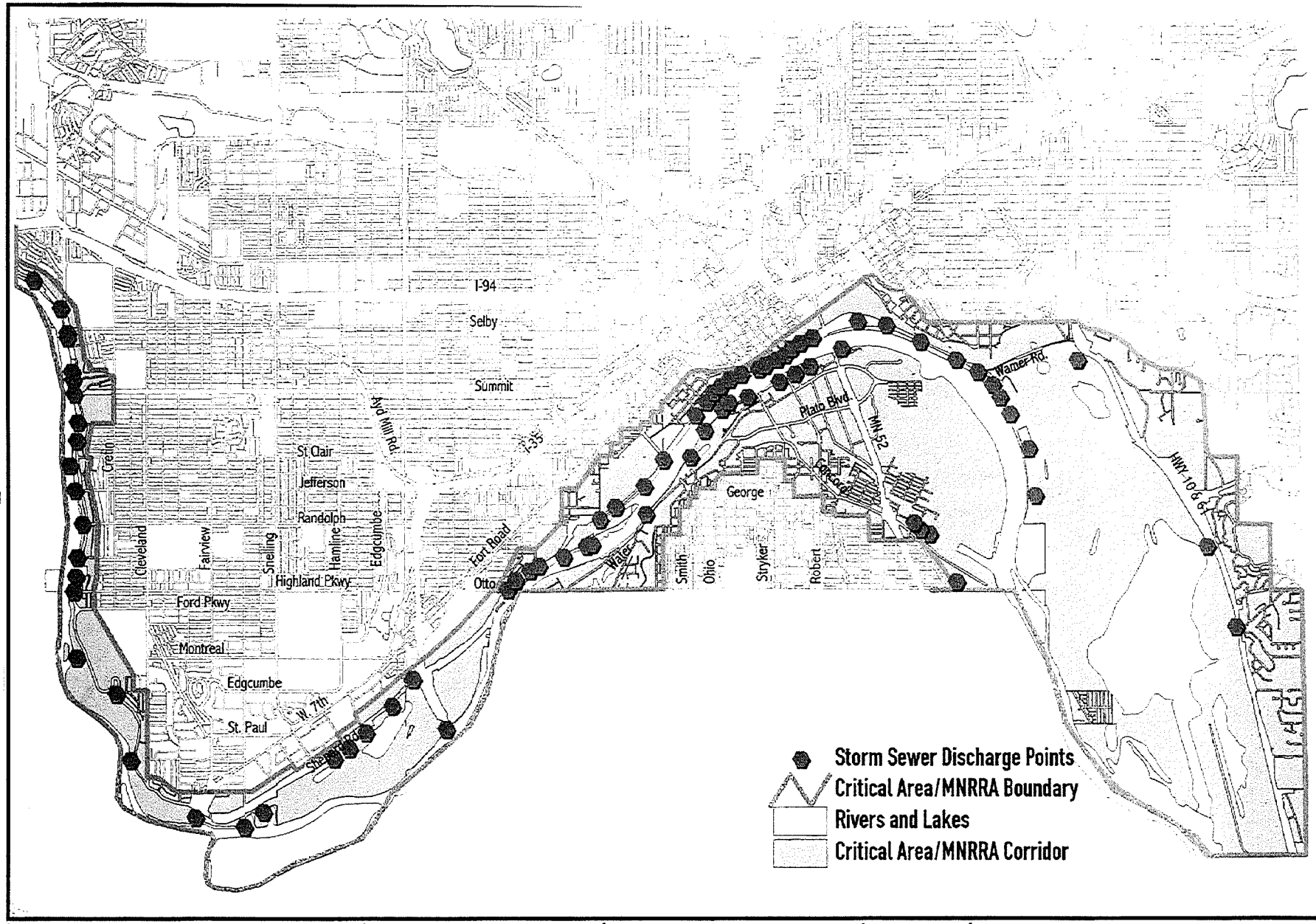
Wetlands and Floodplain



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MFRA McCombs Frank Roos Associates, Inc.

Sources: City of Saint Paul Public Works, McCombs Frank Roos Associates

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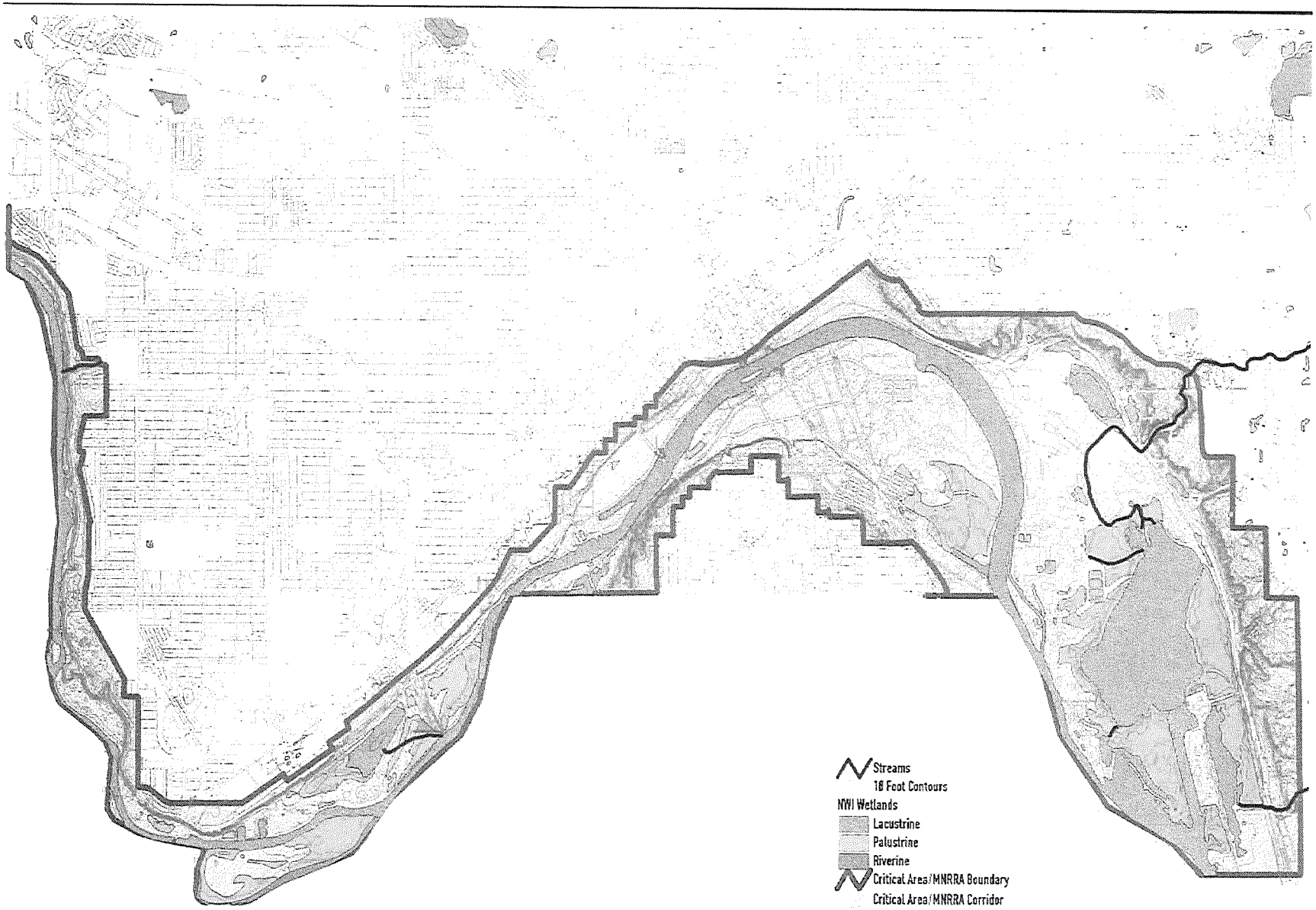
Existing Storm Sewer Discharge Points



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Sources: City of Saint Paul, FEMA, NWI, McCombs Frank Roos Associates

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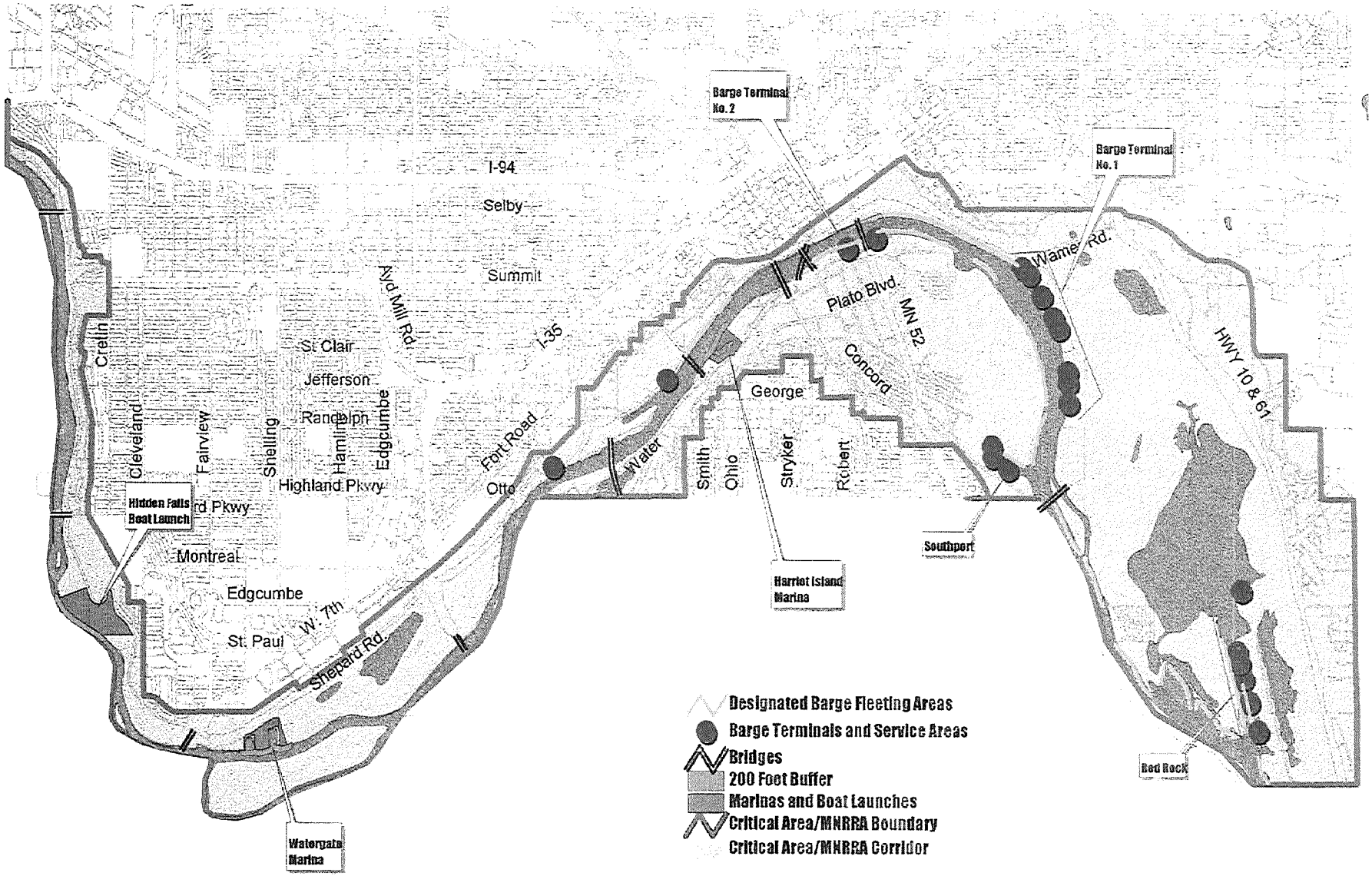
Natural Drainage Routes



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DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT

MFRA McCombs Frank Roos Associates, Inc.

Sources: City of Saint Paul, National Park Service, McCombs Frank Roos Associates

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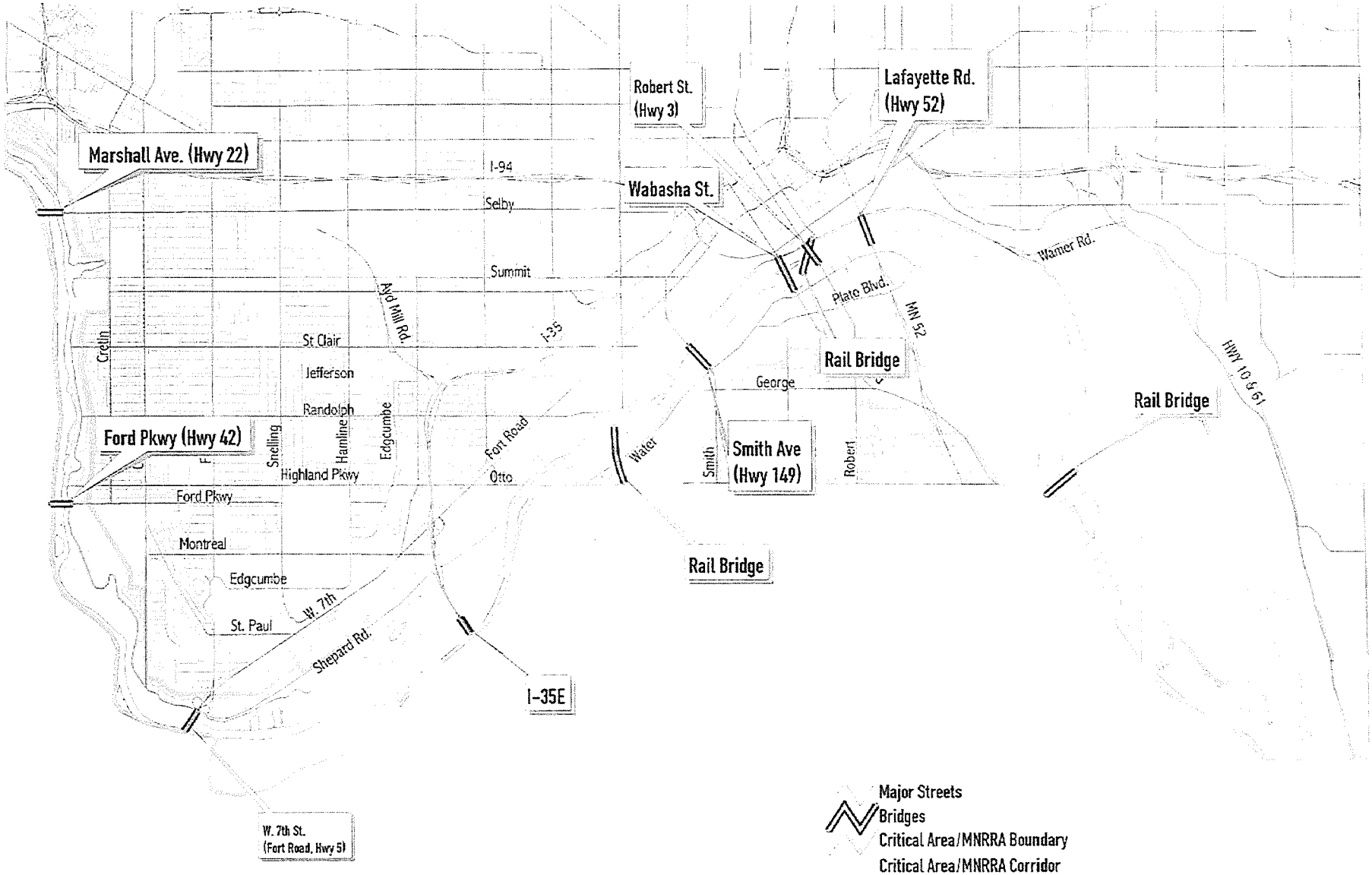
Barge Facilities and Fleeting



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MFRA
McCombs Frank Roos Associates, Inc.

Sources: City of Saint Paul, NWI, McCombs Frank Roos Associates

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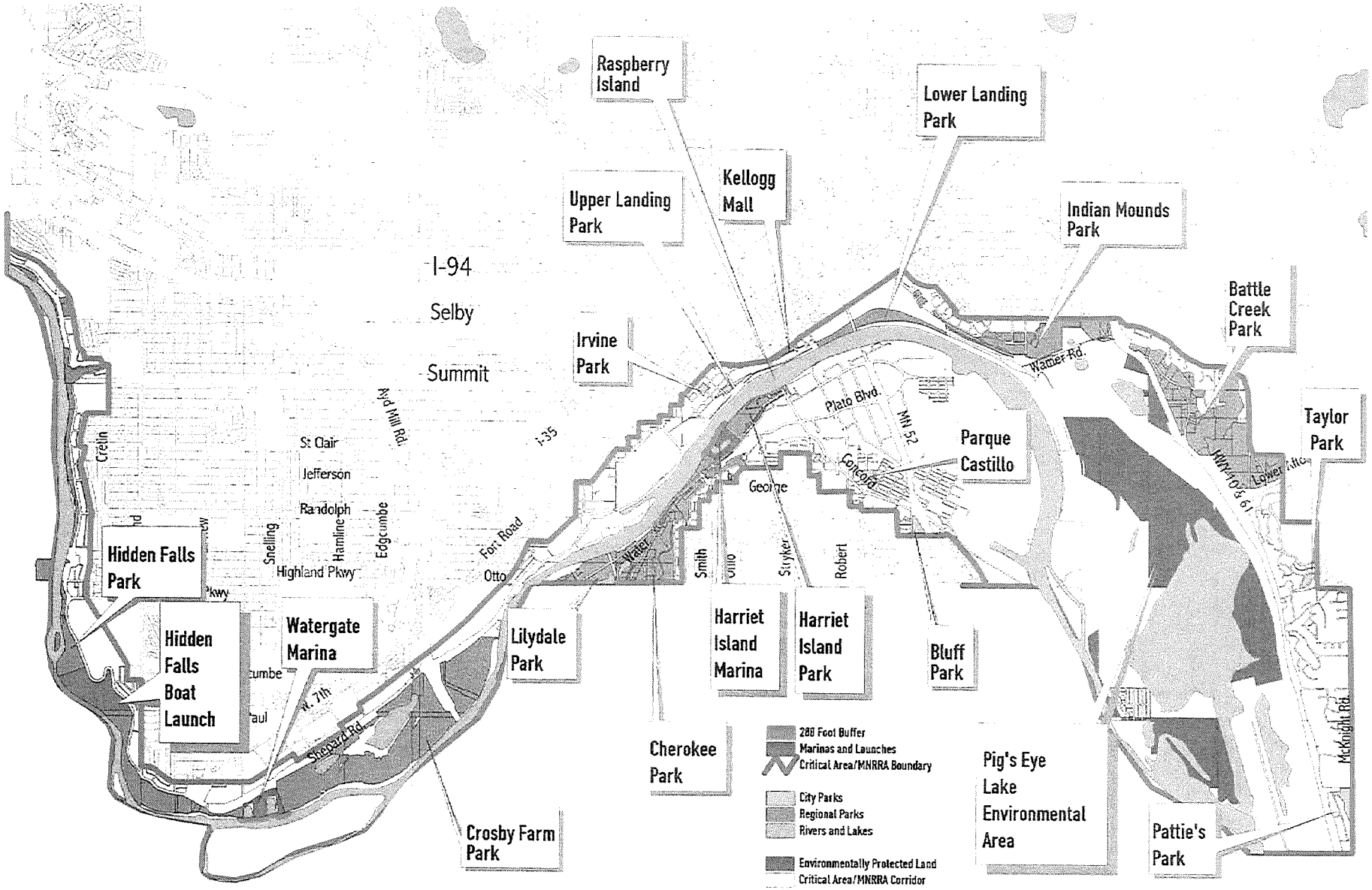
Transportation Facility Crossings



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McCombs Frank Roos Associates, Inc.

Sources: City of Saint Paul, McCombs Frank Roos Associates

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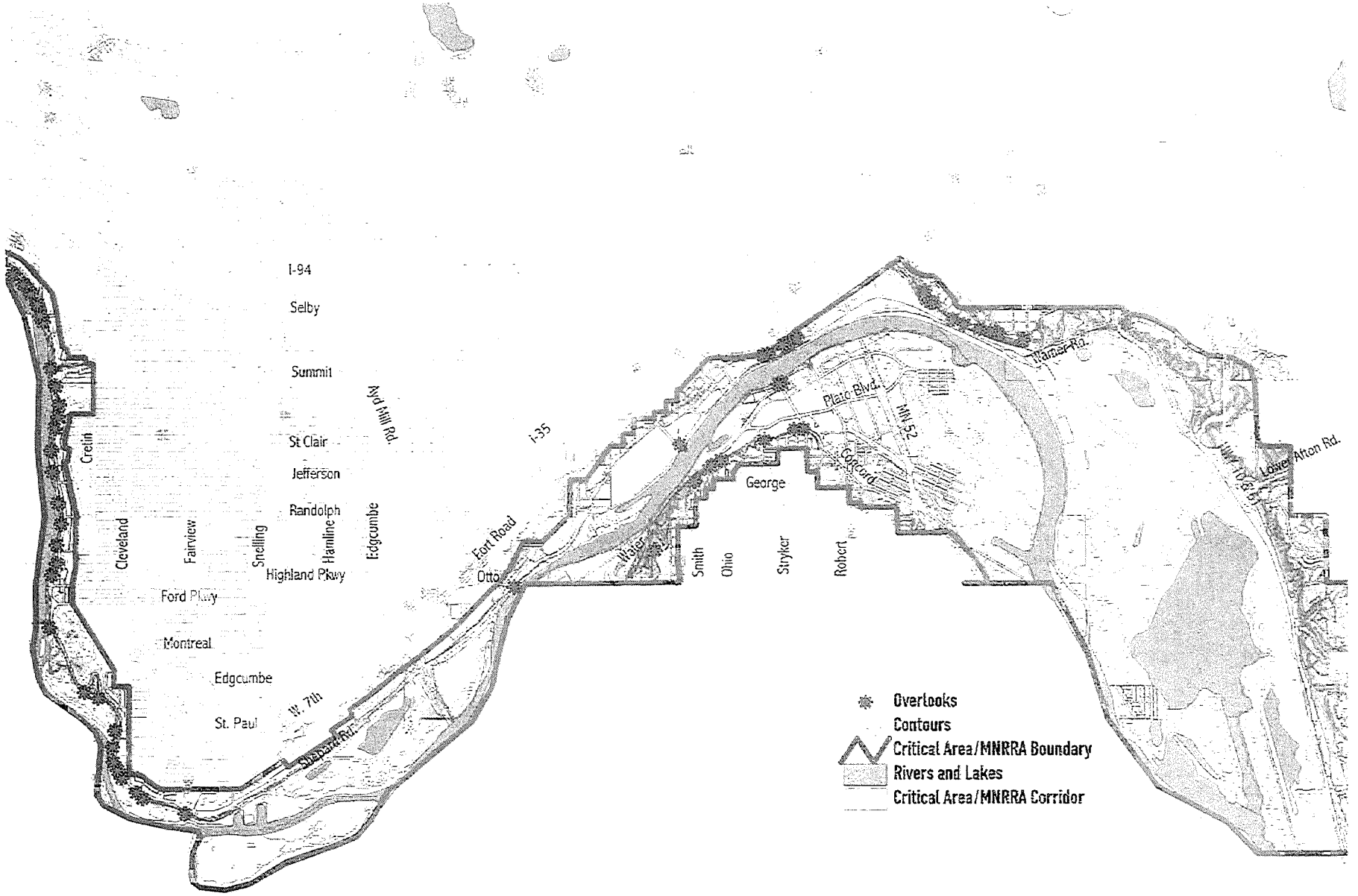
Parks, Open Space and Boat Access



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McCombs Frank Roos Associates, Inc.

Sources: City of Saint Paul, McCombs Frank Roos Associates

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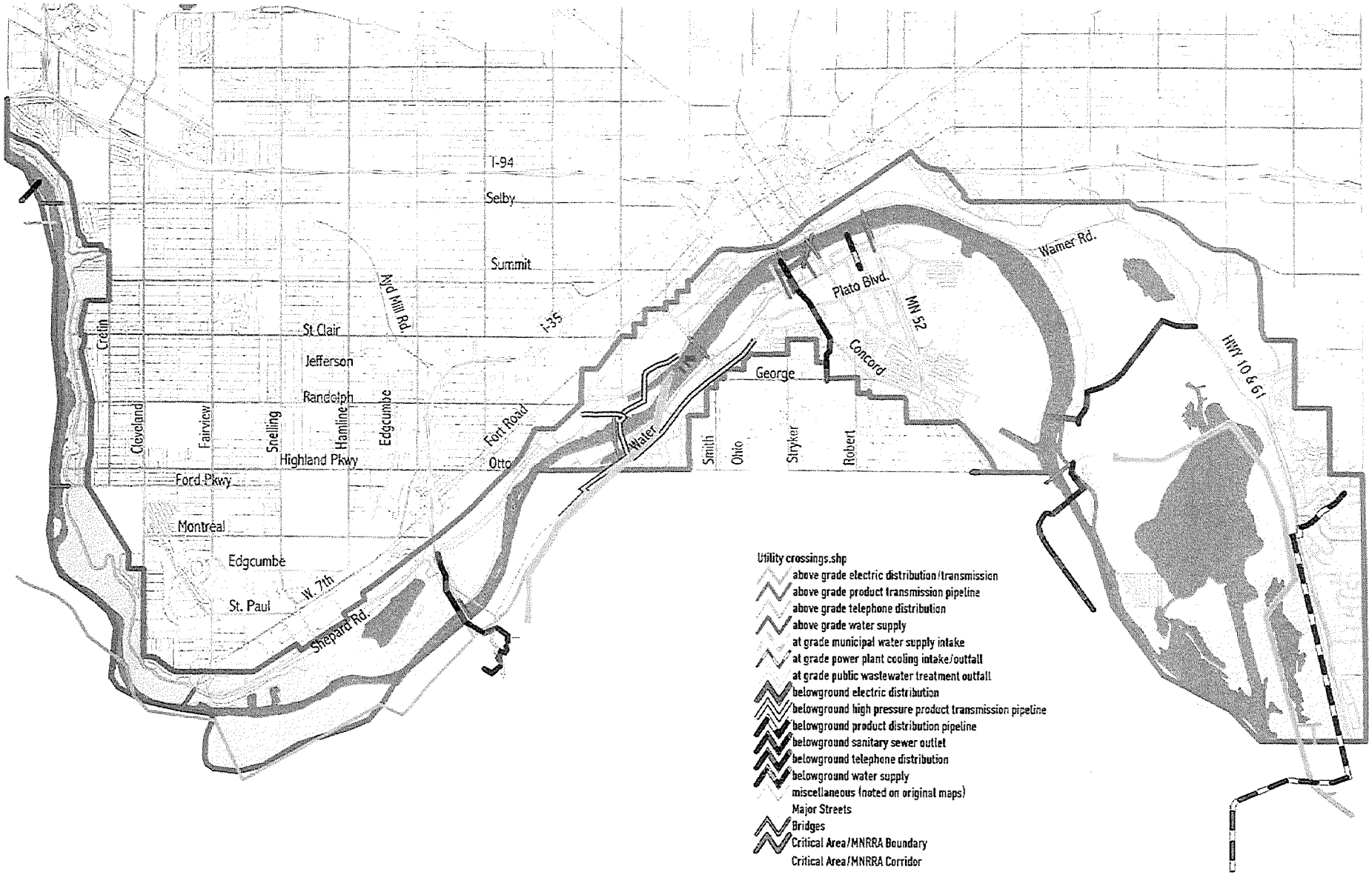
Existing Views and Overlooks



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MFRA McCombs Frank Roos Associates, Inc.

Sources: City of Saint Paul, National Park Service, McCombs Frank Roos Associates

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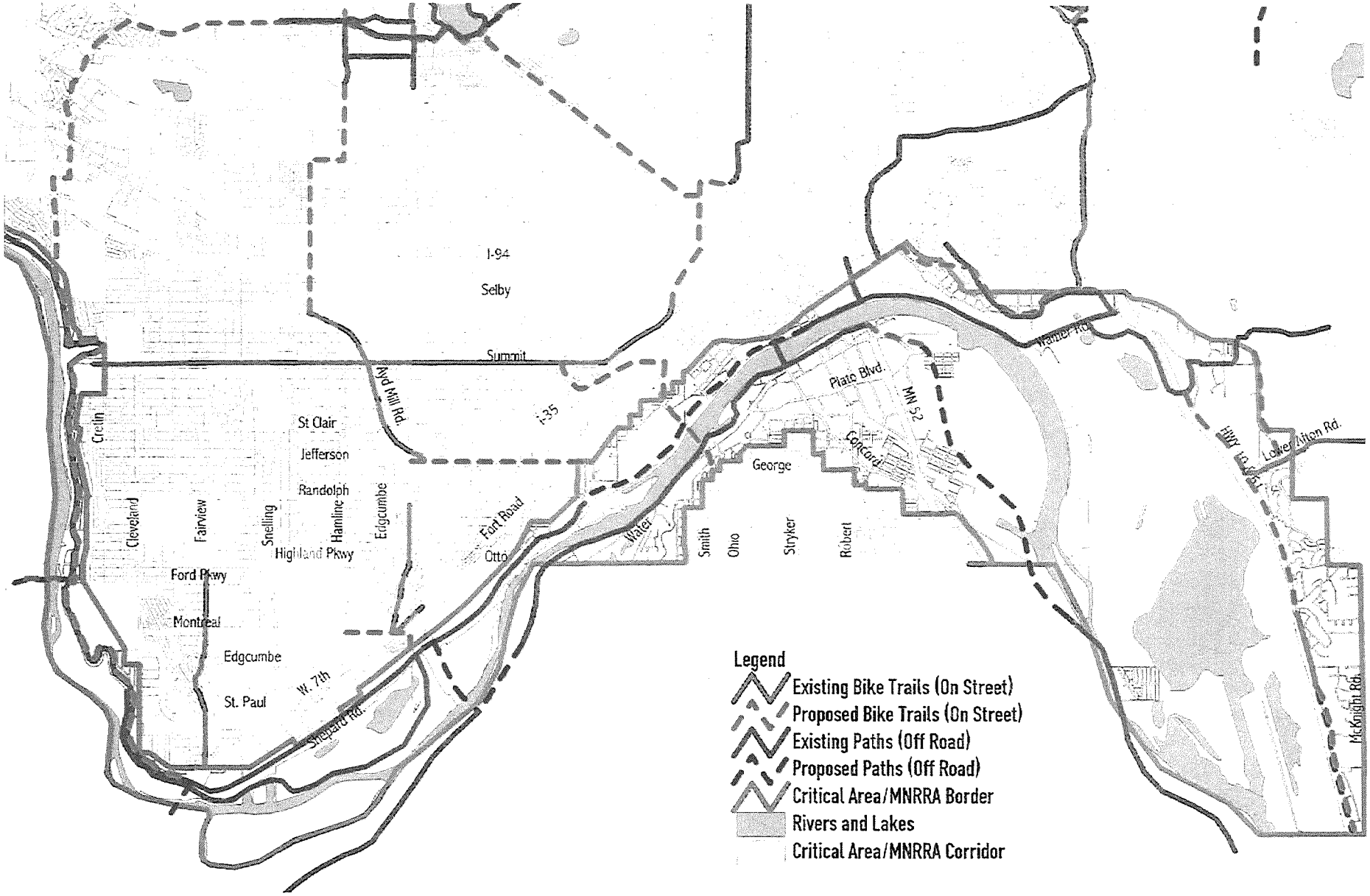
Utility Crossings



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McCombs Frank Roos Associates, Inc.

Sources: City of Saint Paul, McCombs Frank Roos Associates

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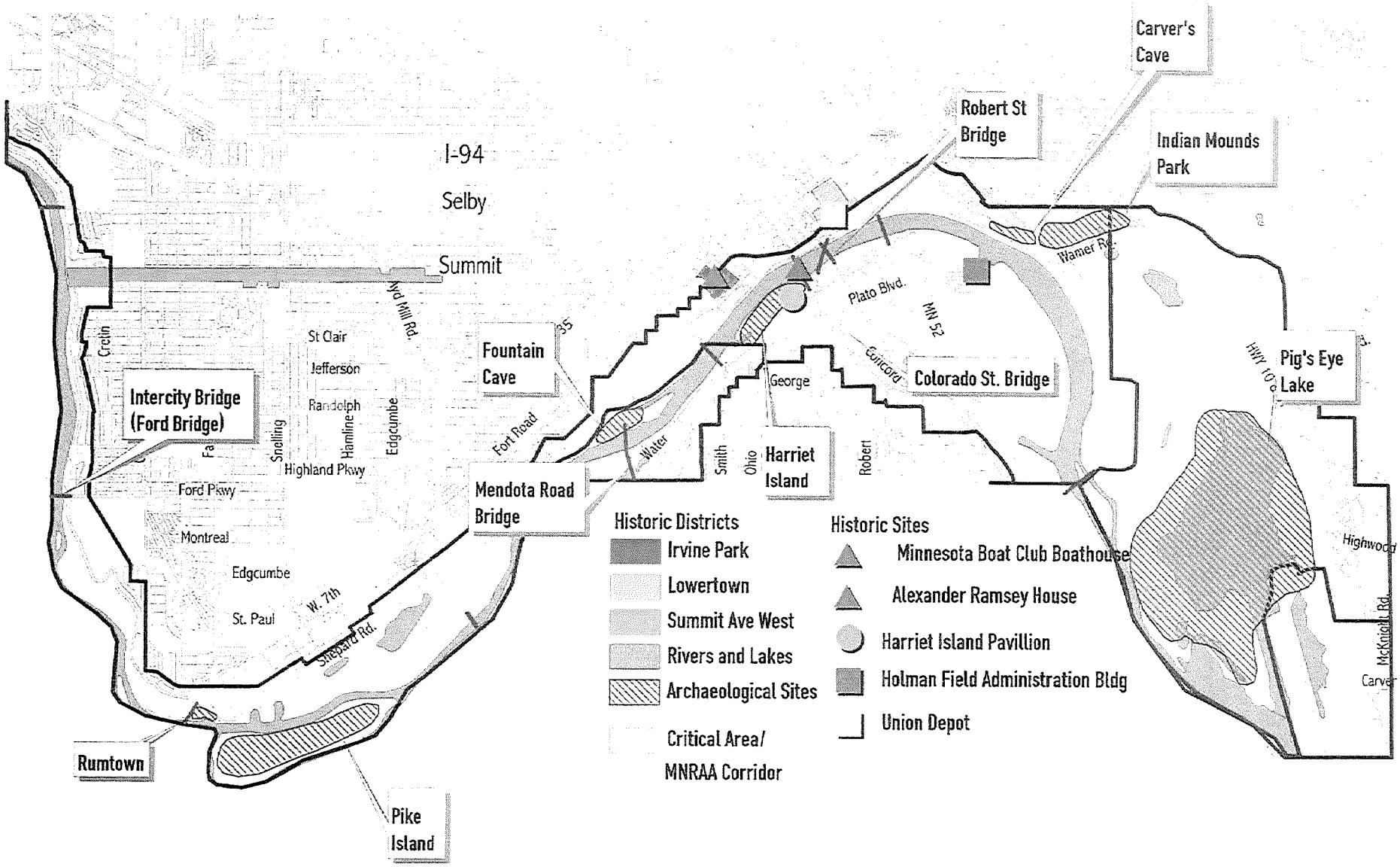
Existing and Proposed Trails



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McCombs Frank Roos Associates, Inc.

Sources: City of Saint Paul, Minnesota Historical Society State Preservation Office, National Register of Historic Places, McCombs Frank Roos Associates

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River Corridor Historic Sites and Districts

Credits

The Saint Paul Planning Commission

Gladys Morton, Chair*
Brian Alton*
Matt Anfang*
Gene Corbey*
Larry Dandrea*
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Timothy Mardell
Michael Margulies*
Susan McCall
Shem Shakir
Anne Geisser, Chair, Comprehensive Planning Committee (to 12/99)

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The City Council

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