



The Greenway Guidebook

The Dakota County Greenway Collaborative
Adopted September 28, 2010



Search greenway collaborative at dakotacounty.us

Prepared for:

A collaboration between Dakota County and the cities within Dakota County of Apple Valley, Burnsville, Eagan, Farmington, Hastings, Inver Grove Heights, Lakeville, Mendota Heights, Rosemount, South St. Paul and West St. Paul.

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www.co.dakota.mn.us/Departments/OPA/Reports/GreenwayCollaborative.htm

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Dakota County Greenway Collaborative



Table of Contents

I. Introduction	5
2. Governance and Funding	15
3. Land Protection and Stewardship	29
4. Greenway Design	37
5. Operations and Maintenance	49

Dakota County
Greenway Collaborative

Chapter I:
Introduction

Introduction



Why Greenways?

Residents want trails, clean water and open space. A survey of residents conducted for the County's comprehensive plan early in 2008 revealed strong support for greenway elements and the greenway concept (see figures below and the County's [comprehensive plan](#)).

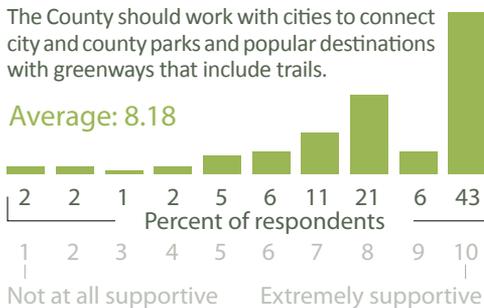
Cities in Dakota County have recognized demand for trails and have built impressive systems anchored on their parks. The city and regional parks system has provided residents with an array of recreation opportunities. Dakota County recognized demand for open space protection and land stewardship and has oriented its Park and Open Space department toward these ends. Dakota County Water Resources has repeatedly heard residents call for water quality improvement and has made great strides. The DNR, watershed districts, private nonprofits and others also have tackled water quality, open space, habitat and other objectives.

In short, all these agencies are working independently toward the shared goals, but they aren't always coordinated or systematic. The greenway collaborative will help to coordinate these activities and allow us to do more together than we could separately.

Each partner brings its own strengths, expertise, experiences and tools to create a whole greater than the sum of its parts.

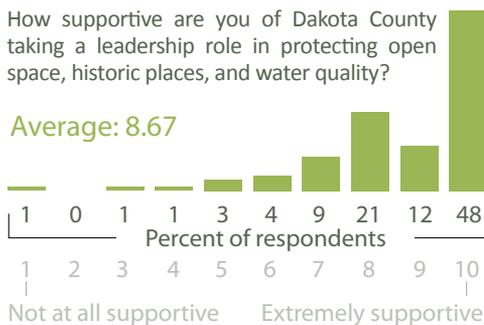
The County should work with cities to connect city and county parks and popular destinations with greenways that include trails.

Average: 8.18



How supportive are you of Dakota County taking a leadership role in protecting open space, historic places, and water quality?

Average: 8.67



Source: Decision Resources phone survey of 400 Dakota County residents January — February 2008. Margin of error +/- 5 percentage points at 95 percent confidence.

Dakota County Greenway Collaborative

What do we mean by collaborative?

Cities, Dakota County and other partners can collaborate to more efficiently and effectively deliver better greenways. But what does this collaboration look like in practice? These guidelines envision two layers of a greenway collaborative. The larger group will meet less frequently — maybe once a year — to guide the effort generally and share experiences in creating the greenway system. This group is envisioned as something similar to the CONDAC transportation group. The collaborative also puts the weight of the region behind funding applications and greenway delivery, giving local projects legitimacy and demonstrated need. The greenway-specific collaboratives are segments of the larger group and contain only the germane parties. This smaller group focuses on master planning, alignment, natural resource priorities, sharing of responsibilities and operating each greenway.

Greenway Collaborative (larger group)

Activities:

- Identifies collaboration opportunities
- Guides efforts
- Advises on guideline improvements
- Communicates values
- Reinforces regional importance
- Stands behind funding applications

Participants:

Cities, Townships, Dakota County,
DNR and other partners

Greenway-specific collaboratives

Activities:

- Master-plan individual greenways
- Assemble land
- Tailor greenway to each context
- Define responsibilities
- Deliver individual greenways
- Operate greenways
- Maintain greenways

Participants:

Cities along a particular greenway
corridor, Dakota County, schools,
landowners, local partners



Lakes, Trails 2030

Introduction



Dakota County Greenways 2030 Vision

The 2008 Dakota County Park System Plan solidifies a vision of an interconnected system of regional greenways through developed areas of the County. The greenway vision suggests 200 miles of regional greenway, 2/3 of which are on land currently in public or semipublic ownership.

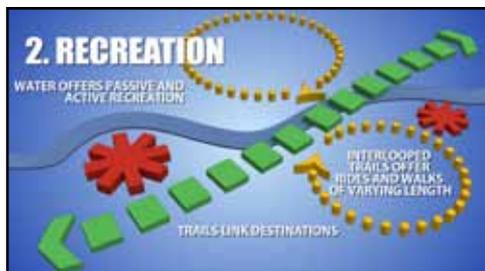
The vision proposes more than a trail system — it suggests enhanced open space corridors that perform multiple functions and provide multiple community benefits in areas of **water quality, habitat, recreation and nonmotorized transportation**. Accommodating all four will be the goal for each greenway segment and is a focus of this document.



Corridors link larger hubs allowing plants and animals to thrive in a functioning ecosystem.



Destination trails with a natural signature tie together a seamless system of local parks, regional parks, local trails, greenways and schools.



Buffer strips, native vegetation and land management practices improve water quality and ecosystem health.



Trails with grade separation and four-season maintenance link activity centers across the county and link a feeder system of local trails.



Guidebook Purpose

With this document, the Dakota County Greenway Collaborative takes the approach used in roadbuilding and applies it to creating a countywide network of greenways. Most of us take for granted the roadway system we use every day. It interconnects, gets us where we want to go, has a hierarchy and is maintained. The roadway system has coordinated and cross-agency structures of funding, operations and maintenance. There is no reason to believe a greenway system will require anything less.

This guidebook outlines a framework to establish regional greenways. The guidebook is organized around key activities in developing successful greenways — funding and governance, land protection and stewardship, design and operations and maintenance. Cross-jurisdictional advisory groups were organized around these topics to develop this guidebook.

Measuring Success

Success of a mature regional greenway system will be measured around factors like recreational usage, habitat creation, reduction in vehicle miles traveled, nonlocal funding secured, miles of trail completed and others. This foundational document is focused on these success factors:

- Positioning greenway segments to be ready for implementation
- Positioning greenway segments to successfully compete for regional, state and federal funding
- Formulating projects that are infused with the core values of water quality, habitat, recreation and nonmotorized transportation

To do this in a simple way, two checklists have been created against which each greenway segment or project should be evaluated. The checklists will no doubt be refined as the Greenway Collaborative gains experience in developing greenway projects but this will provide a good start.

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The first tier of evaluation is a project readiness checklist. This will help determine whether and when a greenway segment or project is ready for funding requests and planning/design resources as a regional greenway.

✓ Project Readiness Checklist

- Does the local community have a park/trail dedication ordinance that recognizes greenways as dedication opportunities?
- Does the local community have PUD and subdivision ordinances that identify greenways as desirable features of new development?
- Does the local community's comprehensive plan identify a greenway for this general corridor?
- Have property ownership, natural resources, topography and other landscape features been generally evaluated to gain a preliminary sense of greenway feasibility and location?
- Have Dakota County and the local community identified this greenway segment as a priority?
- Does the greenway have a Metropolitan Council-approved master plan? Has it undergone feasibility study or design and engineering?
- Have additional funding sources been secured or identified?
- Have residents been engaged and do they support it?

The iterative framework will be used by all parties in formulating, delivering and operating greenways.



Borrowed views on the Minnesota River Greenway

✓ Land Protection and Stewardship

What land protection tools can be used to secure the corridor?

Are there opportunities to restore natural areas, increase biologic diversity and improve ecological function?

Through what means can long-term stewardship of natural areas in the corridor be assured?

✓ Greenway Design

Does the proposed greenway meet the minimum guideline widths?

Is as much of the greenway not adjacent to roads as possible (shooting for 80 percent or better)?

Will the greenway improve water quality? through natural systems with recreational water amenities?

Will natural areas be protected as part of an interconnected system that will provide or enhance wildlife corridors?

Will the proposed greenway provide an attractive recreational experience that makes it a destination in its own right?

Will the proposed greenway provide attractive nonmotorized transportation that connects to destinations and activity centers?

✓ Operations and Maintenance

Have long-term costs been established or projected?



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Who is best for construction and operations regardless of funding source?

How will maintenance and operations preserve and perpetuate the four functions of the greenway (transportation, habitat, water, recreation)?

Will the project ensure construction and operations are infused with multiple benefits of water quality, habitat, transportation and recreation?

Will the project leverage operational strengths of cities and the County?

Key Terms

Greenway: A linear corridor planned, designed and managed to provide multiple benefits to water quality, habitat, recreation and transportation.

Open space: Land not occupied by buildings or dominated by pavement; typically a naturally vegetated tract of land.

Governance: The act of exercising authority or control.

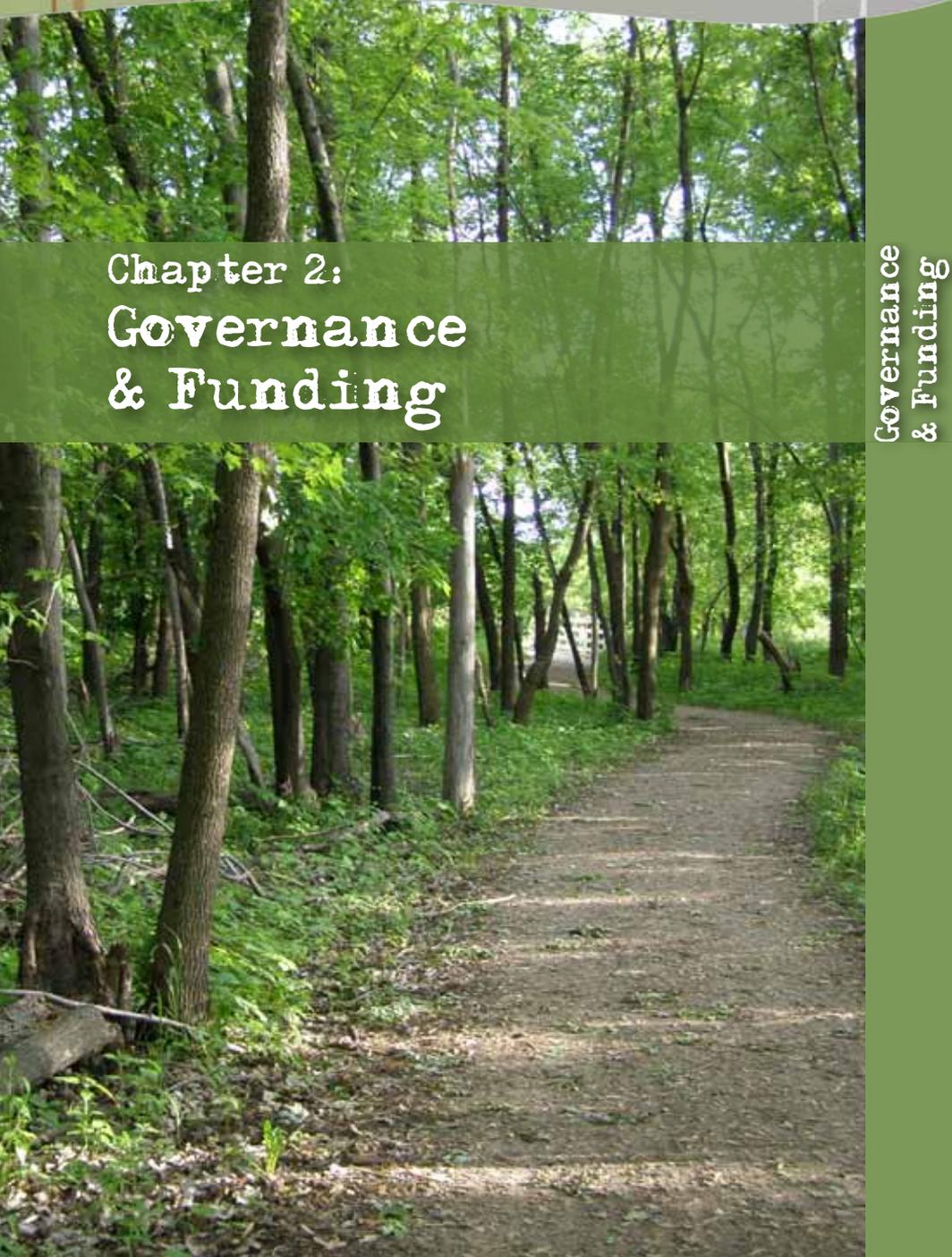
Land protection: For procuring land needed to establish the greenway system and protecting greenway lands over the long-term from damage and misuse.

Stewardship: Closely associated with greenway “operations” with the difference being that operations is focused on the recreation utility of the greenway while stewardship targets the restoration and care of native landscapes and habitat within greenway corridors.

Corridor: A linear tract of land providing passage for people and wildlife.



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Chapter 2:
Governance
& Funding

Governance
& Funding

2. Governance & Funding

Governance and funding are the keystones of the Greenway Collaborative. This chapter suggests a framework of methods by which cities, the County and other partners collaborate to build and operate greenways and an approach to funding those activities. It is recognized that the construction and operational roles played by project partner will likely vary between greenway segments.

Objectives

- › **Institutionalize City/County collaboration and communication regarding...**
 - project prioritization
 - capital improvement planning
 - outside funding pursuits
 - land protection
 - planning/design
 - project delivery
 - operations/stewardship
- › **Establish a governance structure that...**
 - uses each greenway segment's planning process to define the roles of project partners
 - is opportunistic and nimble
 - builds from the strengths of each project partner



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Key Topics

Communication: The greenway system requires institutionalized communication channels between cities and the County. *Finding: Participants in the greenway collaborative should meet periodically to share information and expertise.*

Ownership: There will be numerous ownership scenarios for greenways including private, municipal and County. County ownership of regional greenways is not required, but Dakota County will need a perpetual easement, memorandum of understanding or joint powers agreement on regional trails within greenways. *Finding: Easements or other arrangements will be critical in securing funding and support for greenways.*

Jurisdictional responsibilities: Early discussion among project partners concludes that responsibilities for operations, maintenance, construction and other activities will vary by greenway segment. Regional trails are the jurisdictional responsibility of Dakota County, but the larger greenway corridor could be governed in many ways to suit the situation. The governance structure outlined in this chapter suggests using each master planning process to define specific responsibilities. The intent of the Greenway Collaborative governance structure is to allow flexibility to maximize greenway benefits and efficiencies. *Finding: Joint powers agreements based on individual master plans likely will be needed for each greenway.*

Outside funding: In many cases Dakota County, as the regional agency, will be in the best position to pursue outside funding, but determination of funding pursuits should be linked with other strategic decisions. *Finding: Greenway projects should be positioned to access funding from sources aligned with transportation, recreation, water quality and natural resource protection.*

Opportunistic funding: Limited windows of opportunity to secure crucial greenway land will present themselves. *Finding: Having a flexible funding source is critical to leverage funding from other agencies.*

Coordinated capital improvement and comprehensive planning:

Municipal and county jurisdictions prepare multi-year capital improvement plans as well as comprehensive guide plans. Since greenways will, in many cases, be financial and land use partnerships between a city and the County, plan coordination will be critical. This speaks to the importance of communication, agreeing on greenway corridors, determining priority projects and determining capital funding responsibilities. Specifics of a greenway capital improvement program (CIP) have not yet been determined. *Finding: A greenway CIP could be developed based on input from cities and the County.*

Key Questions

Who makes up Dakota County greenway collaboratives? Most of the collaboration will occur between Dakota County and cities, but school districts, watersheds, townships and federal and state agencies will also collaborate in some corridors. Collaborative partner engagement will vary based on each project, with cities generally being involved only in greenways in their jurisdiction or directly linking to them.

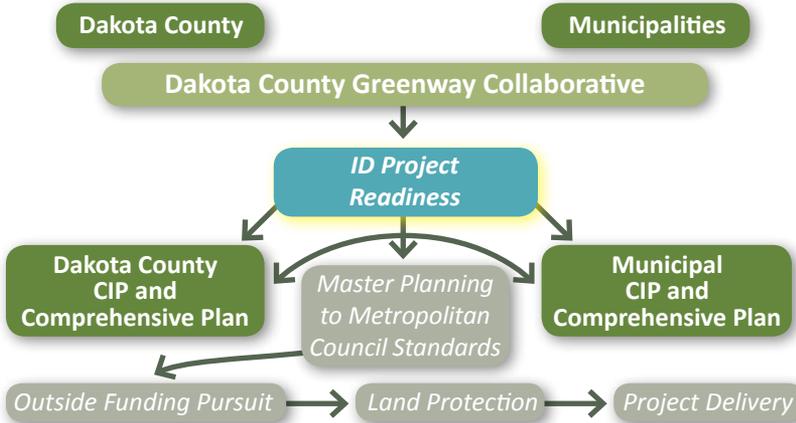
How are priority projects determined? The Dakota County Comprehensive Plan established general priorities for the 200-mile greenway system. At a more refined scale, projects will be prioritized by the County in a transparent process that considers readiness, funding and consistency with the greenway guidelines.

How can comprehensive plans be aligned? Adopted comprehensive plans should include discussion and a map of the Dakota County Greenway Vision. If the extent or location of regional greenways changes, comprehensive plans should be amended.

Who will lead the funding pursuit, planning and implementation of greenways? This is one of the early decisions to be made for priority projects once they are selected. Depending on specific corridor circumstances, a city or the County may lead aspects of the effort.

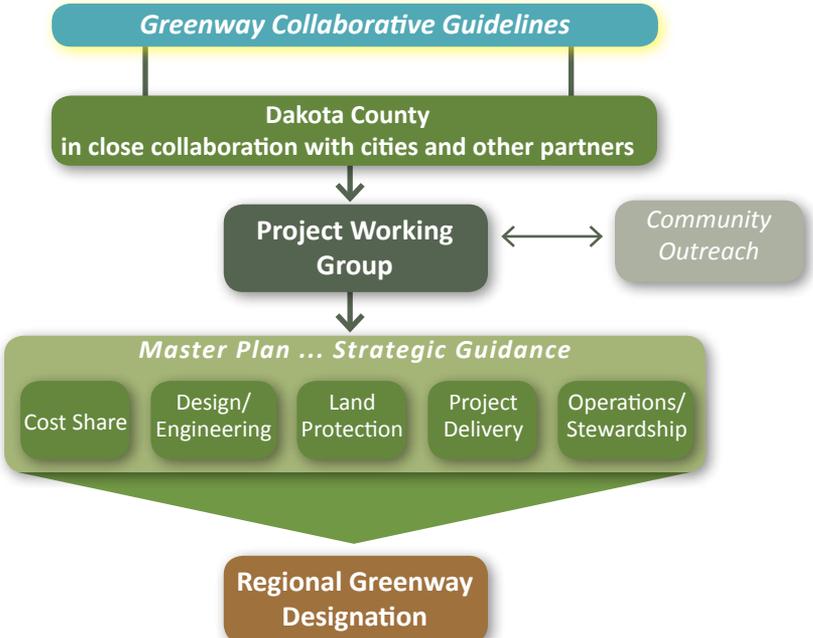
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Governance



Governance & Funding

Master Planning



Master Planning

Dakota County is responsible for funding and preparing master plans for regional greenways. Master plans will be developed in collaboration with the partners, other agencies and residents. Cities may consider their master plan efforts as in-kind contributions for greenways. All master plans for regional greenways are subject to County approval and must meet regional guidelines.

Typical Cost-Share and Roles

Roles should be determined based on the strengths of each agency and the circumstances of individual greenway segments. In-kind contributions of land, easements, design, engineering, construction and maintenance and operations are encouraged. Joint powers agreements will be developed to establish predominant roles and responsibilities between the city and the county regarding cost share and funding. *Future projects will be positioned to secure state and federal funds for recreation, water and habitat. It is anticipated these sources will account for the majority of acquisition and construction costs.*

Typical Ownership

While the greenway network will rely heavily on borrowed views and adjacencies with private and semipublic land, portions of the greenway system will have to be in public ownership to ensure public access, access to funding and natural resource protection because private land that contributes to greenway character has no legal status. Ownership mix in each corridor will vary; below are options for the publicly held portions of greenways.

Component	Ownership
30' regional trail easement	County easement, fee title, MOU or joint powers agreement
Minimum corridor (100-300')	City or County easement, fee title
Connected natural areas	City or others own fee title, County may hold easement if funded through Farmland and Natural Areas Program
Trailheads	City or County fee title

Typical Cost-Share and Roles

Actual roles and responsibilities will vary by project and will be established by joint powers agreements

Component

Component	Acquisition	Design/engineering	Construction/restoration	Operations/Maintenance
30' regional trail easement	County w/ city help using parks, ROW, ponding or park dedication (County will reimburse or negotiate terms)	County unless city is ready to advance project	County; cities can advance for later reimbursement by prior agreement if up to standards	County. May be contracted.
Minimum corridor (100'-300')	City can contribute existing park, park dedication, PUD, ponding, etc. Land not secured by city or others could be secured by County through grants	Shared. City or County contribution can be in-house design and engineering	County may fund natural areas in easements, city may fund active use areas within city parks	Land owner or by agreement
Connected natural areas	County helps city or owner seek funding	NA	County may assist if funded through FNAP	Land owner
Trailheads	Shared when in city parks and master-planned	Shared if facility serves joint use	Shared if facility serves joint use	Shared if facility serves joint use

Typical Federal Transportation grant approach

Actual grant responsibilities will be developed case by case at the time of application through negotiation between the county and cities.

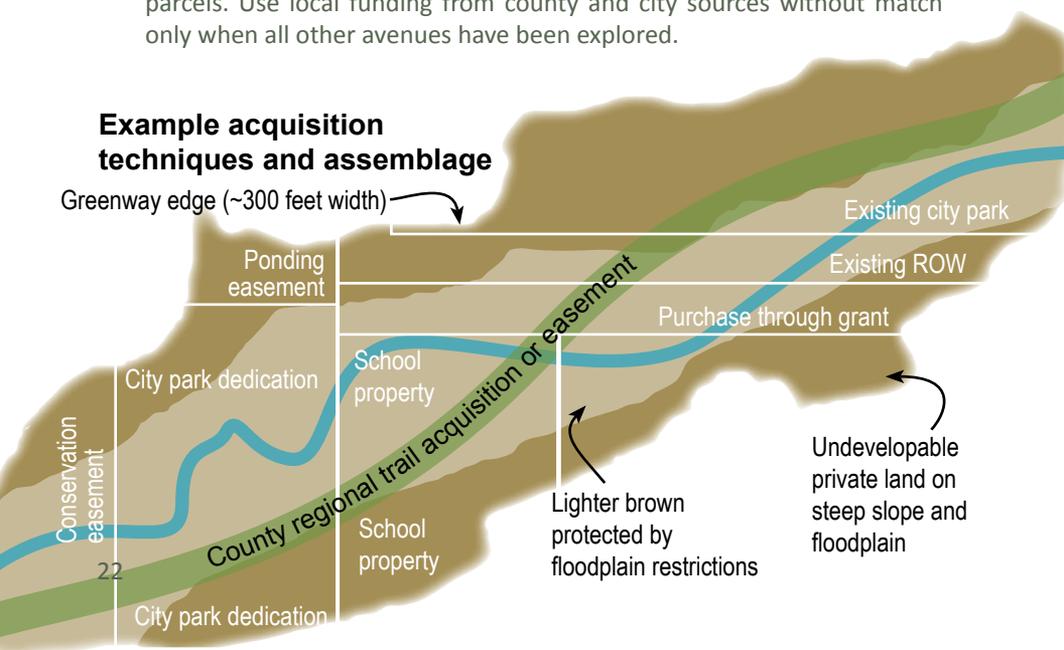
In situations where the cities are better positioned to deliver a project:

- TE applications should be submitted by the city (with assistance from Dakota County as needed)
- Dakota County could provide the required local funding match (20 percent of grant funds)
- Cities could assume costs for design, engineering and construction management (may be in-house)

Typical acquisition strategy for minimum corridor in order of priority

- 1) Use existing public land that is already secured to create corridors. No ownership change is required. Examples include existing parks, ponding areas, schools, wildlife areas and other public land.
- 2) Preserve corridors in coordination with land development. Use park dedication, ponding areas, PUDs, and subdivision requirements to assemble corridors.
- 3) Take advantage of existing land use regulations that protect open space. Public ownership may not be needed in these areas beyond the 30-foot trail easement. Examples include floodplain regulations, shoreland zoning, wetland protection areas, bluff protection areas, etc.
- 4) Strategically purchase property or easements as necessary. Leverage regional, state, and federal grants and existing land conservation programs as sources of revenue and provide local match as needed. The County may access emergency acquisition funds from Metropolitan Council for some parcels. Use local funding from county and city sources without match only when all other avenues have been explored.

Example acquisition techniques and assemblage





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Grant Programs

A funding strategy is needed to create and preserve Dakota County's existing and future greenways. This may include the initial capital costs and on-going maintenance costs. To move forward the County will need to be cognizant of budgeting priorities and allocation of resources. In addition to County and City funds, other sources such as partnerships and grants should be explored; examples are listed below.

NPS Rivers, Trails and Conservation Assistance Program

The National Parks Service's Rivers, Trails and Conservation Assistance Program provides technical assistance to conserve rivers, preserve open space and develop trails and greenways. The program implements the conservation and recreation mission of the National Park Service.

Minnesota Department of Transportation

Reauthorization of SAFETEA-LU likely will fund transportation improvements across the U.S. for the following six years. The most used funding programs have been Surface Transportation Program Urban Guarantee funds, Congestion Mitigation Air Quality funds, Transportation Enhancement funds and Bridge Improvement/Replacement funds. These funds are overseen by MnDOT and the Metropolitan Council.

Minnesota Department of Natural Resources

The Minnesota DNR is one of the most comprehensive resources when it comes to state funding for natural resources, parks and trails. Current programs provide assistance to protect and preserve open space and natural habitats. Each program varies in funding and timing. The DNR should be consulted to clarify funding availability and qualifications.

Minnesota Pollution Control Agency

The MPCA provides grants that address environmental issues. Programs relevant to greenway initiatives include those that address water quality. The MPCA should be consulted to clarify funding availability and qualifications.

The Environment and Natural Resources Trust Fund (LCCMR)

The Environment and Natural Resources Trust Fund is funded through state lottery proceeds. This program has helped acquire land to preserve Dakota County greenways, natural areas, water bodies and open space.

Clean Water, Land and Legacy Amendment

On Nov. 4, 2008, Minnesota voters approved the Clean Water, Land and Legacy Amendment to the Minnesota Constitution, which increased the general sales and use tax rate by three-eighths of one percentage point to 6.875 percent and dedicated the additional proceeds as follows:

- 1/3 to a new Outdoor Heritage Fund to restore, protect and enhance wetland, prairie, forest and habitat for game, fish and wildlife.
- 1/3 to a new Clean Water Fund to be spent to protect, enhance and restore water quality in lakes, rivers, streams and groundwater with at least 5 percent of the fund spent to protect drinking water.
- 14.25 percent to a new Parks and Trails Fund to support parks and trails of regional or statewide significance.
- 19.75 percent to a new Arts and Cultural Heritage Fund for arts, arts education and arts access and to preserve history and heritage.

Watershed Management Organizations

Local watershed management organizations provide funding to improve water quality and manage runoff.

Foundations and Nonprofits

Foundations and nonprofits throughout the country and state are willing to fulfill their mission by supporting local projects. The Minnesota Council on Foundations is a great starting point for identifying local foundations. Before pursuing a foundation, it is important to recognize that each operates differently and toward its own mission. It is also important to contact a foundation early to clarify whether a project would be considered.

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Grant Matrix



Grant

Minnesota Department of Transportation (MnDOT)				
Reauthorization of SAFETEA-LU				
Safe Routes to School Program				
Department of Natural Resources (DNR)				
Metro Greenways Protection & Restoration				
Natural and Scenic Area To increase, protect and enhance natural and scenic areas.				
Federal Recreational Trail Program To encourage the maintenance and development of motorized, non-motorized, and diversified trails by providing funding assistance.				
Restoration Grants Restoration activities that establish or support native plant and animal communities				
Protection Grants Protection of high quality sites with native plant.				
Local Trail Connections Program To provide grants to local units of government to promote relatively short trail connections between where people live and desirable locations, not to develop significant new trails.				
Outdoor Recreation Grants Provides matching grants to local units of government for up to 50% of the cost of acquisition, development and/or redevelopment costs of local parks and recreation areas.				



Grant

<p>Minnesota's Landowner Incentive Program</p> <p>LIP provides technical and financial assistance to eligible, private landowners within LIP project areas, who are interested in enhancing habitat on their land for target species. Target species are: Plants and animals identified under state or federal endangered species laws as endangered, threatened or of special concern (listed species) and non-listed animal species with declining or vulnerable populations (Species In Greatest Conservation Need).</p>				
<p>Lessard - Sams Conservation Partners Legacy Grants</p> <p>Restoration and Enhancement projects will consist of activities that restore or enhance habitat for fish, game, or wildlife on lands permanently protected by conservation easement or public ownership. Protection projects maintain the ability of habitat and related natural systems to sustain fish, game or wildlife through acquisition of fee title or conservation easements. Land acquired in fee must be open to public hunting and fishing during open seasons. Land protection also includes preserving ecological systems and preventing future degradation of those systems.</p>				
<p>Roadsides for Wildlife</p> <p>To encourage local road authorities and landowners to use Integrated Roadside Resource Management Techniques so that ecological values (water, soil, wildlife, native plants) are considered. For example, this program provides information on state mowing laws so that there is reduction in the disturbance of nesting wildlife.</p>				

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Recreation
Transportation
Water Quality
Habitat

Grant

Grant	Recreation	Transportation	Water Quality	Habitat
<p>Shoreland Habitat Restoration Grant Program</p> <p>To expand the diversity and abundance of native aquatic and shoreland plants; improve and protect the quality of shoreline habitat; enhance and protect water quality; raise awareness of the value of native shoreline and aquatic vegetation. Shoreland Habitat Block Grants are to provide cost share funding to counties, cities, watershed districts, other local units of government, conservation groups and lake associations to conduct shoreline restoration projects with native plants, to improve fish and wildlife habitat.</p>				
<p>Wetland Tax Exemption Program</p> <p>To provide a financial incentive to maintain wetlands in their natural state and to promote an awareness of wetland values.</p>				
<p>Native Prairie Bank Program</p> <p>To protect native prairie through the purchase of conservation easements, that allows the land to remain in private ownership.</p>				
<p>Native Prairie Tax Exemption Program</p> <p>To conserve native prairie by providing property tax exemptions on eligible native prairie lands.</p>				
<p>Reinvest in Minnesota (RIM) critical habitat match program</p> <p>To encourage private citizens and organizations to help fund the acquisition and development of critical fish and wildlife habitat by having their donations of land or cash matched from a special state fund.</p>				
<p>Parks and Trails Legacy Grant Program</p> <p>To support trails of regional or statewide significance.</p>				



Grant

Minnesota Pollution Control Agency (PCA)				
<p>Financial Assistance for Nonpoint Source Water Pollution Projects: Clean Water Partnership, Clean Water Legacy and Section 319 Programs</p> <p>The MPCA provides financial and technical assistance to local government and other water resource managers to address nonpoint-source water pollution through the State Clean Water Partnership (CWP) and Federal Clean Water Act Section 319 (Section 319) programs.</p>				
<p>Clean Water Legacy Act Surface Water Assessment Grants</p> <p>Surface Water Assessment Grant funds can be used to monitor the physical, chemical, biological, and/or bacteriological water quality parameters of lakes or streams.</p>				
<p>Clean Water Legacy Act (CWLA) Funding Round Guidance for Stormwater Applications for Federal Clean Water Act Section 319 TMDL Implementation Funds</p> <p>Provides funding to protect, restore and preserve the quality of Minnesota's surface waters.</p>				
Metropolitan Council				
<p>Metro Environment Partnership Grant Program</p> <p>The purpose of MetroEnvironment Partnership Grant Program is to improve the water quality of Metro Area lakes and rivers by reducing nonpoint source (NPS) pollution through education and implementation grants.</p>				
Miscellaneous Grants				
<p>State of Minnesota Lottery - Environment & Natural Resources Trust Fund</p>				



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Chapter 3:
Land Protection
& Stewardship



Land Protection
& Stewardship

3. Land Protection & Stewardship

This chapter outlines the objectives, techniques and key topics associated with protecting and caring for greenways. We use the term “land protection” to mean both securing land needed to establish the greenway system and protecting the integrity of greenway lands from damage and misuse. The term “stewardship” is closely associated with greenway operations discussed elsewhere in this guidebook. The difference is that greenway operations are focused on the recreational utility of the greenway while stewardship targets care for native landscapes and habitat within greenway corridors.

Objectives

- › **Establish an interconnected open space network with high habitat value.**
- › **Protect and improve ecological function.**
- › **Remain flexible to land protection options.**
- › **Choose lands that offer multiple benefits.**
- › **Measure and monitor success.**
- › **Develop partnerships and engage residents.**



A Metro Greenways sign identifies an area protected by conservation easement.

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Native plants in residential areas protect water bodies from the damages of fertilizers and other chemicals that typically run off treated turf grass lawns into storm sewers.



Key Topics

Relationship between land protection and stewardship: There is a strong relationship between the formal protection of land designated as greenway and stewardship of habitat and the natural systems on that land. Legally protecting land does not ensure its environmental health or ecological function — but stewardship does. Correspondingly, good stewardship provides no safeguards against land being sold or altered — but land protection does. A successful greenway system will address both land protection and stewardship.

Integration with the development process: A primary way to protect greenway corridors is to institutionalize the greenway plan into the local development process. Use of comprehensive planning, zoning, park dedication, official mapping and other strategic tools to designate and trigger greenway protection are all part of the land development process. With plans for greenways incorporated into local controls and processes, their protection will become a matter of course.

Ecological function as one of multiple benefits: Most communities have become accustomed to planning and building trail corridors. The Dakota County Greenway Collaborative expands the notion of “corridor” to include ecological benefits as well as recreational ones. Habitat, wildlife movement, stormwater infiltration and carbon sequestration as well as alternative modes of transportation and recreation are core objectives of greenway corridors. A natural corridor without a trail or a trail corridor



without habitat are fine in their own right but they are not what the Greenway Collaborative is striving for — the integration of both.

Using greenways to increase biological diversity: Plants provide a foundation for the ecological function of a greenway and reflect a unique landscape character. Establishing native plant communities such as prairie, savanna, woodland and wetland in appropriate locations across a greenway system supports a broader variety of wildlife, is more visually interesting and is shown to be more ecologically stable – less prone to disturbance, erosion, disease and invasion.

The importance of flexibility: When it comes to land protection, one size will not fit all. There will likely be a customized approach to land protection needed for each property owner. It will be important to remain flexible to the needs of various stakeholders in land protection negotiations.

The need for on-going monitoring: Land protection and stewardship are long-term endeavors. Situations arise with issues like encroachment or habitat damage that can be resolved easily if caught early through regular monitoring but could lead to costly repairs if not addressed. Monitoring of key vegetation, animal groups such as birds and frogs or water quality is also the prime way to measure the success of stewardship efforts.

The strength of partnerships: The strength of any land protection and stewardship project is greatly enhanced by the involvement of other agencies and organizations. Each group brings different perspectives that combine to create superior results. Partnerships benefit the community by getting more people involved, creating stronger connections and making education an inherent aspect of greenways. Furthermore, partnerships allow cities, the County and property owners to leverage their resources by tapping into expertise and resources they may not otherwise have.

The success of any stewardship project is dependent on residents — the people who live nearby, who know it, who bring others there and raise awareness. Without resident engagement, many stewardship projects languish. Engaging residents in multiple project phases, from planning, to installation, to monitoring brings value to the community and individuals. Building these relationships from the beginning phases can help build project support and can make all subsequent phases go more smoothly.

Dakota County Greenway Collaborative

Buffers are a key strategy to improve water quality with greenways



Land Protection Tools

Park Dedication

Park dedication could be used by municipalities to secure greenway land in conjunction with city parks at the time of surrounding development. This tool is typically used by cities to fulfill neighborhood recreation needs and in many situations a greenway could meet local recreation needs while connecting residents to regional facilities. The County would either reimburse the city for the value of the park dedication used for the greenway, or otherwise come to agreement on how to reach an equitable use of park dedication.

The County may evaluate the feasibility of county-wide park dedication to augment funding for regional greenways.

Comprehensive Planning and Zoning

Municipal land use guidance and zoning could define and help protect greenway corridors by officially designating them in comprehensive plans



and zoning codes. Establishing special zoning designation such as overlays and coupling greenway corridors with otherwise protected lands such as floodways and bluffs are a couple of common strategies.

Official Mapping

Greenways could be officially mapped by government entities as public record of the government's intent to acquire the land for public use.

Acquisition

There are a number of approaches to acquiring land and each has its own set of activities, steps, advantages and limitations. The major approaches are described below. There are a number of potential conservation partners, both public and private, that can assist in land acquisition.

Direct Purchase

With this tool, the fee title to the property is acquired. There are often grant programs available (e.g. DNR Metro Greenways Program) and project partners (e.g. Dakota County Farmland and Natural Area Program) that can provide matching funds and/or expertise for acquisition projects.

Land Donation

A landowner may choose to gift all or part of their land for greenway use. The landowner may be able to enjoy tax benefits for donating land to qualified public or conservation partner.

Bargain Sale

In some cases it may be in the landowner's best interest to sell their property for something less than fair market value. By doing so, a landowner may receive tax benefits.

Life Estate

This tool allows the landowner to live on the land after selling the fee title. Life estates can be structured in many different ways (e.g. the landowner can live on the land until he/she dies or any mutually agreed upon number of years). A life estate can affect the appraised value of the land.



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Conservation Easement

A conservation easement is a non-ownership interest in property that imposes limitations to protect natural, scenic, or open-space values; assure its availability for agriculture, forest, recreation, or open-space; protect natural resources, or air/water quality; or preserve the historic, architectural, archaeological, or cultural aspects of property. Each conservation easement is tailor made to the specific landowner and the goals of the project. Dakota County has critical experience with conservation easements.

The natural systems on which greenways will be assembled integrate greenways into the broader landscape. Prior to Western settlement, Dakota County was relatively wild and unplowed; natural forces maintained equilibrium. Native plant and animal communities evolved into an

Stewardship

ecological balance like a protective shell that sustained and buffered the area's streams. It is well outside of anyone's abilities and outside anyone's intentions to fully restore the greenways to pristine presettlement conditions, but major headway within the system is feasible.

The natural resource objective for the greenway system is to strike a new and healthy ecological balance different from the presettlement condition but still a healthy context within which nature can thrive. This vision suggests improved land management with strategic habitat restoration to create a protective web of natural landscapes that once again sustain and buffer the county's streams, provide wildlife habitat and connections.

Greenway corridors: The first stewardship priority is restoring continuous native habitat in greenway corridors themselves. This continuous ribbon of varying widths will function as a wildlife corridor and buffer streams from damaging effects like runoff, pollution and invasive species.

Adjoining Sensitive Lands: The next order of stewardship priority is habitat restoration and protection of the most sensitive lands, including uplands, which link greenways to the broader landscape. These landscapes perform vital functions of preserving habitat and species diversity and stormwater

infiltration and cleansing. Prioritization of adjoining landscapes will be based on intrinsic sensitivities like erodibility, aquifer recharge, the presence of wetlands and the presence of native plant communities, in addition to landowner interest. Designated wildlife and aquatic management areas also provide important refuge for wildlife and native plants.

A Healthy Natural Framework: Stewardship of first- and second-order landscapes will reestablish a stronger habitat network that can thrive in the future. This overall habitat and open space network will have greater resilience and will provide a strong framework for future growth.

Stewardship Techniques

Stewardship Objectives	Rationale	Stewardship Techniques
Establish high habitat value	<ul style="list-style-type: none"> ● Balance wildlife ● Greater ecosystem stability (disease, erosion, invasion) ● Visually appealing 	<ul style="list-style-type: none"> ● Use historic plant communities as guide for restorations ● Control non-native, invasive species ● Minimize pesticide use ● Install native plants or seed ● Model native plant community composition
Protect and improve ecological function	<ul style="list-style-type: none"> ● Reduces non-native invasive species ● Cycles nutrients ● Invigorates native plants ● Perpetuates native plant and wildlife communities 	<ul style="list-style-type: none"> ● Select native, local genotype species ● Prescribed burning of suitable habitats in suitable locations ● Substitute mowing or weeding where fire is not feasible or applicable
Measure and monitor success	<ul style="list-style-type: none"> ● Clear indicators of project results ● Identification of problems or emerging issues. 	<ul style="list-style-type: none"> ● Photographs ● Survey plants and animals (birds, frogs) prior to stewardship, during and after completion. Continue indefinitely. ● Develop responses to new concerns.
Develop partnerships and engage residents	<ul style="list-style-type: none"> ● Strengthens the project ● Creates more community visibility ● Creates long-term investment of residents ● Provides education opportunities 	<ul style="list-style-type: none"> ● Involve local and regional agencies and organizations. ● Open-house planning sessions ● Volunteer work events ● Educational tours



Dakota County
Greenway Collaborative



Chapter 4:
Greenway Design





4. Greenway Design

Design is critical to a high-quality greenway system. An overarching goal of the collaborative is to move beyond trails and develop greenways with trails in them.

Objectives

- › **Create an interconnected system of greenways with a natural design signature that improves water quality, enhances wildlife habitat, provides first-class linear recreation and increases mobility.**
- › **Connect, enhance and interpret natural habitat.**
- › **Create wildlife corridors to expand wildlife range.**
- › **Filter and store stormwater that enters greenways.**
- › **Create a safe, amenity-rich trail network that meets the needs of multiple users in all seasons.**
- › **Create an inviting, connected, memorable and nature-based recreation system.**

Key Topics

Design consistency: Design consistency will be important in combining a regional greenway system with the distinct greenway segments implemented by different agencies and developers. This guidebook establishes the foundation for design consistency; early projects will serve as models with features to be reused and refined in later projects.

Borrowed views: “Borrowed views” suggests taking advantage of greenway-adjacent open space to expand the character and ecological function beyond what the greenway alone can accomplish. What this boils down to is collocating greenways with other long-term open spaces.



Dakota County Greenway Collaborative

Balancing multiple objectives: Implementing a greenway system will require trade-offs. This chapter outlines greenway performance goals and techniques that are ideals in greenway design but will not all be achievable with every project. The collaborative must be mindful of the need for flexibility without losing the underlying intent of the greenway system.

Year-round facility: Greenways will provide year-round recreation and transportation functions. Greenways can be used for jogging, hiking, snowshoeing, nordic skiing and bird watching. With the expected continuing increase in bike commuting, greenways will also serve a year-round transportation function which will require that some greenways be maintained for bicyclists year-round. Which segments are maintained for which activities will be determined as the system develops and demand for each type of transportation and recreation is more readily gauged.

Minimizing conflicts: The primary greenway trail conflict points are with crossing vehicular traffic and with adjoining neighbors. The potential for conflicts in both categories should be minimized through the use of landscape buffers, grade-separated crossings and considerate design.

Universal accessibility: Greenway trails and walkways should provide universal access. Universal design considerations are especially critical at street crossings, in sidewalk and trail cross-section design, and in nature-based recreation and interpretation.

Providing local access: Neighborhood access to the greenway system should be abundant but thoughtful to minimize conflict points; direct access from private property should not be allowed.

Wayfinding: Wayfinding will unify the greenway system from a usability and character standpoint. Signage should be consistent across the system and should both guide people to greenways and to guide greenway users to local services and cultural destinations.

Sustainability and environmentalism: Greenways will be assembled in environmentally sustainable ways with a minimized negative impact on natural systems in Dakota County and beyond. Strategies include using recycled materials, pervious pavement and energy-efficient lighting.



Greenway Typology

Three greenway categories or typologies have been defined for Dakota County regional greenways. They are categorized by the setting within which they exist. Each strives to perform the functions of water quality enhancement, habitat creation, non-motorized transportation and recreation. Because each greenway type has unique characteristics, they also have inherent strengths and weaknesses in each function.

There are references made in this section to greenway width of 300 feet. This is a dimension many habitat experts have arrived at as a minimum corridor width for establishing a healthy native plant and wildlife ecosystem when those corridors interconnect larger habitat nodes. While this is a high standard, it is valuable to understand and strive for healthy ecological function in the greenway system. Greenway collaborative members recognize that there will be instances in which portions of the greenway will be limited to significantly less than the “minimum” width. Greenway segments will be designed individually to best suit the four elements in each corridor; what works in one corridor may not in another. That said, rule of thumb minimums are provided below for each context. Greenway width is the average width per 1 mile segment (determination of segments is flexible and for width calculation need not match segment designation used for other purposes). Where multiple contexts exist within a segment, a prorated minimum width should be used. Contexts and character will be determined by partner consensus in the master planning process.

$$\text{Greenway width} = \frac{\text{area along 1-mile segment}}{1 \text{ mile}} - \text{impervious surface area}$$

Urban greenways are those that would typically be retrofitted into existing neighborhoods or those that are built along with development in dense, urban districts. They will typically require significant compromise on a systemwide ideal width of 300 feet. They will likely have inherent strengths in the transportation and recreation functions and greater design challenges in water quality and habitat. **Minimum width: 100 feet.**

Dakota County Greenway Collaborative



Suburban greenways typically are built in conjunction with developing neighborhoods and have more flexibility in location and width than urban greenways. They can take greater advantage of adjacency to natural features, ponds, streams and parks and their connection to community destinations or natural areas can be designed into the surrounding development pattern. Greenways in suburban settings have an opportunity to creatively balance the functions of water quality, habitat, transportation and recreation. **Minimum width: 200 feet.**

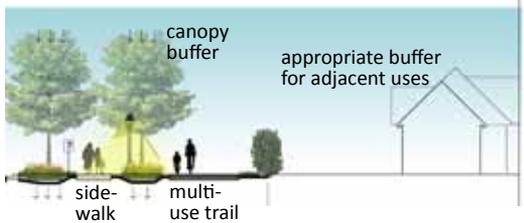
Rural greenways have the greatest opportunity to meet the 300 foot critical dimension and function as healthy habitat and water quality corridors. In this greenway type, the transportation and recreation functions would be equal to other greenway types but the greater width also allows the ecological functions. Agricultural land likely will be prominent in this greenway type. **Minimum width: 300 feet.**

Each greenway type has been diagrammed on the following pages. The diagrams are intended to illustrate inter-relationships between greenway elements and adjacent lands.

Greenway Typology - Urban Setting



PLAN



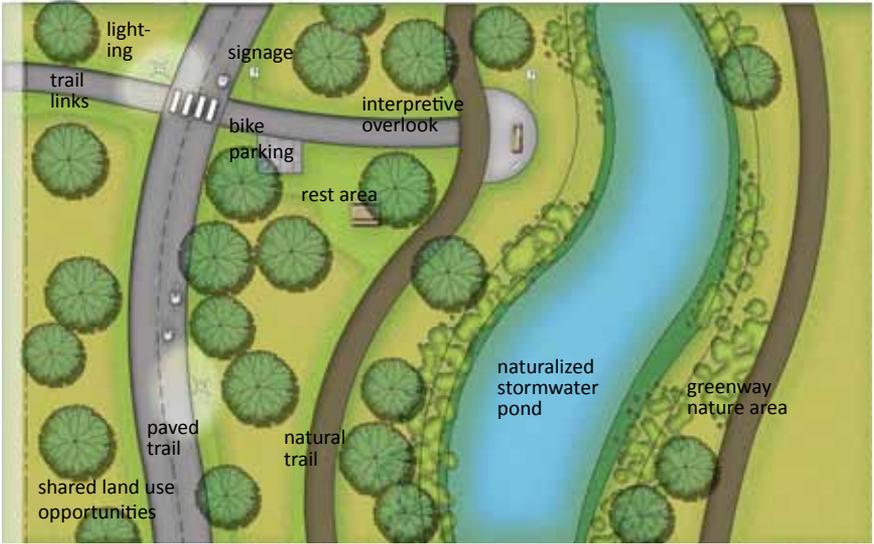
MIN. WIDTH - 100ft

SECTION

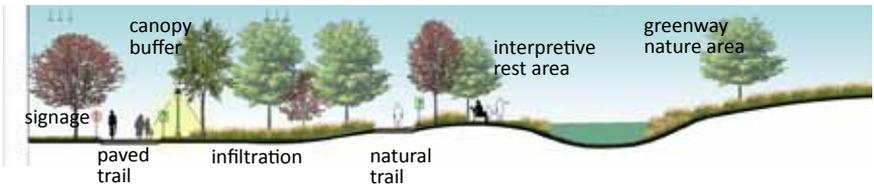
URBAN GREENWAY

Dakota County Greenway Collaborative

Greenway Typology- Suburban Setting



PLAN

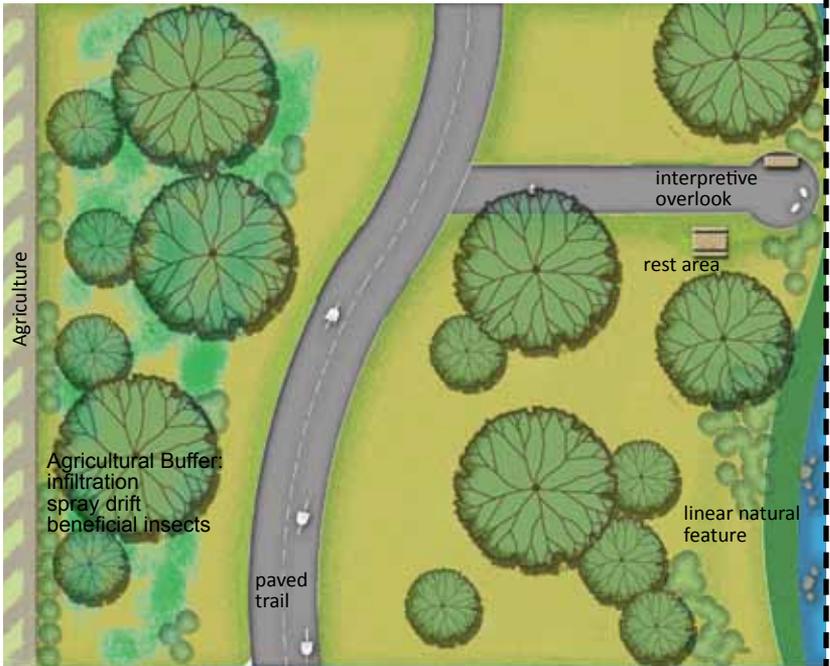


MINIMUM GREENWAY WIDTH - 200FT

SECTION

SUBURBAN GREENWAY

Greenway Typology—Rural Setting



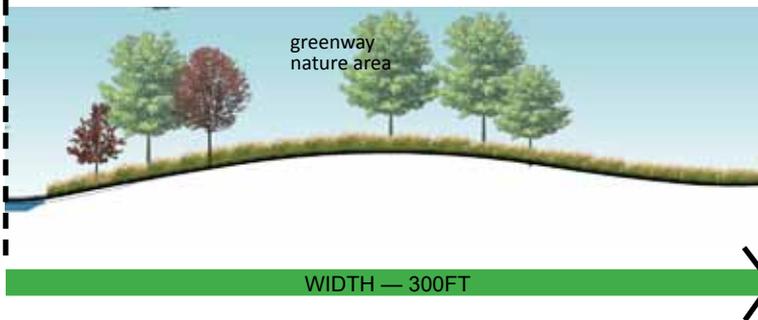
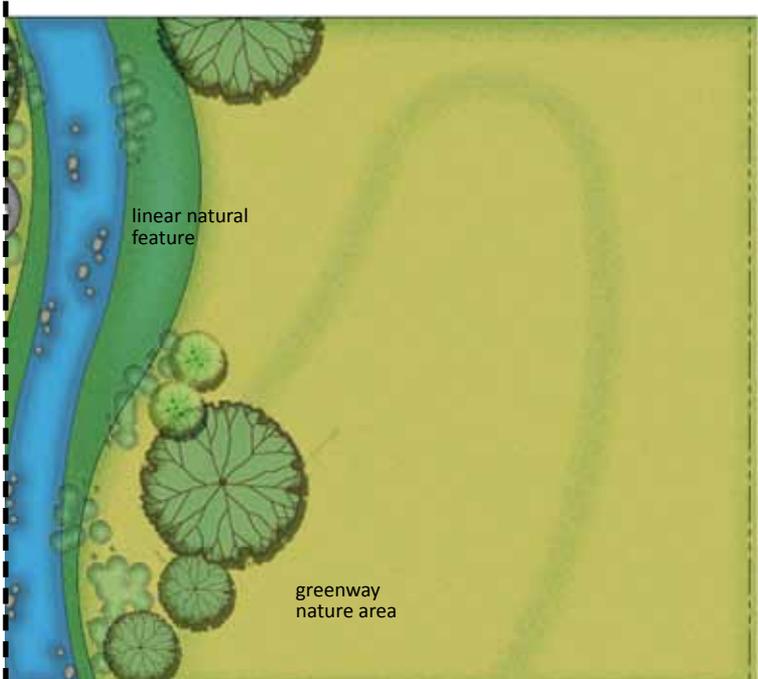
PLAN



RURAL GREENWAY

Greenway Design

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Performance Goals



Topic	Urban	Suburban	Rural
Corridor Location 	Follow water flow and away from streets 80% of time, use to interlink activity centers	Away from streets 80% of time, follow water flow where possible, locate with natural features (wetlands, bluffs), use to interlink activity centers	Away from roads 80% of time, follow water flow where possible, locate with natural features (wetlands, bluffs), use to interlink activity centers
Natural Design Signature 	Native gardenesque landscaping and turf, consistent boulevard trees, follows water where possible, contemporary lighting and furnishings	Native habitat, follows water where possible, contemporary lighting and furnishings	Native plant communities, follows water where possible, contemporary furnishings
Corridor Width 	Minimum — 100 feet	Minimum — 200 feet	Minimum — 300 feet
Borrowed Views 	Public facilities, parks, schools, religious institutions, HOA common areas	Stormwater ponds, parks, schools, religious institutions, HOA common areas	DNR lands, farmland, easements
Bike Trail 	Separate from peds, min. 3 feet from streets, paved, 10-foot min.	Multi-use, min. 50 feet from roads, paved, 10-foot min. width	Multi-use, min. 100 feet from roads, paved, 10-foot min. width
Pedestrian Walkway 	Separate from bikes, min. 5' width, min. 6' from roads and bikes	Multi-use	Multi-use
Other Trail Uses 	Unpaved, x-c skiing where practical	Unpaved, x-c skiing, hiking	Unpaved, x-c skiing, hiking and/or horse in select locations
Road Crossings 	Arterial and above – grade separated, collector – vehicles stop Driveways and local streets – alternative crosswalk pavement	Arterial and above – grade separated, collector – vehicles stop Driveways and local streets – alternative crosswalk pavement	Arterial and above – grade separated, collector – vehicles stop Driveways and local streets – alternative crosswalk pavement

Dakota County Greenway Collaborative

Performance Goals—continued

Topic	Urban	Suburban	Rural
 Trailhead	Primary ones in activity centers; car/bike parking, restrooms, access to water and food; minor trailhead kiosks at neighborhood entries, spaced every 2 miles or less	Primary ones in activity centers; car/bike parking, restrooms, access to water and food; minor trailhead kiosks at neighborhood entries, spaced 2 to 3 miles or less	Locate in public open space; car/bike parking, restrooms, access to water and food, picnic facilities, spaced roughly every 5 miles
 Stormwater	Store and infiltrate greenway stormwater for 100-year storm, consider rainwater reuse for surrounding irrigation	Accept some stormwater from adjacent landscape, store and infiltrate greenway + stormwater for 100-year storm	Accept some stormwater from adjacent landscape, store and infiltrate greenway + stormwater for 100-year storm
 Landscaping/ Habitat	Opportunistic habitat generally focused on plants and animals requiring smaller ranges	Connected native plant communities, some turf; larger animals may be present	Expansive native plant communities, full range of animal groups should be present
 Interpretation	Each greenway segment should have interpretive theme expressed in artful way, integrate interpretation with corridor design, interpretive stops/overlooks at key corridor locations	Each greenway segment should have interpretive theme expressed in artful way, integrate interpretation with corridor design, interpretive stops/overlooks at key locations	Each greenway segment should have interpretive theme expressed in artful way, integrate interpretation with corridor design, interpretive stops/overlooks at key locations
 Wayfinding	Systemwide design, frequent directional signs, street signs, map kiosks, trailheads	Systemwide design, periodic directional signs, street signs, map kiosks, trailheads	Systemwide design, occasional directional signs, street signs, map kiosks, trailheads
 Lighting	Continuous, low-energy, pedestrian scale; enhanced at trailheads/crossings	Continuous except where deleterious, low-energy, ped-scale	Likely only at trailheads
 Amenities	Trash, benches, water at key locations	Picnic tables, shelter, water at minimum 5-mile intervals	Picnic tables, shelter, water at minimum 10-mile intervals

Menu of Potential Design Techniques

This table indicates where design techniques could be considered to meet the range of habitat, water quality, transportation and recreation objectives.

Techniques	URBAN				SUBURBAN				RURAL			
	Habitat	Water Quality	Transportation	Recreation	Habitat	Water Quality	Transportation	Recreation	Habitat	Water Quality	Transportation	Recreation
Adjacencies			✓				✓					
Public Art				✓				✓				
Bike/Ped Separation		✓										
Bird Blinds												✓
Vegetated Buffers	✓	✓			✓							
Connectivity	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cultural Events				✓				✓				
Daylighting	✓	✓			✓	✓			✓	✓		
Density of Recreation				✓								
Flood Protection		✓				✓			✓			
Follow Water		✓		✓		✓		✓				✓
Full Season Interest	✓				✓							
Gardens	✓				✓							
Grade Separated Crossings			✓				✓				✓	
Habitat Restoration					✓				✓			
Rainwater Harvesting		✓				✓						
Infiltration		✓				✓			✓			
Inter-Link Destinations				✓				✓				
Interpretation				✓				✓				✓
Land Forms	✓				✓							
Long Trip				✓				✓				✓
Managed Landscape	✓				✓							
Multi-Use				✓				✓				✓
Native Landscape					✓				✓			
Non-Native Landscape	✓				✓							
Pervious Pavement		✓				✓						
Platform Crossing			✓									
Productive Landscape									✓			
Rain Garden		✓				✓						
Re-naturalized Ponds		✓				✓						
Safe Crossing Lane			✓				✓					
Security			✓	✓			✓	✓			✓	✓
Sensory Landscape	✓				✓							
Separate Commuter Lane			✓									
Signage			✓	✓			✓	✓				
Stream Restoration	✓	✓			✓	✓			✓			
Trailhead			✓	✓			✓	✓				✓
Tree Canopy	✓				✓				✓			
View Preserved								✓				✓
Vines/Green Screen	✓				✓							
Wetland Restoration	✓	✓			✓	✓			✓	✓		
Ballfields				✓				✓				✓

Dakota County
Greenway Collaborative



Chapter 5:
Operations &
Maintenance

Operations &
Maintenance



5. Operations & Maintenance

This chapter focuses on assembling greenways and their long-term operation and maintenance. Greenway maintenance is closely tied to the topic in the earlier chapter Land Protection and Stewardship. Stewardship focuses on management of native habitat while this chapter targets operation of the active or peopled elements of greenways.

Objectives

- › **Determine predominant operational roles within the master plan or by agreement.**
- › **Ensure the multiple benefits of water quality, habitat, transportation and recreation are infused within construction and long-term operations.**
- › **Establish greenways that are financially sustainable.**
- › **Leverage inherent operation strengths of cities and the County.**
- › **Incorporation success measures and audits into ongoing greenway operations.**

Key Topics

Coordinating maintenance operations: There will be some level of cross-responsibility between Dakota County and local jurisdictions for greenway maintenance. With multi-community, cross-jurisdictional facilities like greenways, coordinating maintenance will be critical and likely will use an approach similar to the roadway system where maintenance responsibilities and level of care standards are part of the planning and design process for each greenway segment.



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Winter use: Greenways will be at their peak use during warmer months. It is anticipated that winter will also become an active greenway season as the system matures. Year-round bicycle commuting is growing in popularity. Greenways also offer opportunities for cross-country skiing and other winter activities. Winter use brings different operational needs such as grooming, bike trail plowing and unique public safety issues. The operational needs of various winter uses needs to be incorporated along with planning for those uses.

Lifecycle replacements: Pavement, lights, signs, benches and other built components will wear out and need to be replaced at some point in the future. Monitoring and high-quality maintenance of all aspects of greenways should be built into the operational routine but so should assumptions about full replacement.

Public safety: Like maintenance, policing will be a critical coordination item between Dakota County and local jurisdictions. The Dakota County Sheriff's Office will coordinate with the local law enforcements agencies to determine appropriate policing of greenways in incorporated areas and will be responsible for greenways in unincorporated areas. Of equal importance is the level of policing required to keep greenways secure. Like many issues in greenway operations, policing should be strategized in the planning phase of a particular greenway segment and monitored.

Wayfinding/signage: Greenway signage is an element where uniformity across the system is of critical importance. Signage guidelines and design standards should be resolved to the extent possible with implementation of the first greenway segments and then incorporated into subsequent projects. From a maintenance standpoint, it likely will be most efficient to stock or order standard replacement signs through Dakota County that can be used by all jurisdictions with maintenance responsibilities.



Staying true to design intent: Greenway master plans are documents most likely to suggest how water quality, habitat, recreation and transportation should be infused into a given greenway segment. For cost or other reasons, what sometimes happens in the translation from master plan to engineered drawings to construction is the dilution of original design intent. To guard against this, master plans should be based on feasible construction methods and contain realistic construction budgets and construction drawings should continually circle back to the master plan for guidance. Once constructed, greenways are dynamic landscapes with constantly maturing plants and evolving aesthetic interests applied to them. The landscape transitions (for instance between prairie and mown turf) in a greenway could be subtle and undefined other than the plan created for it. Maintenance practices that favor one landscape type or another could have unintended impacts on greenway functionality. The ability to realign or correct maintenance patterns is an important reason to monitor greenways on an on-going basis as discussed in the Land Protection and Stewardship chapter.

To ensure consistent master plans that will qualify for funding and meet the goals of the various partners, master plans for regional greenways will be approved by Dakota County and will meet regional standards.

Operation Responsibilities

Operational responsibilities consist of the labor, equipment and materials needed to maintain and operate greenway corridors, including the replacement or repair of damaged items. The worksheet below is intended as a coordination tool between the various entities involved in operations of a particular greenway segment. It will provide a way to discuss and work through operational needs of greenways as they are being planned.

Dakota County Greenway Collaborative

Selected Responsibilities

	City	County	Other
Recreation			
Trail lighting maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Site furnishing maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interpretive signage/art maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Structures maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Garbage collection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utility maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utility fees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public safety patrol	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Transportation			
At-grade street crossings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grade-separated road crossings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Paved trail maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sidewalk maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nonpaved trail maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trail snow plowing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ski trail grooming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intersection lighting maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Signage maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water Quality			
Rainwater collection maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surface stormwater maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Underground stormwater maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat			
Intensive landscaping, incl. plant replacement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Native landscaping, incl. raingarden	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Irrigation maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mowing/Burning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Monitoring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>