CHAPTER 5: NATURAL RESOURCES

"Prioritize, Protect, Preserve and Conserve Natural Resources to ensure compatibility of land use planning and development"

The community recognizes the need to preserve the natural resources of the area, including lakes, woodlands, wetlands, and rare and sensitive environmental features in the area. These resources add value to the community and should be not only protected but enhanced.

Most residents see growth and change as continuing through the next decades. The City will carefully consider development to be compatible with the abundance of natural amenities that the City possesses. The community must remain mindful of the need to balance growth and environmental preservation as development pressure emerges

Introduction

This chapter explains why natural resources are important in comprehensive planning and how natural resources can be used to shape new developments, stormwater management, open space, travel routes, and recreation. This chapter also recommends steps that can be taken to preserve and enhance natural resources as a community grows.

The study area discussion includes portions outside of the City of Isanti. These areas are included because they contribute to the overall function of the natural areas that are included in the City. This planning boundary and study area are both defined on Figure 5-2A.

The Natural Resource Analysis in the Comprehensive Plan establishes the foundation for the sustainability of the community in the long-term. The Isanti Master Plan embodies decisions that will have far reaching effects for the community. Future growth and actions will affect the water quality of streams and groundwater, the amount of flooding, the availability of parks and trails, as well as the wildlife habitat and fish population within the community. Natural and open space areas provide benefits to the community by replenishing the groundwater, filtering pollutants such as sediment and phosphorous from stormwater runoff, supporting the fish and wildlife population, reducing flooding, and preventing erosion of shoreline and streambanks. A community that wants to preserve these benefits for future generations will integrate preservation and enhancement of natural resources early in the process of planning for future growth.

The Conservation Plan provides guidelines for protecting and enhancing the natural resources within the community. The Plan lays out the community's vision for balancing future growth and development by conserving natural resources. It is assumed that growth and conservation are mutually achievable goals. Based on past achievements, the community will create a network of parks, trails, and other open space areas that will preserve the ecological benefits described above. Parks and open spaces also create an identity for the community, increase the value of nearby properties, and expand the range of recreational experiences. Future residents of Isanti will value this investment as essential to their quality of life.

The Conservation Plan takes a regional approach to stormwater management by preserving opportunities to use soil infiltration, evaporation and plant transpiration, and floodwater storage that already exists in wetlands, floodways, infiltration areas, and swales. As the amount of impermeable area (i.e. pavement and rooftops) increases within the watersheds, stormwater management facilities will need to expand. The regional stormwater management approach is expected to meet or exceed water quality standards, control flooding and bank erosion, and minimize the use of storm sewers. It also creates space for trails, makes connections between important natural areas, and adds buffers to streams, ponds, lakes, and wetlands. This benefits the quality of all surface waters and the enjoyment of people living nearby.

The goals behind the Conservation Plan can be used throughout the City or in a single development. By implementing the Conservation Plan, the citizens of Isanti and elected officials will lay out a multi-year implementation budget, seek partnerships with others, and revise zoning ordinances.

Conservation Planning Approach

The Conservation Plan involved coordination between ecologist, engineers, and planners.

A land cover map of the planning area was created showing forests, wetlands, grasslands, lakes, streams, farmland, and developments. Natural resources were assessed through extensive field work. Ecologists rated the natural areas in Isanti for their value to conservation. Water resource engineers rated the capacity of Isanti's watersheds to absorb future development. Principles of ecology, wildlife management, and water resource management were used to develop the conservation plan. The Plan was built on important natural areas, connecting corridors, drainageways, wetlands and floodplains. Existing public and semi-public lands were incorporated into the Plan.

Several development scenarios were developed based on market and growth planning information. These scenarios blended the future growth needs and land use of Isanti with the future conservation needs, and created a plan which balances growth and conservation.

Finally, recommendations were established for implementing the steps of the Conservation Plan. Implementation starts by mapping past public investment in parks and open space, identifies opportunities to expand this public investment, and suggests ways in which existing zoning and associated ordinances could be used and modified to implement the conservation plan.

Inventory of Natural Resources and Stormwater Management

Important Natural Areas

Typical of the Midwest, Isanti has large natural areas as well as isolated remnants of the original natural vegetation. Approximately 20% of the Study Area remains in natural land cover that is in good to poor condition; see Figure 5-4A. The rest of the Study Area is made up of existing development and cropland. Small patches of natural vegetation are scattered throughout the developed and farmed areas. Although they may be small in size and in poor condition, they may be legally regulated wetlands or floodplains. They may also be valuable to the owner, preserve local water quality and flood control potential, or they may contain rare species and habitats. (See Appendix 1, Photos 1 & 2)

Figure 5-4A shows that the largest and best natural areas are located along the Rum River (Appendix 1, Photos 3 & 4) and within the large forested headwaters of Cedar Creek, at the southeast corner of the Study Area, as shown in Photos 5 & 6 in Appendix 1. The Rum River floodplain and bluffs support diverse floodplain forests, open wetlands, and oak forests and woodlands. A forest supporting a large variety of native ferns, sedges, and wildflowers is located where Isanti Brook meets the Rum River (Appendix 1 Photo 7).

The large forested headwaters of Cedar Creek contain a mosaic of wet meadows, marshes, swamps, and upland maple-basswood-oak forest. It is mapped by the Minnesota County Biological Survey as one of Isanti County's large natural area which contains a diverse, high quality natural community[1]. European buckthorn has escaped from hedges and is colonizing nearby forests near the City of Isanti. Farther away from the City, the presence of European buckthorn is minimal.

The natural areas found in Isanti are separated from each other by cropland, roads, and developments. Therefore it is difficult for disturbance-sensitive animal and plant species to move around and persist in the Study Area. As Isanti grows and develops, these species have a greater risk of disappearing from the study area than the common species. This habitat is referred to as being "fragmented". This habitat is easily invaded by European buckthorn and other harmful plants, which was observed in many of the small forest patches. Habitat fragmentation is a great challenge in natural resource planning. The Conservation Plan is intended to reverse and compensate for habitat fragmentation by reconnecting isolated natural areas.

Stormwater

In approximately three-quarters of the planning area, stormwater flows west to the Rum River and then it flows to the Mississippi River. The remainder flows largely southeast to Cedar Creek and from there to the Sunrise River and then eventually to the St. Croix River.

Due to the sandy soils within the planning area, a large portion of rainfall quickly enters wetlands, streams, and groundwater. As a result, the potential is low to moderate for potential flooding downstream in most of the Study Area, due to stormwater flow overland. As shown on Figure 5-4B and Figure 5-4C, several small watersheds within the Planning

[1] Map can be downloaded at http://www.dnr.state.mn.us/ecological_services/mcbs/maps.html

Boundary including 58, 55, 56, and 61, will experience flooding if developed without proper safeguards as described in the implementation process further in this chapter.

Streams located in the Planning Boundary are also susceptible to being damaged if their watersheds are not protected with proper safeguards. For example, Isanti Brook has low, vegetated banks and a sandy gravel bottom causing its flow to be continuous year-round, which in turn may be capable of harboring cold-water fish (Appendix 1, Photo 8). These features indicate stable hydrological conditions as a result of the headwater east of TH 65, which contain large, diverse wet meadows and adjacent upland habitats (Appendix 1, Photo 9). Currently, Isanti Brook's watershed is not overly developed; therefore, rainfall is entering the groundwater which is continuously replenishing the stream. Groundwater discharge into Isanti Brook and all of Isanti's streams is especially important in mid-summer and during the drought years.

Spirit Brook which begins east of TH 65 in a large wetland complex, is also fed by a long, narrow wetland that is the headwaters of Cedar Creek. When this wetland's water level is high, water flows west to Spirit Brook. When it is low, it flows east to Cedar Creek. All of the wetlands at the headwaters of Spirit Brook help to maintain year-round water flow and stable hydrology. Even in the downtown area, Spirit Brook appears natural, with wet meadows and relatively stable banks.

Park Brook, west of TH 65, has been channeled, while east of TH 65, it is encroached upon by development and agriculture. Located in the City of Isanti, the deep channel with its narrow floodplain, create a potential for bank erosion. By preserving and restoring the natural infiltration capacity of the Park Brook Watershed, it can reduce this problem and will also create a natural amenity in and near the City of Isanti.

Over 150 years ago, the Study Area was covered by natural vegetation causing the infiltration potential and groundwater recharge to be high. Ongoing development and agriculture have reduced this potential, along with having a high water table at some locations which cause an increase in the risk that water and groundwater quality maybe affected by development. Poor runoff management in future developments could compromise water quality and degrade the high quality streams of the planning area. With an increase of impervious surface area, surface water runoff will increase, while there will be a decrease in groundwater recharge causing hydrological instability in wetlands, groundwater, and streams and reduces plant variety. Surface runoff will carry additional sediment and phosphorous, which will stimulate the growth of algae in streams and wetlands. Proper mitigation can help to manage these potential harms by using best management practices and ecological stormwater management as described in this chapter.

Implementing the Conservation Plan

The Conservation Plan focuses on protecting important natural areas and reserving spaces for future stormwater management, while linking these areas to create a network of greenways that will be become the backbone of the community's recreation and trail locations. Figure 5-6A identifies existing ownership and patterns which then builds on existing investments in the public sector[2].

Existing Public Parks and Recreation Land

The City of Isanti already has a number of active parks but little passive parkland (Figure 5.6A). Some land is protected as park, recreation land, or wildlife refuge by the Minnesota Department of Natural Resources (MNDNR) and other government units.

Existing Public Interest Land

Additional land is protected from development by ownership or by easements held by the City of Isanti. Any of this land may contribute to conservation of natural resources if in the right location. Land of this type owned by Isanti includes the wastewater treatment plant, lands on school grounds, and lands in subdivisions to protect stormwater treatment basins. Easements held by Isanti and other governments include easements to protect natural areas at Villages on the Rum. Sanbrook Golf Course has public access and is treated as public interest land although it is privately owned[2].

Rum River Wild and Scenic Area Easement

The MNDNR purchased scenic easements on the Rum River requiring 150ft building setbacks from the river's ordinary high water level (OHWL) or 30ft from the bluffline, whichever is greater. Details on setbacks and management are available online3. Isanti Brook is a designated tributary of the Rum River and setbacks are 200ft from the OHWL.

Conservation and Restoration

Some natural areas are in good condition today, but in the future if the City and others do not actively manage these areas native plants and animals will decrease and non-native plants and animals will increase. The large natural areas in the best condition will sustain most of the area's native fish and wildlife species if they are actively managed.

Isanti can implement conservation over time using a menu of options and incentives (Figure 5.6B). The City of Isanti must weigh the costs and benefits of different options. Options may change but one thing is certain—implementing a conservation plan takes a commitment over years, the same as planning and building roads.

The conservation plan shows the different types and options for the conservation of land (Table 1). A conservation plan with options and incentives is fair to landowners. When landowners understand the options they can plan for the future and decide which option is best for them. Everyone in the community can see how different lands contribute to the conservation plan. Landowners then can pick developers who are committed to using conservation design principles. Developers and landowners can plan to donate easements on important natural areas, dedicate parkland that helps fill a gap in the conservation plan, or enter into landowner assistance agreements with government agencies and obtain cost-sharing for conservation practices.

2 See Appendix 2 for definitions and terms related to ownership and conservation

Table 1.

Conservation Plan Land and Acreage within Larger Study Area[4].

	Non-Wetland Acres	Wetland Acres	Total Acres
Existing Parks (Active & Passive)	96	3	98
Existing Public Interest Land	1,212	251	1,463
Future Proposed Park	139	211	350
Stormwater Management[5]	970	873	1,843
Future Public Land/Open Space	1,282	1,392	2,674
Land Subdivision Ordinance	1,425	262	1,687
General Zoning Ordinances	8,519	499	9,019
Total	**13,643**	**3,491**	**17,134**

1. Existing Parks (Active & Passive)

The current City's owned parks and recreation land already contribute to the conservation plan because they are owned in fee title by the City. The current investment in City parks and recreation land is approximately 98 acres (Figure 5.6A). The majority of this land is for active parks.

- *Option – Ecological Restoration and Management:* Some of these lands need ecological restoration and management. Without active management ecological conditions will deteriorate and benefits will be lost. Funding can be obtained for City-owned parks and recreation land from the Minnesota DNR Environmental & Conservation Partnerships Grant[6] program. This provides grants to municipalities for habitat improvement. The grants are for amounts of up to $20,000. A 50% municipal match is required and can be in in-kind contributions (e.g., volunteer labor) or cash. Funds are not available for the 2007-2008 biennium but may be available for 2009-2010.

2. Existing Public Interest Land

Existing public interest land is defined as land where the public has some kind of stake. The government either owns the land or holds an easement on the land. The land isn't necessarily dedicated for park and recreation use. This includes the 192-acre Athens Wildlife Management Area (WMA) which is the largest block of public land in the Study Area (Appendix 1 Figure 10). This WMA is dedicated to passive recreation use, including hunting.

Existing public interest land also includes school grounds that contain natural resources, such as the Rum River bluffs at the middle school.

Some public interest land limits the extent and type of development but allows development to take place. A large acreage of scenic easement was purchased along the Rum River by the Minnesota DNR. The scenic easement preserves the appearance of a wilderness experience for boaters using the Rum River. The Sanbrook Golf Course is included here as public interest land because it represents a large acreage of recreational open space used by the public and is at the headwaters of Park Brook.

3 See http://www.dnr.state.mn.us/grants/habitat/env_cons_part.html

- *Option – Enhance Rum River Scenic Easements.* The City of Isanti can improve the effectiveness of the Rum River easements through a partnership with the Minnesota DNR. The scenic easements provide opportunities to work with landowners, limit encroachment on the Rum River bluffs, and preserve existing natural plant communities. For example, the City could provide incentives to developers to increase the setback from the river and blufflines.

- *Option – Purchase Development Rights on Rum River Scenic Easements*. Purchase development rights for the most important areas on the Rum River. Examples include: 1) parcels adjacent to public land or public interest land (e.g., the boat ramp on the Rum River, the easement area at Villages on the Rum); 2) parcels with high quality natural areas (e.g., Isanti Brook); 3) parcels near downtown and residential neighborhoods.

- *Option – Administrative Designation.* Administratively designate portions of government and school sites that contribute significantly to the protection of future parks, recreation land, important natural areas, and a regional stormwater management system. For example, the City of Isanti and MNDNR own land along the Rum River which could be designated as passive parkland to protect natural resources.

3. Future Proposed Park

The future proposed park is mostly private land. Securing these lands will allow City residents to enjoy high quality recreational experiences and protect significant natural resources. It will also create a distinct character for the City.

One reason to purchase future proposed park land is to establish a "Grand Rounds[7]" recreation corridor that connects the Rum River to Isanti Brook and Spirit Brook. Acquisition of fee title is preferred but easements can be used. Some lands with high quality natural resources require ecological restoration and management.

- *Option – Focused Park Dedications.* Modify the park dedication provision of the City's regulations in order to focus dedications on implementing the conservation plan.

- *Option – Increased Park Dedications.* Increase the amount of parkland dedicated beyond the City's subdivision ordinance through incentives provided to developers and landowners.

- *Option – Park Bonding Initiative.* Carry out a bonding initiative for parks and recreation acquisition. This can be modeled after initiatives described in the Conservation Campaign[8].

- *Option – MNDNR Grant.* Seek a MNDNR Regional Park or Natural and Scenic Areas

---

4 All acreages have no overlapping boundaries. For example, Future Public Land/Open Space does not include the Future Proposed Park in its acreage. Also, Existing Public Interest Land was not included in Future Public Land/Open Space.

5 Areas of stormwater management that do not overlap with other categories. The actual acreage for stormwater management areas is 1,416 non-wetland acres and 1,193 wetland acres, totaling 2,609 acres.

6 See http://www.dnr.state.mn.us/grants/habitat/env_cons_part.html

grant to purchase environmentally significant land for park use. A 40% (Regional Park) or 50% (Natural and Scenic Areas) match is required. Applications for 2007-2008 period were due March 31, 2007[9].

- *Option – Regional Trail Grant.* Obtain a Regional Trail Grant[10] for regional trail system easements. Applications are due Feb 28th for the next year's funding cycle. A 50% cash match is required.

4. Stormwater Management

Stormwater management lands are privately and publicly owned but are essential to maintaining the existing hydrology of Isanti's streams, wetlands, and groundwater. If these lands are not utilized appropriately in future developments, there will be an increased risk for flooding, stream degradation and water quality damage to wetlands and groundwater. Stormwater management lands are mostly made up of streams, wetlands, ponds, floodways, floodplains, steep slopes, and upland buffers. They also include additional space that will require the installation of biofiltration swales, created wetlands, and infiltration areas. By establishing stormwater managements areas, it helps to preserve the existing hydrology and water quality as development occurs.

Individual developments can be designed to manage stormwater on site and municipalities can require that such developments have minimal impact on stormwater. If they are integrated with the regional stormwater system and designed to meet appropriate water and pollution control standards, the stormwater management areas will capture the majority of the sediment and nutrients in the surface runoff moving through them. These management areas will also infiltrate and slow stormwater runoff, preserving the hydrology of wetlands and streams. These areas are typically planted in permanent, deep-rooted vegetation and are not mowed. They may appear to be untended wild lands, but proper design places these stormwater areas at appropriate locations in a development to minimize this issue.

Zoning and ordinances that require preservation of flood control and water quality are not required in Isanti at this time, but could be developed and adopted. Ordinances in other communities have been demonstrated to work. Stormwater management is easier if new developments are concentrated in the smallest footprint possible, if natural vegetation is preserved, and best management practices and other approaches are employed to provide flood control and to protect water quality. In new developments, a stormwater utility easement can be held by the City on lands owned by others. It has been demonstrated that this approach will work for these alternative options to stormwater management.

- *Option- Stormwater Ordinance:* Create an ordinance that implements the stormwater portion of the Conservation Plan. A model ordinance exists for Isanti but should be reviewed to determine if it results in the implementation of this plan

- *Option- Wetland and Floodplain Setback:* Provide setbacks from wetlands a minimum of 30 feet and for floodways a minimum of 100 feet. The setbacks filter stormwater runoff, reduce pollution entering streams and wetlands, prevent erosion on streambanks and slopes, and they allow some infiltration of stormwater runoff. More infiltration of stormwater runoff can be achieved with wider setbacks.

- *Option- Stormwater Area Easement:* Permanently protect stormwater management areas using City-held easements on private land held by a home owners association

(HOA). Residents of the HOA will own an undivided interest equal to their portion of their residential development's open space. That portion of open space which residents own is subject to being taxed. The HOA is required to maintain the storm-water management area under an approved management plan using funds that are annually assessed on each lot.

- *Option- Low Impact Development Ordinance:* Revise ordinances to require that low-impact development (LID) practices be used in the design of new developments[11]. LID practices include allowing smaller lots and narrower streets to reduce the amount of impervious surface and turf, which do not infiltrate as much as stormwater runoff as natural vegetation. Other practices include the promotion of surface water treatment of stormwater runoff which includes bioswales, infiltration areas and created wetlands and by discouraging the use of storm drains and sewers. Promoting sheet-flow of stormwater runoff from streets through the use of ribbon curb or curb cuts and the promotion of using raingardens for infiltration and filtering of stormwater on lots and in areas where space is limited, are other practices to be considered.

- *Option- Stormwater Easement Donation:* Create an easement dedication program for lands used for stormwater management which will result in income tax deduction for the landowner in advance of purchase by a developer.

- *Option- Land Subdivision Ordinance for Stormwater:* Revise the land subdivision ordinance to support the implementation of the stormwater management portion of the Conservation Plan.

- *Option- Closed basin Ordinance:* In small, closed basins, design new development to provide flood storage with overflow to adjacent watersheds. The best opportunity to maintain existing infiltration capacity of the planning area may be to locate new development on cropland and other already altered land cover types.

- *Option- Retrofit Existing Developments:* In existing developments, benefits will be large if they install raingardens, infiltration swales, and other devices on unused land to increase infiltration to groundwater and reduce surface water runoff and sediment-phosphorus transport. The City of Burnsville installed raingardens in an existing neighborhood[12]. Runoff leaving the neighborhood with raingardens was just 10%, opposed to nearby neighborhoods without raingardens. Therefore rain-fall that is converted from surface runoff to groundwater feeds nearby streams and wetlands. Groundwater helps to preserve the water quality in Isanti's streams and wetlands by reducing hydrological bounce and by providing clean water which lacks sediment and phosphorous.

---

7 "Grand Rounds" is the recreational corridor system for the City of Minneapolis first conceived in the 1890s and nearing completion today.

8 See http://conservationcampaign.org

9 See http://www.dnr.state.mn.us/grants/land/natural_scenic.html

10 See http://www.dnr.state.mn.us/grants/recreation/trails_regional.html

- *Option- Acquire Stormwater Areas with Park Purchase:* Combine the creation and funding for the regional stormwater management system along with the City's park and recreation trail system for the City and it's nearby residents.

5. Land Subdivision Ordinance

Privately owned vacant developable land, as referred to as Land Subdivision Ordinance areas on Figure 5-10A, are important to complete the Conservation Plan. These parcels are not important for stormwater management areas and are poor candidates for future park and recreation areas. The intended development on these lands shall be influenced by revisions to Isanti's existing zoning ordinances. Zoning ordinances that require planning, the use of conservation design principles, and best management practices can achieve a sufficient level of conservation. Conservation in these areas will protect natural resources, provide flood control and water quality protection, accommodate trails, and will serve the recreational needs of residents. Incentives would be provided to developers and landowners to encourage the implementation of these new and revised aspects of the land subdivision ordinance. Several options are included below.

- *Option- Conservation Design Ordinance:* Study, modify, and adopt conservation design development ordinances and approaches used by other communities. These include the Conservation Development Design Ordinances of St. Croix County (WI) and the City of Lino Lakes (MN), the Rural Residential Cluster Development Ordinance for the Cities of Marine on St. Croix (MN) and the City of Chisago (MN). Conservation development designs are widely available[13].

- *Option- Performance Standards:* Develop performance standards for conservation development design to include an efficient open space and trail system, preserve significant open space in large blocks, identify and protect natural resources and stormwater management areas, protect slopes and setbacks from blufflines, stream banks and wetlands. In addition, minimize land clearing with partial replacement of cleared trees, reduce lot sizes and road widths to minimize impervious surfaces, minimize the use of traditional curb and gutter, storm drain, and storm sewers and minimize the use of steep-sided, rip-rapped floodwater storage ponds, also known as wet ponds.

- *Option- Incentives:* Create incentives for developers to use conservation development design principles that include a mixture of lot sizes that result in a bonus of increased lot numbers compared to the yield from the existing ordinance standards. In addition, expedite the review process for developers.

- Option- Open Space Protection and Management: Revise the land subdivision ordinance to promote the dedication of easements over open space and trails, establish a home owners association (HOA) to maintain the open space and trails, ensure the completion and use of the open space management plan by the HOA, ensure the HOA obtains funding to maintain the open space and arrange for annual inspections and repairs, as necessary.

6. Future Public Land/Open Space

Future public lands/open space are privately owned but include easement land (e.g., the Rum River Scenic Easements). They will give residents in the City of Isanti opportunities to enjoy

high quality recreational experiences while protecting significant natural resources within biking distance and creating a distinct character for the City.

Future public lands are often next to existing public lands or public interest lands, they have potential to create high quality active and passive recreational experiences, or they contain unique and valuable natural resources. Acquisition of fee title is preferred but easements can be used. Some of these lands require ecological restoration and management because they have high natural resource values and are at risk of losing their quality if not managed. Future use of this land includes a regional park and MNDNR hunting and recreation land.

- *Option – Critical Habitat Match Grant.* Obtain a Reinvest in Minnesota (RIM) Critical Habitat Match grant[14] to purchase land. The program is continuous but depends on state funding. A 50% match is required.

- *Option – RIM Reserve Easement.* Purchase easements on private lands using the MN Board of Water & Soil Resources' Reinvest (RIM) in Minnesota Reserve program[15]. This program purchases permanent easements and requires no match. However, enrollment in the program depends on the current land use and condition of the land. Cost-share is available for habitat restoration and management.

- *Option – Easement Donation.* Promote donation by private landowners of easements to non-profit conservation organizations (Minnesota Land Trust, Trust for Public Lands, etc.). The donor may receive an income tax deduction and/or property tax reduction depending on the type of donation. A property tax reduction is dependent on local valuation practices, which are not always supportive of conservation easement dedication.

- *Option – State Purchase.* Work with the State of Minnesota Lands Division[16] to acquire land in areas where the state already has a fee title interest (e.g., Athens WMA, Rum River DNR ownership tracts).

7. General Zoning Ordinances

Existing general zoning ordinances apply to the remaining private lands in the planning area and may be sufficient to implement the conservation plan. Conservation should still be the goal of land use and development and existing regulations will apply. Following are options to assist in this process.

- *Option- Enforce Existing Regulations:* Enforce appropriate regulations for wetlands, state protected waters and streams, shore areas, and floodplains.

- *Option- Private Land Stewardship:* Educate residents about different programs that provide advice to landowners for land improvements that focus on forest resources, such as the Minnesota DNR Landowner Assistance program called the Forest Stewardship Program[17]. MN Releaf provides grants up to $15,000 and requires a 50% private match.

---

11 For examples of LID practices, see http://clear.uconn.edu/tools/lid/index.htm

Appendix 1: Representative photographs of natural Areas

Figure 1. Remnant Sand Prairie in SE part of study area near Co. Rd. 9

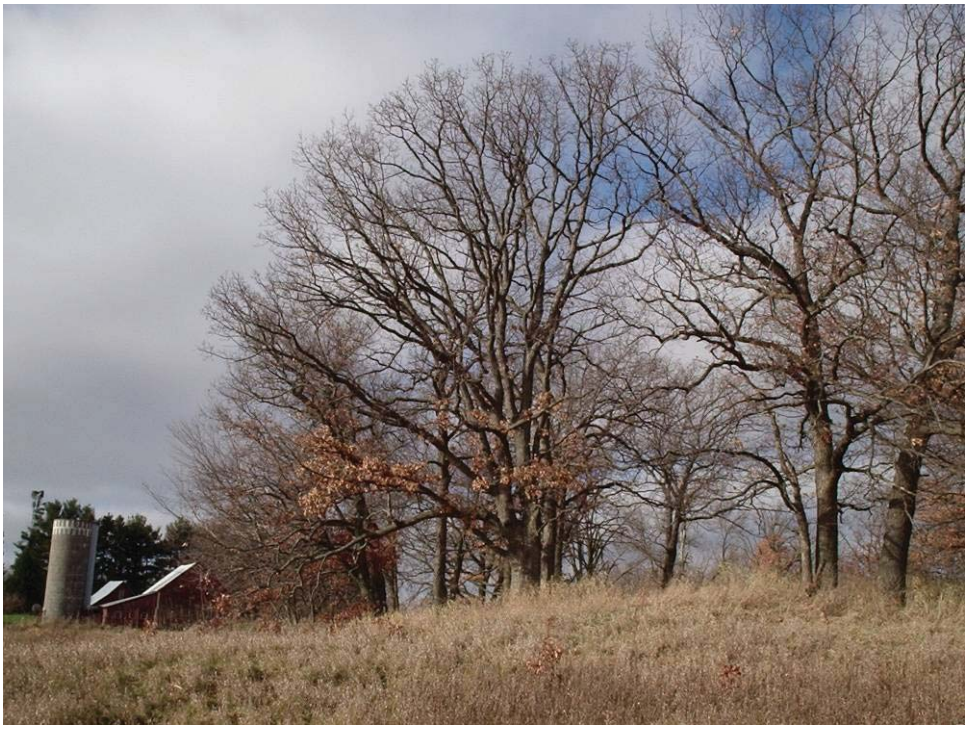

Figure 2. Oak Savannah near the Rum River

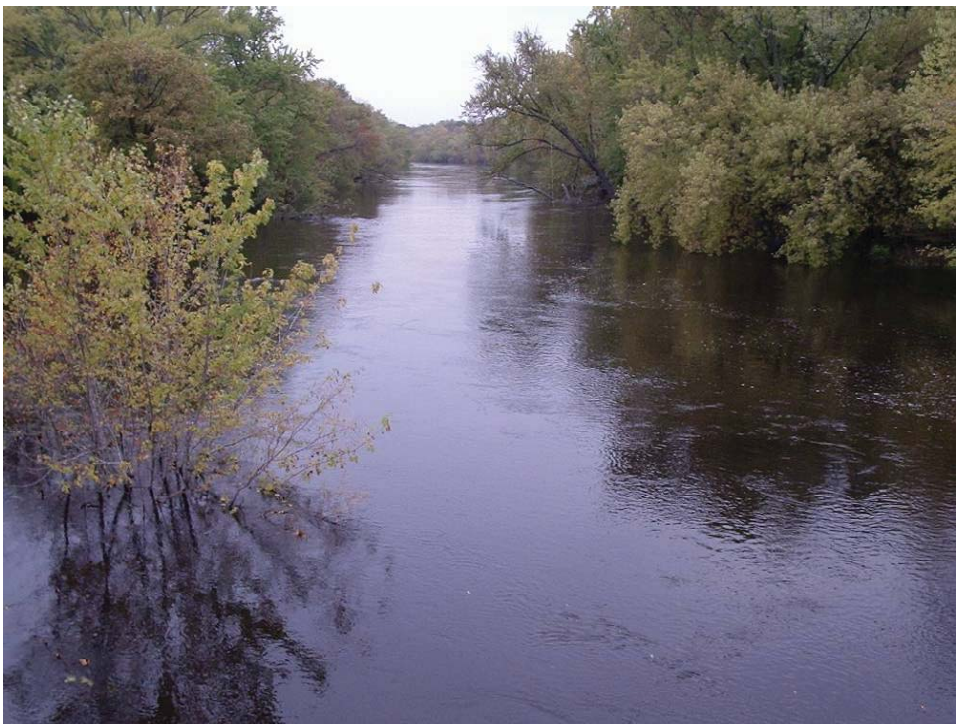

Figure 3. Rum River near Isanti

Figure 4. Floodplain along the Rum River with native sedges dominating the groundcover.

Figure 5. Oak-Maple-Basswood forest in the proposed regional park in the southeast part of the study area.

Figure 6. Alder-Tamarack swamp in the in the southeast part of the study area.

Figure 7. Forested valley of Isanti Brook with native groundcover of sedges, ferns, and wildflowers.

Figure 8. Isanti Brook showing good stream characteristics and water quality.

Figure 9. Wet meadow along the headwaters of Isanti Brook.

Figure 10. Athens Wildlife Management Area..

Appendix 2. Definition of Terms

Density. The number of housing units per acre. Density is used by municipalities to limit the number of dwelling units on a parcel of land in order to achieve community goals (e.g., "rural character"). A typical density used to preserve rural character is one residence per 2.5 or 10 acres. This low-density approach quickly spreads the impact of development over a large area and increases the likelihood that important natural areas will be degraded and future recreational opportunities will be lost. It does reduce the likelihood of water quality pollution by reducing the amount of impervious surface and density of septic systems. Overall the ecological damages of low-density development outweigh the benefits.

On the other hand, high-density rural (<0.5 units/acre) development preserves large patches of natural vegetation and future recreational opportunities. Conservation design principles can be utilized to eliminate the problems associated with small lot sizes, and ensures access and views to large blocks of open spaces. In combination with ecological stormwater management principles and BMPs, high-density rural development prevents flooding and protects water quality. The greatest challenge is septic and well systems. Community septic systems and wells are ideal, but are unfamiliar to many communities and therefore not allowed. Good planning and the use of open space for drain fields typically solve the issue of individual septic systems and wells and smaller lots.

Easement. A type of ownership on private land where the landowner continues to own all the rights to the land except the right to develop it. A second party owns the land development rights, usually a local municipality, a non-profit land trust, or the state or federal government. A municipality may also hold an easement on lands that are part of the regional stormwater management system (i.e., a stormwater utility easement).

Fee title. A landowner owns rights to use the land in certain ways. Full fee-title ownership means that the landowner owns all rights to use the land, including developing it for non-agricultural purposes.

Landowner assistance. There are many government programs that provide technical advice and share the costs of establishing conservation practices on private lands. These programs give landowners a greater stake in their land from a conservation standpoint, and can lead to short term protection. Landowners who own important natural areas can improve the ecological conditions using cost-sharing from federal or state government.

Public Land. Lands owned in fee by a City, township, county, or other government unit. These lands include parks, recreation areas, wildlife management areas, protected natural areas, and also sites for schools, libraries, public hospitals, and government office buildings.

Public Interest Land. Lands where a City, township, county or other government unit owns a right to use land or restrict some uses of the land. The public interest is purchased by the government, or donated by a landowner. Examples of a public interest are easements for utilities, stormwater management, and visual setbacks from rivers and bluffs.