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(AS REPRESENTED IN THE FULL TEXT OF THE MODEL ORDINANCES – PLEASE SEE FOLLOWING CUT-SHEETS THAT SUMMARIZE EACH OF THE MODEL ORDINANCES)

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I. NATURAL AREAS WITHIN MACOMB COUNTY

Like many areas of Southeastern Michigan, communities in Macomb County are trying to balance the demands of growth with environmental preservation. Many new methods of encouraging sustainable development have emerged over the past decade, allowing growth without sacrificing the character or natural features of an area. This creates a win-win situation – development professionals can produce a successful product, and the community is left with environmental features that continue to perform important functions. Functions such as maintaining water quality and quantity, floodwater retention, air cleaning properties, wildlife habitat and travel corridors, sources of genetic diversity, and recreation. Functions that sustain the quality of life in a community.

Sustainable development methods also provide design approaches that use preserved features to the economic benefit of the developer. So, rather than believing preservation efforts are an infringement on property rights, preserved environmental features actually increase the value of developed properties, and the return to the developer.

Natural areas are fundamental to a healthy environment but they also play a role in maintaining a strong economy and quality of life. Preservation of these areas is essential. And protection becomes even more challenging as growth in population and development increases.

Changes Over the Past Ten Years

In the period from 1990 to 2000, Macomb County's population increased approximately 10 percent and is projected to increase another 13 percent from July 2004 to 2030. The majority of Macomb's population increases are expected in the middle townships/communities and along the border with Oakland County. The lower tier of communities is expected to lose population while the four northeastern townships can expect moderate growth in population (Southeast Michigan Council of Governments, SEMCOG, 2004).



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Natural Features or Buffer Ordinance . . . 1¶
Resource Protection Overlay District . . . 1¶
Regulations and Site Plan Review . . . 1¶
Example Ordinance Language . . . 1¶
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¶ Carlisle/Wortman Associates, Inc.¶
¶ August 16, 2004¶
¶ Introduction

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Related to this growth, data from SEMCOG (2004) shows increases in land uses between 1990 and 2000, classified as residential, commercial/office and industrial. Associated with these changes is a corresponding decrease in active agricultural land (-5 percent) and grassland and shrub lands (-3 percent). As of 2000, approximately 154,864 acres (242 square miles) of land was considered developed, which represents a 15.5 percent increase since 1990. On the positive side, woodlands and wetlands have remained relatively stable and water experienced a slight increase (SEMCOG, 2004). Note that the increase in water may be partly due to improvements in mapping technology.

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An important trend that is occurring within Macomb County, and throughout the Southeast Michigan region, is that land is being consumed at a faster rate than the increase in population. Macomb County's 10 percent increase in population was accompanied by a 15.5 percent increase in the amount of developed land. This, in part, can be attributed to the lower densities (fewer housing units per acre) of recent residential developments, and fewer people living in each housing unit. Instead of 3.15 units per acre (1990), there are now 3.11 units per acre (2000) in the County. And the number of people per housing unit has also decreased from 2.68 (1990) to 2.52 (2000). These trends are forecasted to continue.

What This Document Provides

Seeking development patterns that work within the framework of the County's environmental resources is important to maintaining and improving the quality of life for Macomb County residents. The information in this document provides community staff and public officials with a comprehensive set of methods to incorporate environmental protection into community documents that will preserve and enhance your community's long-term environmental and economic health. These ordinances can be used individually, or developed to work together for a more thorough protection program. When implemented County wide, the ordinances will provide greater consistency between communities in their environmental preservation and development efforts, as well as help to meet the overall County's goals of natural area protection.

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This document is organized into chapters, by environmental topic. Topics include storm water management, floodplains, wetlands, open space, native landscaping, and woodland/tree protection. Each chapter includes a general discussion about the topic, and then provides example ordinance language. Sidebars within the ordinances discuss important components of each regulation, and issues to consider. **An important point to remember is that these ordinances were written to include a wide range of provisions – some of which may or may not be appropriate for your community.** Individual communities need to decide which provisions work best in the context of their overall development regulations. Therefore, the model language needs to be adapted to fit your community's specific needs and conditions.

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Deleted: ections, Plans and Policies, Environmental Ordinances, and Example Ordinances. The Plans and Policies section is a general overview of recommended initial steps for developing ordinances that protect natural resources and water quality. The Environmental Ordinances section is more focused and addresses ordinance development for wetlands, woodland/trees, floodplain management, storm water management, and native landscaping. This section specifically identifies key elements of an ordinance vital for protecting a particular natural resource. .

SIDEBAR TEXT

- The Macomb County Department of Planning & Economic Development can provide local governments, residents, businesses and fellow county departments a variety of services. We offer expertise in land use and environmental planning, economic development, community development, graphics and GIS. Please feel free to contact our department at (586) 469-5285. or at <http://macombcountymi.gov/planning/>

Master Plan as a Basis

Relevant to most of the models included in this document is how the Master Plan provides a basis for any regulatory ordinance. A community's Master Plan is the only officially adopted document that sets forth an agenda for the achievement of development goals and policies for the entire community. It provides the basis upon which zoning and land use decisions are made.

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A community's Master Plan also establishes the basis for the protection and preservation of natural resources and the justification for ordinances to achieve natural resources preservation/protection and ecologically-aware development. Both the Municipal Planning Act (P.A. 285 of 1931) and the Township Planning Act (P.A. 168 of 1959) give broad authority for the consideration of natural resource protection and development rules and guidelines in the formulation of the Master Plan. Whenever new environmental protection ordinances are adopted, justification for protection of these resources should be provided in the Master Plan, or Recreation Master Plan, through mapping, analyzing, and prioritizing natural areas for preservation. This could be accomplished by amending the Master Plan, or adopting a Natural Areas Plan or Greenways Plan. Either plan could be separate from the Master Plan or a chapter within the Master Plan.

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¶ Statement of a community's goals and policies, and comprehensive vision for the future.¶
¶ Aids in daily decision-making. The Plan guide the Planning Commission and elected officials in their deliberations on zoning, subdivision, capital improvements and other matters relating to land use and development.¶
¶ The Plan provides the statutory basis upon which zoning decisions are based. Both the Township Rural Zoning Act (P.A. 184 of 1943, as amended), and the City and Village Zoning Act (P.A. 207 of 1921) require that the zoning ordinance be based upon a plan designed to promote the public health, safety, and general welfare.¶
¶ The Plan is an educational tool and gives citizens, property owners, developers, and adjacent communities a clear indication of the community's direction for the future.¶
¶

Deleted: There are three tools that can be incorporated into the Master Plan to further protect and preserve a community's natural resources: Natural Areas Plan, Storm Water Master Plan, and Greenway Plan. Each is described below.

Meeting Phase II Permit Requirements

The ordinances in this document could be used to help meet some of the Phase II storm water regulations now being addressed by area communities. Since 1972, the Clean Water Act has been operating to reduce and control *point-source* water pollution. The next phase of the law (or "Phase II") is requiring communities that have "urbanized areas" within their boundaries to help control *non-point source* (storm water) water pollution. Urbanized areas are defined by using criteria from the 2000 U.S. Census. Non-point source water pollution is defined as pollutants that wash into streams, lakes and other water bodies with storm water. Storm water systems, particularly older ones, often don't treat the water that flows through storm pipes, and many times discharge storm water directly into surface water features.

One component of the Phase II permit is requiring governmental jurisdictions to reduce pollutants that enter storm drains from new developments, and re-development sites (called the “Post Construction Storm Water Management Program for New Development and Redevelopment Projects”). These rules require that communities implement non-structural and/or structural “Best Management Practices,” or BMPs. Non-structural BMPs are preventative actions that reduce the amount of runoff from a site; as well as minimize the amount of pollutants that runoff carries with it. Ordinances protecting natural features, such as wetlands and woodlands, preserve the land’s natural storm water holding capacity (reducing runoff), as well as some of nature’s treatment methods (minimizing pollutants). For instance, wetland plants remove many chemical pollutants from storm water. Infiltration of water into a woodland also helps to filter the water as it moves through the soil.

Working with Ecosystems and the Michigan Natural Features Inventory

So much effort is being extended to protect existing natural features for the simple reason that they cannot be re-created to a standard that provides the same benefits as efficiently or completely as a natural system. While many have achieved a certain degree of success, the “built” systems cannot be constructed, within budgets and timeframes, to “replace” what had been destroyed. Therefore, a good philosophy to follow is its better to preserve natural systems than try and create new ones.



To this end, some of the preservation tools environmental planning has to offer are based on an “ecosystem” approach to land management. To start with a definition, an “ecosystem” consists of a dynamic set of living organisms (plants, animals, and microorganisms) all interacting among themselves and with the environment in which they live (soil, climate, water, and light). An example of an ecosystem is a wetland that receives its water from an adjacent stream, and from ground water coming off of a wooded hillside. As you can see, this ecosystem consists of more than one feature – it

includes a wetland, stream, woodland and steep slopes, as well as all the plants and animals that live in each. While this example shows an ecosystem at a relatively mid-sized scale, ecosystems can also occur at very small scales (a depression in a woodland that collects water in the spring) or at a huge scale (a wetland complex that covers hundreds of acres, provides flood storage for an adjacent river, and supports both marsh and woodland vegetation, among other functions). The important idea is that adjacent natural features interact with and are impacted by each other. This interaction allows them to function and provide the benefits we depend on. See the graphic on a following page which shows how land forms are connected to one another, and the development potential of each.

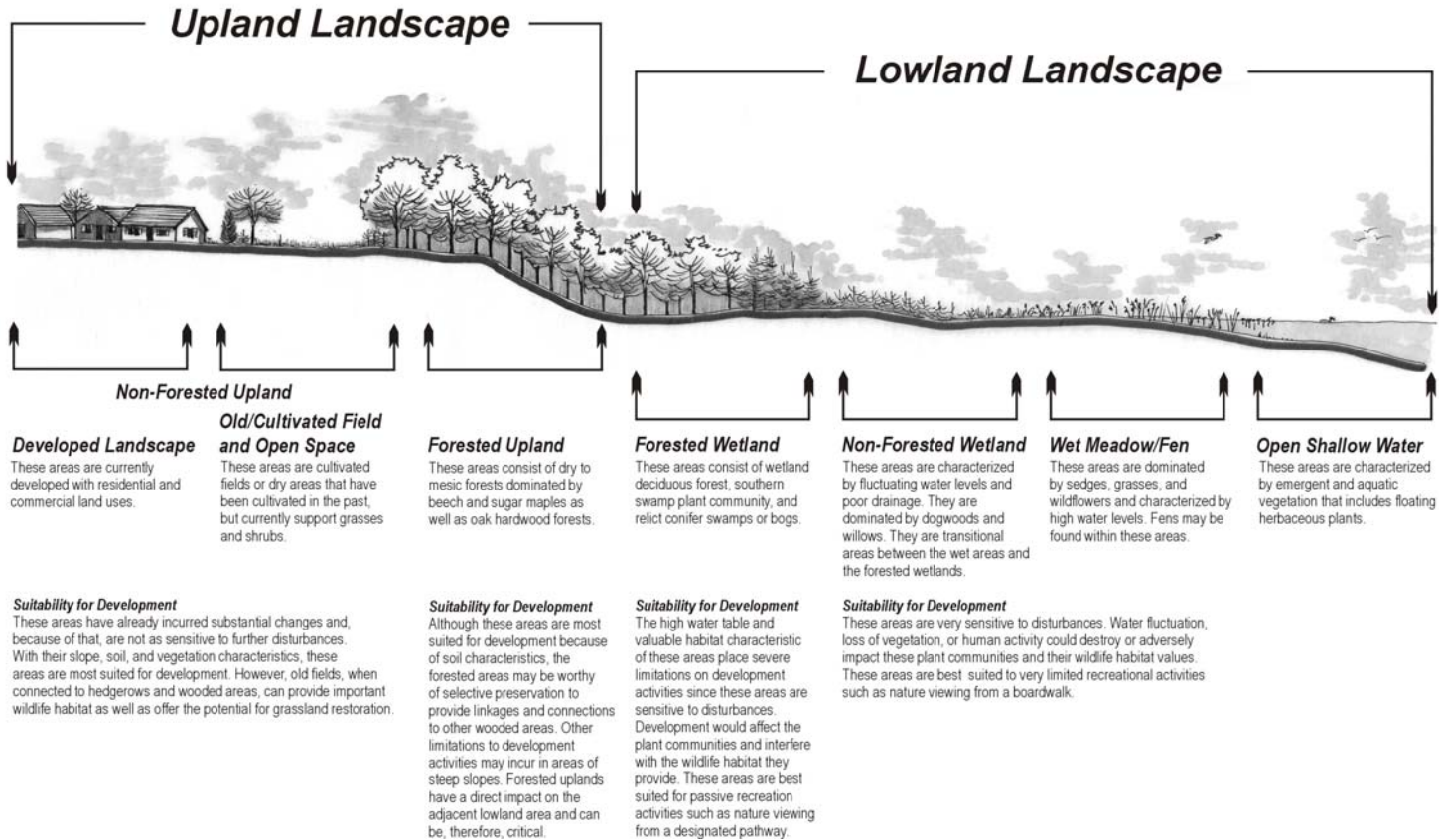
Applying this idea to land development then helps us understand that preserving one natural feature in isolation will not ultimately preserve that feature. Our example wetland would not continue to exist over time if it was cut off from its water sources, the stream and uplands, by mass grading or construction of buildings or parking areas. Therefore, a general concept to keep in mind in preparing any environmental preservation ordinance is identifying how that feature interacts with other nearby natural features, and encouraging designs that preserve this connection.

Another related concept is that natural features do not respect property boundaries. Therefore, preservation techniques practiced on one property should be considered for an adjacent property, to preserve the natural systems (and its connections to supporting land forms) across properties.

To help communities preserve these connections, the County has recently contracted with the Michigan Natural Features Inventory (MNFI) group to identify and rank natural areas within the County. MNFI is a group of biologists, botanists, ecologists and wildlife specialists affiliated with the Michigan State University Extension Service. They inventoried the County to locate potential conservation areas made up of high quality and unique natural areas. They looked for areas that were intact (not fragmented), that had wetlands and/or riparian corridors, and areas that were wooded. Once areas were identified, they were rated based on their size, size of the “core” area (total size minus 300’ wide buffer), presence of stream corridors, landscape connectivity, restorability of surrounding lands, fragmentation, vegetation quality, and known occurrence of rare species.

A total of 359 sites, or 23,560 acres (36.8 square miles or 7.6% of the County), were identified as potential conservation areas. The sites were delineated by using the boundaries of the natural resources themselves rather than political or property boundaries. The sites were then categorized into “Priority One,” “Priority Two,” and “Priority Three” categories for additional study and preservation. The Macomb County Department of Planning & Economic Development has the results of this inventory, and maps that show the location of the potential conservation areas. This data is available to communities on the County’s web site (www.macombcounty.mi.gov/planning).

Typical Land Cross-Section



Adapted from the Shiawassee and Huron Headwaters Resource Preservation Project.

How can the MNFI data be used by communities looking to protect environmental resources? As you'll see when reading the ordinance language, several ordinances require that data identifying a community's resources (whether it be woodlands, wetlands, or areas within an overlay district) be included as part of the ordinance. The MNFI data can be used to either provide this information, or supplement it. The data can also help communities prioritize areas for open space acquisition, preservation through conservation easements, or revising zoning designations to acknowledge the sensitive nature of some sites. The MNFI report also encourages communities to use the data to work together and establish an open space system of linked natural areas throughout Macomb County.

ENVIRONMENTAL ORDINANCE RESOURCES

STORMWATER MANAGEMENT RESOURCES

- 1) **Center for Watershed Protection Website.** www.cwp.org.
- 2) **EPA Website.** Menu of Best Management Practices for Stormwater Phase II. www.epa.gov/npdes/stormwater/menuofbmps/menu.cfm.
- 3) **Center for Watershed Protection.** *Better Site Design: A Handbook for Changing Development Rules in Your Community.* August, 1998.
- 4) **Schueler, Thomas R. and Holland, Heather K.** *The Practice of Watershed Protection.* Center for Watershed Protection. 2000.
- 5) **Southeast Michigan Council of Governments (SEMCOG).** *Land Use Tools and Techniques. A Handbook for Local Communities.* March, 2003.
- 6) **Southeast Michigan Council of Governments (SEMCOG).** *Opportunities for Water Resource Protection in Local Plans, Ordinances, and Programs. A Workbook for Local Governments.* August, 2002.

FLOODPLAIN RESOURCES

- 1) **Federal Emergency Management Agency.** *Answers to Questions About the National Flood Insurance Program.* March, 1992. Also look on the FEMA website at www.fema.gov under the “Mitigation and Flood Insurance” button.
- 2) **Morris, Marya.** *Subdivision Design in Flood Hazard Areas.* American Planning Association. 1997.
- 3) **Planning and Zoning Center, Inc.** “Floodplain Management.” *Community Planning Handbook: Tools and Techniques for Guiding Community Change.* Michigan Society of Planning Officials. 1991.
- 4) **Southeast Michigan Council of Governments.** “Floodplain and Stream Corridor Protection.” *Land Use Tools and Techniques. A Handbook for Local Communities.* March, 2003.
- 5) **Association of State Floodplain Managers.** www.floods.org.
- 6) **National Flood Insurance Program Community Rating System CRS Coordinator’s Manual. 2002.** Federal Emergency Management Agency.

WETLANDS RESOURCES

- 1) **U.S. Environmental Protection Agency, Office of Wetlands, Oceans, and Watersheds.** www.epa.gov/owow/wetlands.
- 2) **Michigan Department of Environmental Quality.** Wetlands protection information can be found at www.michigan.gov/deq and pressing the “Wetlands Protection” button.
- 3) **Clinton River Watershed Council.**
- 4) **Books:**

Dean, Lillian F. *Protecting Wetlands at the Local Level: Options for Southeast Michigan Communities.* Rouge River Watershed Council. June, 1991.

Tip of the Mitt Watershed Council. *Living With Michigan’s Wetlands: A Landowner’s Guide.* 1996

Tip of the Mitt Watershed Council. *Preserving Michigan’s Wetlands: Options for Local Governments.* 1997.

RESOURCE PROTECTION OVERLAY RESOURCES

- 1) **Southeast Michigan Resource Conservation & Development Council,** www.semircd.org/index.php.

NATURAL FEATURE SETBACK RESOURCES

- 1) **Southeast Michigan Resource Conservation & Development Council.** <http://www.semircd.org>
- 2) **Schueler, Thomas R., H. K. Holland.** 2000. *The Architecture of Urban Stream Buffers* in The Practice of Watershed Protection. Center for Watershed Protection. Ellicott City, Maryland.
- 3) **National Conservation Buffer Initiative – Natural Resources Conservation Service.** <http://www.nhq.nrcs.usda.gov/CCS/Buffers.html>
- 4) **Center for Watershed Protection.** www.cwp.org.
- 5) **Better Site Design: A Handbook for Changing Development Rules in Your Community.** 1998. Center for Watershed Protection. Ellicott City, Maryland.

6) State NRCS and FSA Buffer Initiative Contacts:

Steven V. Law, DC
USDA-NRCS
2343 N. US 27 HWY
St. Johns MI 48879
517-224-8769 x116
fax: 517-224-1033

Chris Coulon, PAS
USDA-NRCS
3001 Coolidge Rd., Suite 250
East Lansing MI 48823-5243
517-324-5244
fax: 517-324-5171

Bob Payne, Program Specialist
USDA-FSA
3001 Coolidge, Suite 100
East Lansing MI 48823
517-337-6660 x1215
fax: 517-337-6898

7) Fish and Wildlife Agency Buffer Initiative Contact in Michigan

Mark Sargent
Private Lands Wildlife Biologist
Wildlife Division Private Lands Office
8903 East Stoll Road
East Lansing, MI 48823
Phone: (517) 641-6667
Fax: (517) 641-6525
widdnr@voyager.net

8) Conservation Buffers Work...Economically and Environmentally.

<http://www.nrcs.usda.gov/feature/buffers/pdf/BufferBr.pdf>

NATIVE VEGETATION RESOURCES

- 1) **Springfield Township Native Vegetative Enhancement Project.** This project includes printed information sheets for the homeowner and development professionals, and an interactive native plants CD that lists more than 230 plants native to southeastern Michigan. Contact the Township at 248-846-6510.
- 2) **Wild Ones Natural Landscapers.** National, non-profit organization dedicated to educating the public about native plants. www.for-wild.org.

- 3) **Environmental Protection Agency (EPA).** www.epa.gov/glnpo/ Under “Other Topics of Interest” at the bottom of the page, hit the “Landscaping with Native Plants (Greenacres) button.
- 4) **Michigan Native Plant Producers Association.** Professional association in south Michigan. Plant and seed guide available at the following link: www.nohlc.org/MNPPA.htm.
- 5) **Macomb Land Conservancy.** www.savingplaces.org.
- 6) **Books:**

Barnes, B.V. and Wagner, W.H., Jr. *Michigan Trees. A Guide to the Trees of Michigan and the Great Lakes Region.* University of Michigan Press, 1981.

Hightshoe, Gary L. *Native Trees, Shrubs, and Vines for Urban and Rural America.* Van Nostrand Reinhold Co., 1988.

WOODLAND AND TREE RESOURCES

- 1) **Guidelines for Developing and Evaluating Tree Ordinances.** 2001. International Society of Arboriculture.
- 2) **U.S. Forest Service.** www.fs.fed.us/.

MACOMB COUNTY ENVIRONMENTAL MODEL ORDINANCE TECHNICAL REVIEW COMMITTEE

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 Glenn Wynn, AICP, Shelby Twp.
 Justin Robinson, MCPEDD

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¶
 A community’s master plan and ordinances lay out a community’s future vision of the character of its landscapes, the goals of its citizens, and the policies it has adopted to achieve this vision. Any plans separate from the master plan must also reflect a community’s future vision. ¶

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¶
 A Natural Areas Plan identifies environmentally significant areas of the community that should be preserved in their natural state and those that can be compatibly integrated with development. It can occur as part of the Master Plan or as a stand alone plan. The plan not only protects natural areas but also the functioning of these areas. There are five (5) steps in developing a Natural Areas Plan and they are:¶

¶
Combining the Data. Natural features data should be mapped together with human-made features. This data could include wetlands, woodlands, wildlife habitat, wetland riparian systems, upland landscape fabric, publicly-owned properties and recreational lands, and other corridors such as human-made corridors. ¶

¶
Analyzing the Data. Identify environmentally sensitive areas on the map from step 1. ¶

¶
Identifying Connections. Identify areas on the map where sensitive areas overlap and connect. These could form natural corridors and could be any combination of rivers, tree rows, natural beauty roads, and utility lines. ¶

¶
Prioritizing Areas and Identifying the Protective Tools. The next step involves assessing the relative quality of each natural area. Criterion include, size, level of fragmentation, riparian corridor, wetlands, restorability, and occurrence of rare plant communities or species. Each area is then evaluated for their fitness for development. ¶

¶
Develop Tools for Natural Features Protection. Example tools are listed below.¶

¶
 Preserve open space through fee simple purchase and/or conservation easements.¶
 Continue to use land conservation and clustering tools to preserve existing natural features and their functioning.¶
 Protect non-regulated wetlands from development and water quality degradation. Best management practices should be implemented for the capture and filtering of storm water and storm water infiltration to treat storm water before it reaches any existing wetland.¶
 Use low-impact road crossing techniques to protect the riparian corridor and existing hydrology of rivers and st... [1]

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Protect non-regulated wetlands from development and water quality degradation. Best management practices should be implemented for the capture and filtering of storm water and storm water infiltration to treat storm water before it reaches any existing wetland.

Use low-impact road crossing techniques to protect the riparian corridor and existing hydrology of rivers and streams.

Storm Water Master Plan

A comprehensive Storm Water Master Plan should be developed to protect a community's water resources. The plan should address development, implementation, and enforcement of controls. It should also require the development of ordinances or other regulatory measures to address post-construction runoff. A list of example protection tools follow.

1. Ordinances. Regulation of storm water runoff from developed sites is attainable through the use of ordinances. The ordinances should address storm water quality, and limit the rate of runoff to pre-development rates.
2. Best Management Practices (BMP). Require the use of structural and non-structural BMP.
3. BMP Maintenance. Require the use of long-term BMP to ensure ongoing protection of water resources.

4. Site Review Process. Develop specific requirements during the site plan review process.
5. Minimize Illicit Discharges. Requirements should be established to limit illicit discharges or spills by commercial operations.*Greenway Plan*

A Greenway Plan serves many purposes depending on a community's goals. The primary purpose is perhaps the protection of natural features. The Plan may also address pathways for alternate modes of transportation, and recreational opportunities. Greenway Plans are particularly relevant to water resource protection because of their linear character of which rivers and streams are ideal corridors. As discussed earlier, master plans should have a set of goals and objectives to help to guide the development of the plan and assist in decision-making.

Development of a Greenway Plan involves several steps that combine several layers of information about the community including information on natural resources, and cultural features.

1. Determine Greenway Elements. Identify important community destinations such as parks and schools that would benefit from a non-motorized connection.
2. Determine Natural Features. Identify natural river and stream corridors and other natural features.
3. Determine Human-Made Features. These include roads, abandoned railroad rights-of-way, tree-rows, Natural Beauty Roads, utility lines, and existing and planned amenities such as trail systems.
4. Create and Map the Greenway. When all of the data is mapped areas of overlap and potential connections are revealed. Routes that connect communities increase the value of the greenway for alternative transportation and recreation.

The Greenway Plan may become part of a community's overall Master Plan or function as a stand-alone plan.