

3.2 Protection Activities

Washtenaw County is implementing programs under Federal law and has adopted several regulations that contribute to surface water protection.

Activity #11 Clean Water Act

Section 303(d) of the *Federal Water Pollution Control Act of 1972*, commonly called the Clean Water Act (CWA) requires each state to identify surface waters within its boundaries that are not meeting, or expected to meet, water quality standards (WQS) (Figure 8). The law further requires the states to prioritize their listed waters for development of Total Maximum Daily Loads (TMDLs) to protect the seven designated uses described in Table 2.

Each one of the uses has associated water quality standards. Water bodies that meet or exceed the associated water quality standards are in attainment of the standard set by the CWA. A policy of antidegradation is applied to these water bodies. All water bodies that are not meeting WQS for a designated use are in non-attainment and scheduled for TMDL development.

A TMDL can be best described as a budget for pollutant influx to a watercourse (TMDL locations on Map 8). This “budget” must account for all of the potential factors for the water body not meeting the WQS. A TMDL requires development of a system-wide strategy that will lead to attainment.

Twenty Washtenaw County waterways have been identified as being in non-attainment of the WQS (Table 3). Eight have plans and are in the process of implementation to achieve the TMDL. Two have reached attainment and have been removed from the list. The Allen Creek TMDL is combined with the Huron River TMDL. The remaining nine that do not meet the WQS are scheduled to develop plans by 2011.

FIGURE 7: Clean Water Act Flowchart



Source: <http://www.epa.gov/watertrain/cwa/bigpic.htm>, Dec, 2005.

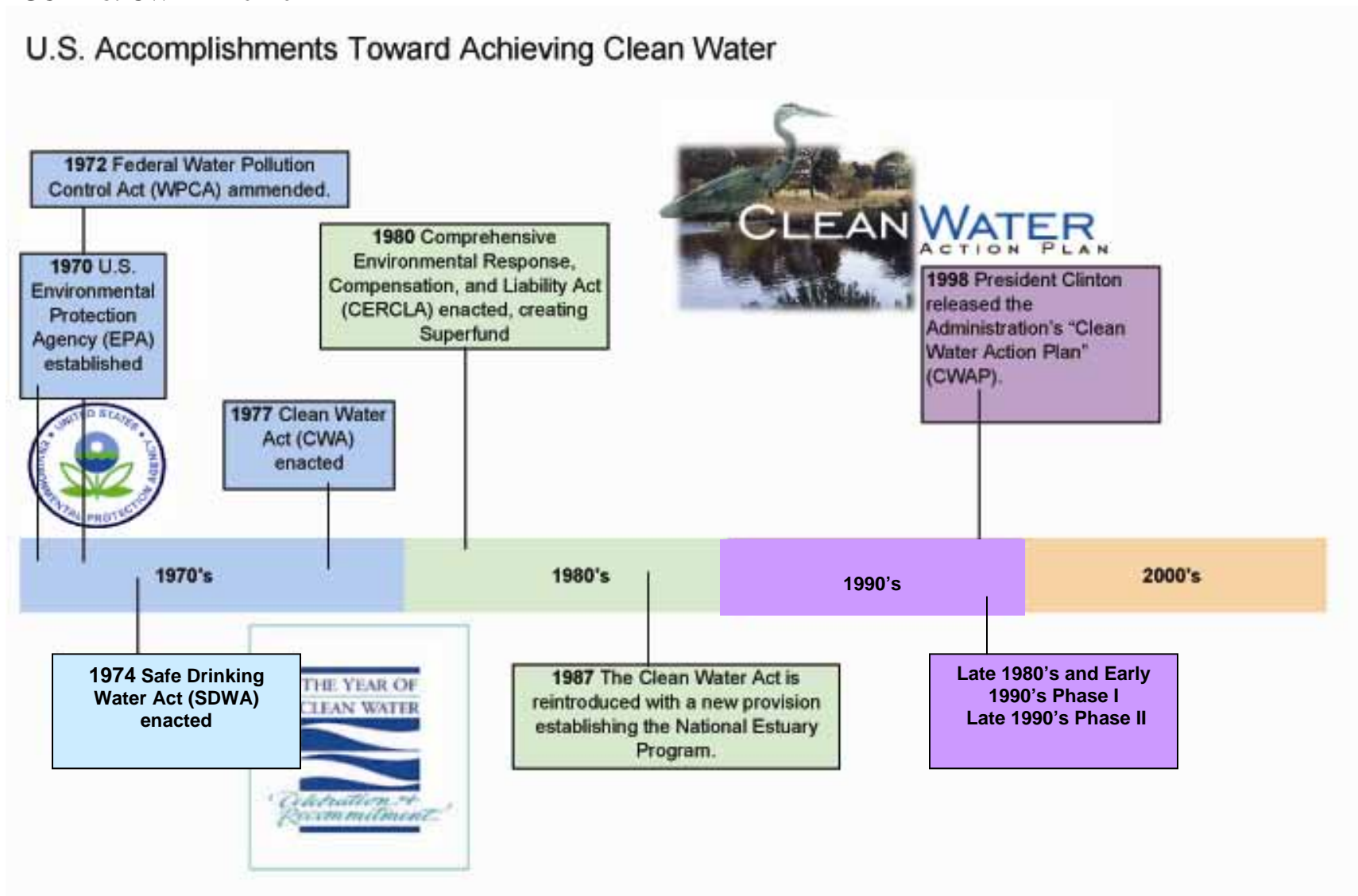
There are several policy tools and programs that the CWA establishes to help to implement TMDL strategies outlined for a water body in non attainment.

- **National Pollution Discharge Elimination System (NPDES)** – A permitting system designed to regulate all point source discharges into waterways. An NPDES permit generally sets effluent limits for specific pollutants to be released over a specific time period. In the mid 1980’s, this program was extended to include storm water. The NPDES prescribes programs and strategies to reduce these nonpoint sources of pollution in an attempt to regulate the threats they pose to water quality.

- **CWA Section 319 Grants** – Section 319 is designed to address nonpoint source pollution. Approximately 40% of all water bodies on the 303d list are affected solely by nonpoint source pollution³. Section 319 funds programs aimed at reducing the negative effect of nonpoint source pollution on water quality. The 319 program grew from its initial funding in 1987 of \$38 million to \$238 million in 2004.
- **Section 401** – Section 401 gives the state authority to certify that all federal permits granted within its borders are consistent with the goals outlined in the Clean Water Act. The 401 permit program is implemented by MDEQ with EPA oversight. This right of certification is also granted to all states that are downstream of any federal permit, and whose water quality may also be affected by the federal permit application.
- **Section 404** – Section 404 prohibits the placement of fill, sediment, and dredged materials into any waters of the United States. This section is most commonly applied to wetlands. The federal government defines wetlands as: "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil." [33CFR328.3(b)]. Michigan is one of only two States in the Country that is authorized to implement a permit program under section 404 at the state level.
- **State Revolving Loan Fund** – The Clean Water State Revolving Loan Fund (CWSRF) is another grant program that supports localized water quality projects. The program provides low interest loans and requires state matching funds. Projects implemented under this program include waste water treatment plant construction and improvements, wetland protection, clean up activities, and storm water treatment facilities.

³ Source: <http://www.epa.gov/watertrain/cwa/cwa52.htm>, December, 2005.

FIGURE 8: CWA Timeline



Activity #12 Michigan Drain Code

Most waterways in Washtenaw County are “Waters of the State” meaning they are under State jurisdiction. However, there are over 600 creek segments and constructed storm water management systems or drains that are within the County Drain Commissioner’s jurisdiction (Map 9).

A county drain may be an open ditch, stream, underground pipe, retention pond or swale that conveys storm water. These drains become designated as “county drains” through a petition process where either property owners or a local municipality petitions the Drain Commissioner to establish a county drain.

Drains are systems that are designed to provide storm water management, drainage, flood prevention and stream protection for urban and agricultural lands. The Drain Commissioner also develops standards and design criteria for management of storm water runoff in new developments, with a goal of protecting private property and natural resources.

County drains were originally established to create arable land, prevent local flooding, and to protect the public from mosquito borne diseases. Once a drain is established, the Drain Commissioner is required to maintain it and remove obstructions that may impede flow. Maintenance work is then charged to the landowners of the drainage district, and the governmental jurisdictions in which the drainage district is located, as a special assessment. Most of the drains and drainage districts established over the last 15-20 years were designed for flood prevention and storm water conveyance and are more often associated with suburban development than agricultural uses.

The State Drain Code limits minor drain maintenance projects to a maximum expenditure of \$2,500 per mile of drain. Minor maintenance is often initiated by request from landowners or municipalities. These ‘service requests’ are followed up by county staff. In an average year, 200+ service requests are handled by Washtenaw County. Pro-active maintenance, such as mowing and brush cutting, is conducted on an annual schedule.

Major drain projects (generally defined as those with costs in excess of \$2,500 per mile) are initiated by residents or municipalities through a petition process. Costs are recovered through special assessments levied on private properties, local governments, county roads, railroads, and state highways.

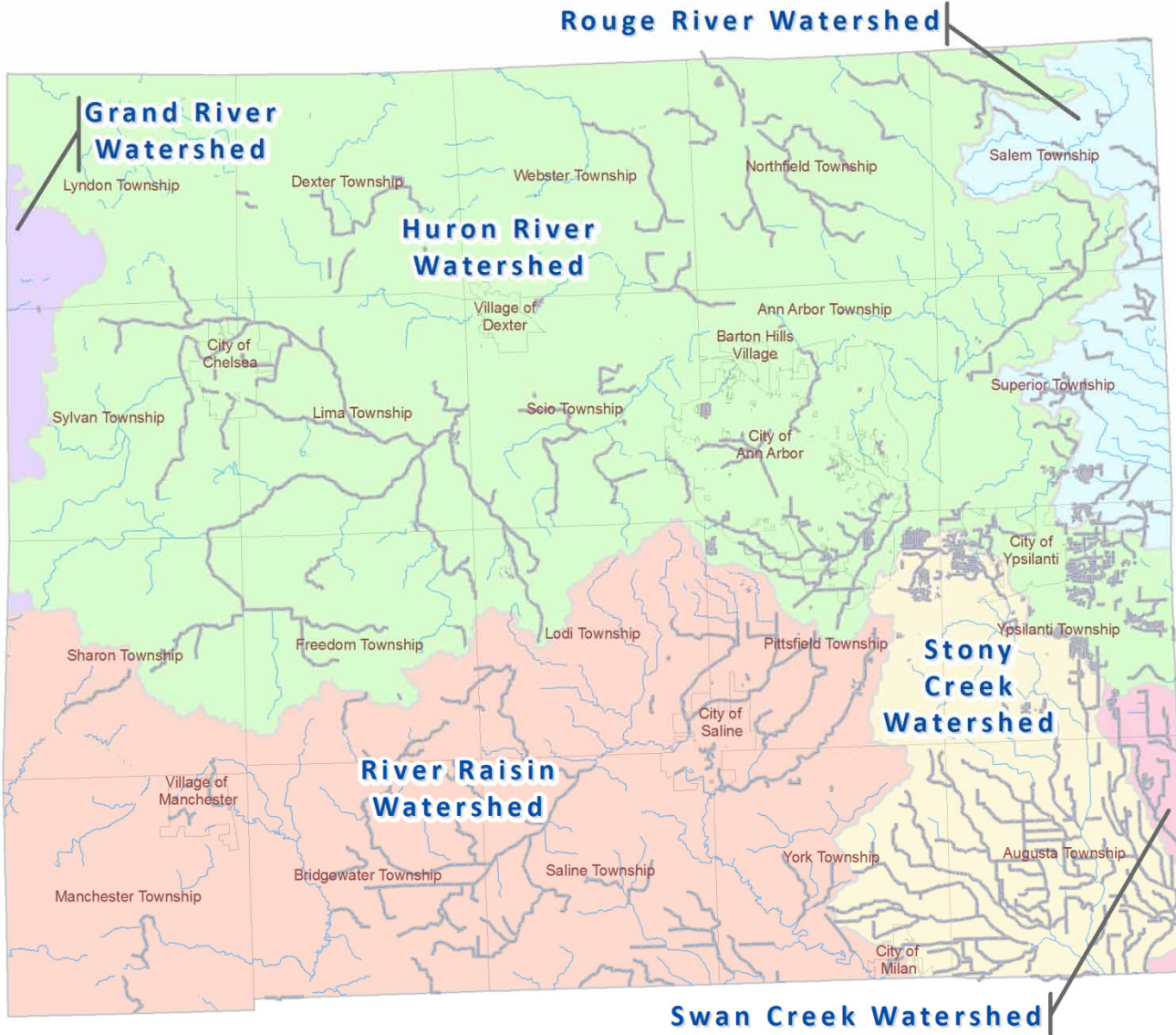
Not all storm drains are county drains. Many drainage ways, including roadside ditches, pipes, bridges and culverts located adjacent to state and county roads may not be designated as county drains. These types of drains are maintained by the Washtenaw County Road Commission. Still other private drains exist that are not under the jurisdiction of any governmental body.

Although the Drain Code was not originally designed as a water quality protection measure, it has been used as such in Washtenaw County. The Code provides a legal basis to conduct programs ranging from illicit discharge elimination to the construction of storm water facilities designed to reduce pollutant loadings.

MAP 9: County Drains and Watersheds



Washtenaw County:

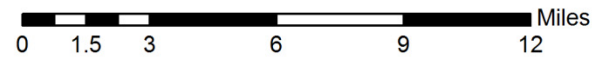


Legend

- County Drains
- Streams
- Townships

Watersheds

- Grand River Watershed
- Huron River Watershed
- River Raisin Watershed
- Rouge River Watershed
- Stony Creek Watershed
- Swan Creek Watershed



Visit Washtenaw County Government Online:
www.ewashtenaw.org



Created by: M. Paul Uppens
Environmental Health, October 2005.
No reproduction of this print shall be made without authorization of Washtenaw County. The map shown here is for illustrative purposes only, and is not suitable for site-specific decision-making. The data depicted is compiled from a variety of sources, thus this information is provided with the understanding that the conclusions drawn from the data are solely the responsibility of the user. Any assumptions of the legal status of this data are hereby disclaimed.

Activity #13 Inland Lake Level Act

Originally enabled by the Inland Lake Level Act, PA 146 of 1961, and now part of NREPA (Part 307 of Act 451), the Drain Commissioner may be required to maintain lake levels established by order of a circuit court. In Washtenaw County, there are six bodies of water with established lake levels:

- Four Mile Lake
- Horseshoe Lake
- Iron Lake
- Hiland Chain of Lakes
- Whitmore Lake
- Portage-Baseline Lakes

Hiland Chain of Lakes, Whitmore Lake and Portage-Baseline Lakes are intercounty lake level projects, jointly administered by the Washtenaw and Livingston County Drain Commissioner.

Activity #14 Lake Management

Washtenaw County conducts a lake management program designed to assess and promote the health of lakes that have specific threats and management concerns. Currently, this program has focused on Whitmore Lake; however, a management plan is in the development process for Sugarloaf Lake.

The Whitmore Lake Improvement Project is a three year lake management project coordinated by the Washtenaw County Board of Public Works on behalf of Northfield and Green Oak Townships. The project involves yearly fishery, vegetation and water quality studies. The data obtained from the studies is utilized to determine the types of control measures needed to stop the proliferation of invasive species and to improve the overall health of the lake.

The 2006 Lake Management Report for Whitmore Lake provides details to the findings of the fisheries, vegetation and water quality studies as well as the results of the 2005 control measures. The report is available online at: http://www.ewashtenaw.org/government/departments/planning_environment/dpw

Activity #15 Watershed Management Planning

Watershed management planning aims to develop comprehensive strategies to protect and restore a waterway and its supporting watershed. Watershed planning and implementation of these plans is one important way for residents to become involved in local water quality issues. The following watershed plans are reviewed on the coming pages and cover the major basins in Washtenaw County

- ***Plan 1:*** Upper Grand River Watershed
- ***Plan 2 :*** Huron Chain of Lakes
- ***Plan 3:*** Mill Creek Subwatershed Management Plan
- ***Plan 4:*** Watershed Plan for the Huron River in the Ann Arbor – Ypsilanti Metropolitan Area
- ***Plan 5:*** Middle One Rouge River Subwatershed Management Plan
- ***Plan 6:*** Lower One Rouge River Subwatershed Management Plan
- ***Plan 7:*** River Raisin Watershed Management Plan, Phase 1
- ***Plan 8 :*** Stony Creek Watershed Management Plan

The *Watershed Plan for the Huron River in the Ann Arbor Ypsilanti Area* includes as appendices creek or sub basin plans for Malletts, Fleming, and Allen’s Creek, and Ford Lake and Buhr Park. A plan for Millers Creek has also been developed and will be included in the revision scheduled for completion by the end of 2007.

Most of the watershed management plans recommend using best management practices (BMPs) to address threats to the watershed health. Table 4 shows 29 commonly recommended BMPs (Plans that recommend a particular strategy are marked “✓”). More detailed watershed plan summaries and a comprehensive list of BMP recommendations can be found in Appendix B.

Table 4: BMP Examples

BMP Recommended For County Wide Implementation	BMP Description	BMP Outcome	Plan #							
			1	2	3	4	5	6	8	
Phosphorus reduction ordinance	Regulate selection, use, storage and disposal of fertilizers	Reduction of nutrients entering watershed reducing algal blooms and fish kills		✓	✓	✓				
Native plant landscaping ordinance	Encourage use of plants adapted to this geographic area	Improved storm water infiltration , soil stabilization and habitat		✓	✓	✓				
Private roads ordinance	Allows for roads to be narrower than county standards	Reduction of impervious surface area minimizing runoff to watershed		✓	✓	✓				
Storm water management ordinance	Regulations to guide property development	Protects watershed regarding water quality, quantity and biological integrity		✓	✓	✓	✓	✓		
Local wetlands ordinance	Ordinance for wetlands not currently regulated by state or federal authorities	Protection of small and isolated wetlands		✓	✓	✓				✓
Enhance site plan requirements	Review floodplain, soil types, landmark trees, groundwater recharge areas, etc.	Assures environmental responsible development		✓	✓					✓
Reduce directly connected impervious surface area	Directing flows from roof drains and paved areas to stabilized vegetated areas	Reduction in storm water peak discharges, runoff volume and erosion		✓	✓		✓	✓	✓	
High powered street and paved area sweeping	A management measure that involves pavement cleaning on a regular basis	Reduction of sediment debris and pollutant export to receiving waters		✓	✓		✓	✓	✓	
Improve protection of stream and riparian habitats through alternative drain practices	Look for opportunities to correct old drainage practices like tiled agricultural land	Restores hydrologic function		✓	✓					
Initiate hydrologic study and hydraulic study	Comprehensive hydrology and hydraulic study in the watershed	Understanding precipitation, infiltration, surface runoff, flow rates and storage & better understanding of velocity, flow depth, flood elevation, channel erosion		✓	✓					✓
Investigate opportunities for recreation areas	Increase opportunities for people to access water resources	Increase in number of persons interested in protection of water resources		✓	✓	✓	✓	✓		

Table 4: BMP Examples (Continued)

BMP Recommended For County Wide Implementation	BMP Description	BMP Outcome	Plan #							
			1	2	3	4	5	6	8	
Create and maintain grassed waterways	Natural or constructed channels on farm lands established with suitable vegetation	Treatment of sheet flow, improved infiltration, reduced erosion	✓	✓	✓					✓
Install and maintain vegetated filter strips	Strips of grass or other permanent vegetation designed to treat sheet flow	Slower runoff velocities, better infiltration, sediment and nutrient filtration	✓	✓	✓					✓
Install and maintain riparian buffers	Streamside ecosystems managed for the enhancement of water quality	Slower runoff velocities, infiltration, sediment and nutrient filtration	✓	✓	✓					✓
Install and maintain bioretention systems	Landscaping features in developed areas adapted to provide onsite treatment	Sediment and nutrient filtration, slower runoff velocities	✓	✓	✓	✓				✓
Install grassed swales	Open channel management practices designed to treat and attenuate storm water runoff	Slower runoff, sediment and nutrient filtration, improved infiltration	✓	✓	✓					✓
Practice crop rotation w/ cover and mulch	Employ agricultural techniques that limit impacts on water quality	Reduced sedimentation, and nutrient loadings	✓	✓	✓					✓
Restore wetlands	Rehabilitation of drained or degraded wetlands	Treatment, settling and storage of storm water. Aesthetic value/habitat	✓	✓	✓			✓	✓	
Install rain gardens	Vegetated depression typically near an impervious surface to intercept storm water runoff	Slower runoff velocities, infiltration, nutrient filtration		✓	✓					
Install and maintain vegetated roofs	Structural addition of plants/soil over a traditional roof system	Improved energy efficiency, reduction of storm water runoff		✓	✓					✓
Install grade stabilization culverts	Install structures to control the grade and head cutting in channels (mostly agricultural)	Reduces erosion and sedimentation		✓	✓			✓	✓	
Install and maintain catch basin inserts	Installation of additional sump chambers to enhance collection of solids	Reduction of sediment in storm water		✓	✓	✓				
Install and maintain sediment trapping devices	Barriers, basins and other devise designed to remove sediment from runoff	Reduction of sediment in storm water		✓	✓	✓		✓	✓	
Repair misaligned/obstructed culverts	Coordinate townships and County efforts to address drainage problems	Addresses changes in hydrology and maintenance		✓	✓	✓		✓	✓	✓
Stabilize road/bridge surfaces	Alter grading practices and examine surface options on unpaved roads and bridges	Reduce sediment pollution		✓	✓	✓				✓

Activity #16 Natural River Designation

Since 1970, the Country-Scenic Natural Rivers Designation has been enabled by the Natural Rivers Act, now known as Part 305 of PA 451 of 1994. The designation was established for the Huron River from Portage Lake to the Ann Arbor city limits in 1977. Natural River Designation is intended to preserve the natural quality of a stream corridor via overlay zoning. It is the only such designation of this type in southeast Michigan. The townships involved in this area of the river are Dexter, Webster, Scio, and Ann Arbor.

Along this portion of the Huron River homes cannot be built within 100 feet of the banks, and brush cannot be cut within 25 feet from the banks. Stream crossings are highly restricted. More information regarding Natural River designation can be found on the Michigan Department of Natural Resources web site. For more information visit: www.michigan.gov/dnr

Activity #17 Fish Advisories

The issues surrounding fish consumption advisories are important to understand if you plan on eating fish from local water bodies. Low levels of toxins in the ambient environment accumulate in fat and muscle tissue of fish. These same toxins also accumulate in people. Some toxins are potentially hazardous in repeated doses, especially in young children and women who may become pregnant.

Certain types of fish found in Washtenaw County, like black crappie, walleye, channel catfish, large and smallmouth bass, bullhead, northern pike, white sucker, and carp, may contain elevated levels of toxins, including polychlorinated biphenyls (PCBs) and mercury. These toxins are suspected of causing neurological and developmental disorders, cancers, endocrine disruption, reproductive disorders and other serious health problems.

The Michigan Department of Community Health (MDCH) has issued a statewide mercury advisory for all inland lakes, reservoirs and impoundments. All of Washtenaw County's lakes are included. The general population is advised to limit consumption of the species included in the advisory to one meal per week. Children under age 15 and women of childbearing age should eat no more than one fish meal per month. Barton Pond and Ford Lake are the only water bodies in the county with advisories for PCBs.

Older and larger fish tend to contain the highest percentages of toxins and are given an elevated warning level. By limiting consumption of high toxin fish such as large carp, pike and catfish, it is safe to include local fish in a diet. People can protect themselves and their children by:

- Eating smaller and younger fish.
- Limiting consumption of fish that eat other fish.
- Trimming and cooking fish in ways that reduce the amount of fat ingested.
- Following the recommended consumption of fish found in the Michigan Department of Community Health's (MDCH) 2004 Fish Consumption Guide.⁴

Activity #18 Beach Monitoring

Washtenaw County Environmental Services Division staff collects water samples from public beaches throughout the county from Memorial Day through September. To protect public health and to prevent the spread of disease, the samples are analyzed for various water quality parameters, including bacteria levels. Beaches are closed if samples are deemed unsafe to public health.

⁴ http://www.michigan.gov/documents/FishAdvisory03_67354_7.pdf

Public Beaches Tested in Washtenaw County:

- Bruin Lake Beach, Lyndon Township
- Half Moon Lake Beach, Dexter Township
- Independence Lake Beach, Webster Township
- Silver Lake Beach, Dexter Township
- Sugarloaf Lake Beach, Lyndon Township

In addition to public beaches, many other rivers and streams running through the County are sampled by local environmental organizations in order to determine current water quality and to recognize trends over time. Environmental surveys are conducted to evaluate possible pollution sources, safety hazards, depth drop-offs, currents, and hazardous objects.

Activity #19 Natural Resource Environmental Protection Act (NREPA)

The State of Michigan's primary rules for protecting and preserving water quality are outlined in the NREPA. The NREPA contains guidelines for inland lake and stream preservation, wetland protection, construction erosion and sedimentation control, natural area preservation, etc.

Activity #20 Illicit Discharge Elimination

The Washtenaw County Drain Commissioner, as part of the Phase II Storm Water Permit, conducts inspections of all County Drains and identifies possible discharges from sources that should be connected to sanitary sewer, as well as other illegal sources. In 2005, over 150 drains were inspected and 17 illicit connections were identified and corrected.

Activity #21 Home Toxics Reduction Program

The Washtenaw County Home Toxics Reduction Program provides residents with a disposal option for flammable, poisonous, toxic and corrosive materials. The program addresses the environmental and public health effects resulting from improper handling and disposal of home toxics, and is committed to reducing the use of home toxics and keeping citizens informed about the choices and responsibilities associated with purchasing, handling and disposing of toxic substances.

Activity #22 Waste Knot Program

The Washtenaw County Waste Knot program aims to develop relationships within the Washtenaw County business community to support waste reduction and recycling activities. The program provides community-wide recognition and organization-based technical assistance along with value-added education to organizations that exhibit leadership in waste reduction and recycling.

Activity #23 Water Quality Stewardship Program

Water Quality Stewardship Programs including Community Partners for Clean Streams, Homeowners Programs, and the new Riversafe Home Program (implemented in March/April 2007), are all designed to help business, residential and other land owners to evaluate how their activities affect surface water quality, and to develop strategic action plans designed to reduce nonpoint source pollution. These programs provide both technical assistance and community recognition.

Activity #24 Water Monitoring

There is no comprehensive surface water monitoring program in Washtenaw County due to a lack of financial resources. Governments do not have the money, and grant programs rarely pay for systematic data gathering. Water monitoring has been conducted sporadically by different organizations for various projects and planning efforts. There has also been some monitoring conducted as a part of Storm Water Permit Programs. The lack of a comprehensive and strategic program greatly inhibits the overall assessment of water quality in Washtenaw County.