

### **3.3 Challenges and Responses**

Surface water of Washtenaw County is threatened by both point source and nonpoint source pollution. Point source pollution is pollution and/or waste that is discharged directly into a water body from a single point such as municipal waste water treatment plants or industrial discharge. Nonpoint source pollution, unlike pollution from industrial discharges and sewage treatment plants, comes from many sources. It occurs when rainfall or snowmelt flows over the ground and carries away natural and manmade pollutants that eventually find their way into surface water and groundwater. Substances like fertilizers from farms and residences; oils, grease, and toxic chemicals from cars and trucks; salt from roads; and bacteria and nutrients from pet and urban wildlife waste are examples of nonpoint source pollution. Both point source pollution and nonpoint source pollution contribute to the degradation of surface water quality in Washtenaw County.

#### **Nonpoint Source Pollution**

One way to think about nonpoint source pollution is the collective environmental impact of people on the ecosystem. As Washtenaw County becomes increasingly urbanized the effects of nonpoint source pollution on the County's water quality have become more and more evident. A watershed that has less than 8-10% impervious surfaces such as roads, rooftops, and driveways, will most likely have good water quality. Once a threshold of 8-10% impervious surfaces is reached studies show that nonpoint source runoff is likely to have a negative effect on stream water quality and habitat. This is primarily due to increased volumes and velocities of runoff, as well as the array of pollutants associated with urban land use.

The major categories of nonpoint source pollutants, their general sources, and their specific impacts are discussed in this section:

- Challenge # 9 – Excess Nutrients
- Challenge # 10 – Sediments
- Challenge # 11 – Toxic Compounds
- Challenge # 12 – Pathogens and Bacteria
- Challenge # 13 – Temperature, Volume, and Rate

There is also an emerging issue that is being discovered as water quality testing and monitoring technologies advance:

- Challenge # 14 – Pharmaceuticals

Many of these challenges are addressed by the Clean Water Acts National Pollution Elimination Discharge System (NPDES) program that was extended to regulate the discharge of storm water pollution. It is only one of many response activities that address the challenges presented by nonpoint source pollution.

#### **Point Source Pollution**

Point source pollutants come from readily identifiable inputs where waste is discharged to the receiving waters from a pipe or drain. After treatment, industrial facilities and wastewater treatments plants discharge to rivers and streams. This section addresses the general challenge of point source discharges and provides information on the emerging issues associated with community wastewater systems:

- Challenge # 15 – Point Sources Discharges
- Challenge # 16 – Community Wastewater Systems

### **Challenge #9 Excess Nutrients**

It is natural for nutrients to be present in the water column or in bottom sediments of our rivers, lakes and streams. Michigan's limestone rich soils are a natural source of calcium and phosphorus, and decaying plants and animals provide other nutrients such as nitrogen and potassium. Nutrients are the building blocks for all plant and animal life in the aquatic environment.

Human activity can cause over-nutrication and affect water quality, especially in slow moving or stagnant water. A nutrient-rich lake can often be subject to frequent and severe nuisance algal blooms, low transparency and hypoxia (low oxygen). Lakes with very high nutrient concentrations and biological activity are termed *hypereutrophic*. Some causes of high nutrient concentrations are:

- Paving over land (prevents infiltration and causes erosion)
- Construction site erosion
- Excessive or inappropriate fertilization
- Improper manure management
- Septic system failures
- Pet waste and urban wildlife
- Sanitary sewer overflows

### **Nutrient Response Objective**

Limit nutrient delivery to waterways from stormwater runoff, agricultural activities, and sanitary overflows.

#### ***What protection activities address the challenge of excess nutrients?***

- ◆ Clean Water Act
- ◆ Michigan Drain Code
- ◆ Watershed Management Plans
- ◆ Illicit Discharge Elimination
- ◆ NREPA

### **Nutrient Response Results**

Nutrients are often bound in sediments. As a result, the erosion control regulations mentioned in the 'Sediments' discussion (Challenge #10) apply to nutrients. Both the Federal Clean Water Act NPDES program and the Michigan Natural Resource Environmental Protection Act (NREPA) regulate activities that disturb more than one acre of land, or any acreage within 500 feet of a waterway.

**Figure 9: Storm Water Runoff**



Source: County Drain Commissioners Office, December 2005

These same laws require primary and secondary treatment of wastewater before being discharged to rivers, lakes or streams. Septic systems are regulated under NREPA and County codes.

A Total Maximum Daily Load (TMDL) has been established for phosphorus for the middle Huron River. A TMDL is a pollutant budget that limits the amount of phosphorus that can be delivered to the river by human activity. Since 1994, the Huron River Watershed Council has managed the 17-community "Middle Huron River Watershed Initiative", a comprehensive strategy to meet the Phosphorus TMDL.

The Rules of the Washtenaw County Drain Commissioner were updated in 1994 to enhance pollution removal. The Rules require water quality treatment for runoff from new construction and reconstruction. Best Management Practices (BMPs) such as stormwater detention, infiltration systems, stream buffers, and more, help to cleanse stormwater runoff before it leaves the site. These rules apply to most construction activity, but not all. The rules have been adopted by many local municipalities and are widely applied. The rules will appear in an updated version in early 2008.

Stream bank stabilization projects designed to reduce erosion and sediment delivery, are being conducted in the Huron River, and various creeks: Johnson, Traver, Mill and Miller.

Watershed plans in the Huron, Stony, Rouge, and soon the River Raisin and Saline, call for improved BMPs that promote a wide range of BMP's (see Appendix B). Special Projects have been completed to reduce nutrient discharges:

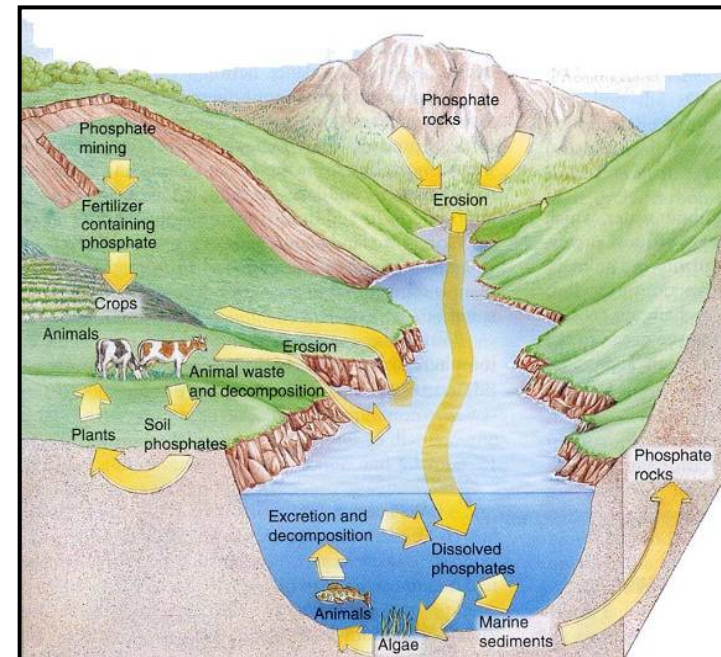
- Olson Park and Stormwater Demonstration – a City of Ann Arbor park located on Pontiac Trail and Dhu Varren Road that incorporates and interprets a variety of water quality BMPs: biodetention, porous pavement, rain gardens, wetland treatment, etc.
- With county assistance, thirty rain gardens have been installed at various homes and businesses and more are planned. These sunken gardens capture and infiltrate stormwater, allowing the plants to absorb nutrients. Many other rain gardens have been installed by private landowners and local governments.
- Illicit discharges, improper sanitary discharges to storm sewers, are being identified and removed. In 2005, 150 drains were inspected and 17 illicit connections were identified and corrected. Local Cities and Villages are pursuing similar programs.

- Septic systems are inspected at the time of home sale, and failing systems are corrected.
- A 15 acre wetland treatment area is being constructed at Mary Beth Doyle Park along Malletts Creek, in the City of Ann Arbor. This system will reduce phosphorus by 50% within the Malletts Creek subwatershed.

### Next Steps

The scope of the problem suggests that current responses are inadequate. Future development and redevelopment sites must infiltrate stormwater similar to the natural landscape. The next generation of County storm water regulations will prescribe such practices. Additional regulation of lawn care chemicals and wide public education also will be pursued.

**Figure 10: Phosphorus Loading**



Source: <http://vincejtremanete.tripod.com/cycles/phosphours.htm>, May 2006

### ***Challenge #10 Sediments***

Runoff from rainstorms and snowmelt is the most significant source of water pollution today. Sediment from construction sites, agricultural activities, and urban landscapes, is a principal constituent of polluted runoff. In addition, sediment from stream bank and channel erosion, resulting from excessive stormwater volumes and flows rushing into local waterways, is another major source of sediment deposition. Sediment is a physical concern; it can clog catch basins, culverts and stream channels, causing flooding, impeding navigation and recreational uses, and requiring expensive dredging. It can smother habitat and spawning areas. In addition, because of the range of pollutants, including nutrients and toxic chemicals, some of which can bind with soil, it is also a source of chemical pollution, resulting in nuisance aquatic weed growth and algal blooms.

### ***Sediment Response Objective***

Minimize sediment delivery to waterways from storm water runoff, and reduce stream channel erosion. Limit impact of in-lake sediment through management practice.

### ***Sediment Response Results***

Washtenaw County and local units of local government can control construction erosion under Part 91 of Michigan Public Act 451 of 1994 (NREPA). All construction sites of 1 acre or more or within 500 feet of an inland lake or stream must develop and implement an approved soil erosion and sedimentation control plan. Such plans are also required under the federal Clean Water Act. The law requires that a log be kept at every construction site, and that all erosion control measures be inspected and maintained after any significant rain event.

Habitat Total Maximum Daily Loads, under Section 303(d) of the Clean Water Act, are in place for local streams including Malletts and Swift Run, mandating a plan of action for sediment reduction.

The Rules of the Washtenaw County Drain Commissioner require that storm water be collected and managed prior to leaving a developed site at a regulated rate, thereby reducing the high velocities that lead to channel erosion.

### ***What protection activities address the challenge of sediments?***

- ◆ Clean Water Act
- ◆ Michigan Drain Code
- ◆ Watershed Management Plans
- ◆ Illicit Discharge Elimination
- ◆ NREPA (Part 91, Soil Erosion and Sedimentation Control)

Watershed plans in urban areas call for retrofitting and maintaining BMPs, such as storm water ponds, to provide better flow control and sediment removal. Close to \$4 million is being spent along Malletts Creek (Mary Beth Doyle Wetland Preserve) to advance these objectives. Riparian buffer ordinances are also under development and/or implementation. These natural areas can filter runoff and keep sediment out of waterways.

Stream bank stabilization projects have been conducted throughout the County. Johnson Creek, a tributary within the Arboretum, and Traver Creek are some of the waterways where projects have been implemented. Others are underway on Mill and Miller Creeks.

Routine drain maintenance conducted under the Michigan Drain Code provides for sediment removal from stream channels, culverts, and stormwater structures.

Rain gardens have been installed on 30 individual properties with financial assistance through the County. These help capture and infiltrate storm water flows, trapping sediment and reducing volume and velocity of runoff. The program has been extended into 2008-2009.

A program is being piloted for management of Ford Lake, designed to reduce the impact of nutrient-rich in-lake sediments or water quality. Professor John Lehman of University of Michigan, operating with a Federal Clean Water Grant, has demonstrated that lake management techniques can mitigate the effects of in-lake phosphorus and reduce algae blooms. For more information see: <http://www.umich.edu/~hrstudy>

### ***Next Steps***

Rapid land use change makes control of erosion and sedimentation from construction sites a challenge. Visual inspections indicate that more enforcement would benefit all Part 91 programs. Enforcement agencies are meeting in a County-wide forum. This may be an opportunity for resource-sharing and program improvement.

The Huron River Watershed Council is working with local governments on Stream Buffer programs that can provide a model for implementation by communities throughout the County.

In 2007, revised Rules of the Washtenaw County Drain Commissioner were published, calling for infiltration of storm water where possible, and supporting more innovative BMPs that can refine on-site water management. Local governments generally follow these County standards. The Rules target new development and some redevelopment. However, runoff volumes from developed areas also must be reduced.

Expansion of rain garden and BMP installation/retrofit programs is recommended. Allen Creek will be the focus of an urban retrofit study in 2007.

Comprehensive and proactive drain maintenance can substantially reduce sediment delivery. Drain Code statutory spending limits (\$2500 per mile of drain per year) limit what can be accomplished. State Drain Code amendments are recommended.

Institutionally follow-up on the innovative lake management program for Ford Lake is recommended to reduce the impact of in-place sediments. By preventing lake “turnover”, it appears that algae blooms and weed growth can be reduced significantly.

**Figure 11: Sedimentation at Swift Run**



Source: Huron River Watershed Council

### ***Challenge # 11 Toxic Compounds***

Sources of toxic compounds include pesticides, motor vehicles, industrial activities, atmospheric deposition, spills, and illicit dumping.

Toxic substances lower dissolved oxygen, stress sensitive flora and fauna, enter the aquatic food chain, and may degrade the appearance of water surfaces. Periodically elevated concentrations of toxic compounds may be responsible for the paucity of aquatic species diversity found in the Huron River's urban tributaries and slightly impaired populations of the Huron main stem.

***What protection activities address the challenge of toxic compounds?***

- ◆ Home Toxics Program
- ◆ Pollution Prevention
- ◆ Community Partners for Clean Streams
- ◆ Hazardous Waste Regulations

Metals found in surface waters and bottom sediments in the project area include lead, arsenic, zinc, cadmium, manganese and barium. Some sediment samples from Geddes Pond, for example, were found to be "heavily polluted" with arsenic and lead, according to U.S. EPA standards.

### ***Toxic Compounds Response Objective:***

Maintain or attain water quality standards and minimize the exposure to and consumption of water with elevated levels of toxic compounds in Washtenaw County.

### ***Toxic Compounds Response Assessment:***

There are no TMDL plans under implementation that involve toxics; however, lack of water quality monitoring data makes quantitative assessment for toxic compounds impossible.

Washtenaw County manages a Home Toxics Reduction Program designed to assist residents in the proper disposal of toxic materials commonly used in homes. The Home Toxics Reduction Program collected over 729 thousand pounds of toxic materials between 1994 and 2004. Substances included flammables, oil-based paints, pesticides, batteries, mercury, and more.

**Figure 12: Home Toxics Drop-off Station**



Source [http://www.ewashtenaw.org/government/departments/planning\\_environment/dpw/hhw\\_location\\_html](http://www.ewashtenaw.org/government/departments/planning_environment/dpw/hhw_location_html), May 2006

The County's Pollution Prevention Program ensures that chemicals are properly handled and stored. It also provides for source control by reducing the amount of toxic substances used. In addition, the County has a "Polluter Pay" regulation in place to respond to instances of toxic dumping.

The Community Partners for Clean Streams program produces educational materials that provide guidance on toxic compounds. The program emphasizes utilizing the “least toxic option” when purchasing products like cleaners and paints. The program also provides tips for reduction of use, and for proper storage and disposal of these items.

Hazardous waste regulations enable the County’s Emergency Management department to have a hazardous material response team (HAZMAT). The County also has 24-hour response to spills and releases coordinated with the MDEQ.

***Next Steps:***

There is an opportunity to prevent toxics from becoming a widespread water quality issue in the County. This will require continued and expanded support for successful activities like the Home Toxics Reduction Program. Water quality monitoring is needed to determine and catalog the extent to which toxics maybe a problem in the water system.

### ***Challenge # 12 Pathogens and Bacteria***

The source of pathogens and bacteria can be traced to animal waste, failing septic systems, illicit sewer connections and sewage treatment overflows. Increased pathogen levels can pose health risks and close or restrict the use of recreational areas. Samples taken from the County waterways and storm drains after rainstorms have demonstrated that concentrations of pathogens routinely exceed federal water quality standards for full body contact. Pathogen levels in excess of total body contact limits have also been found in the Huron's tributary waterways. Problems are predominantly wet weather related.

#### ***What protection activities address the challenge of pathogens and bacteria?***

- ◆ Clean Water Act
- ◆ Time of Sale Program
- ◆ Michigan Drain Code
- ◆ Illicit Discharge Elimination
- ◆ Pet Waste Ordinances
- ◆ Beach Monitoring

#### ***Pathogens and Bacteria Response Objective:***

Maintain or attain Water Quality Standards and minimize the exposure to and consumption of water with elevated levels of pathogens and bacteria in Washtenaw County.

#### ***Pathogens and Bacteria Response Assessment:***

Total Maximum Daily Loads for pathogens, bacteria, and/or *E. coli* have been established and are under implementation for stretches of Allen's Creek, the Huron River, and the Saline River. Similar TMDLs are scheduled to be developed for Honey Creek and Paint Creek.

An Illicit Discharge Elimination Program is in place and ongoing. Results of limited DNA testing suggest that contamination is largely from urban wildlife and pet waste rather than human sources. The DNA-typing information demonstrates that attaining total body contact levels in urban areas may not be possible, as such sources cannot be controlled.

*E. coli* and pathogen TMDLs are in full implementation with Storm Water Permit activities as the strategies for pathogen and bacteria reduction in urban areas. However, because the Federal Storm Water Permit is only required in areas that meet the U.S. Census Bureau definition of "urban areas", fragmentation of program implementation occurs and undermines the effectiveness of the activities; it is not an ecosystem based approach. Further, because water quality monitoring is sporadic and limited, it is difficult to track overall progress outside of the stormwater permit area.

The Time of Sale program requires that all residences served by well water be tested for excess pathogens and bacteria prior to property transfers.

The County Drain Commissioner's Rules (design standards) set buffers around waters designated as County Drains, including many streams and storm water ponds. Natural buffers and landscaping can be utilized to reduce nuisance geese populations around these features.

The Illicit Discharge Elimination Program aims to find and eliminate illegal and/or unknown point source discharges into stormwater systems. In 2005, 150 drains were inspected and 17 illicit discharge connections were identified and corrected.

Most, if not all, of the local units of government in Washtenaw County have pet waste ordinances. These ordinances require pet owners to properly cleanup and dispose of waste produced by their pets. Enforcement of these ordinances may go a long way to addressing this challenge. In addition, public education efforts are being stepped-up. The Humane Society of Huron Valley estimates some 60,000 feral cats in Washtenaw County. Spay and neutering programs are ongoing.

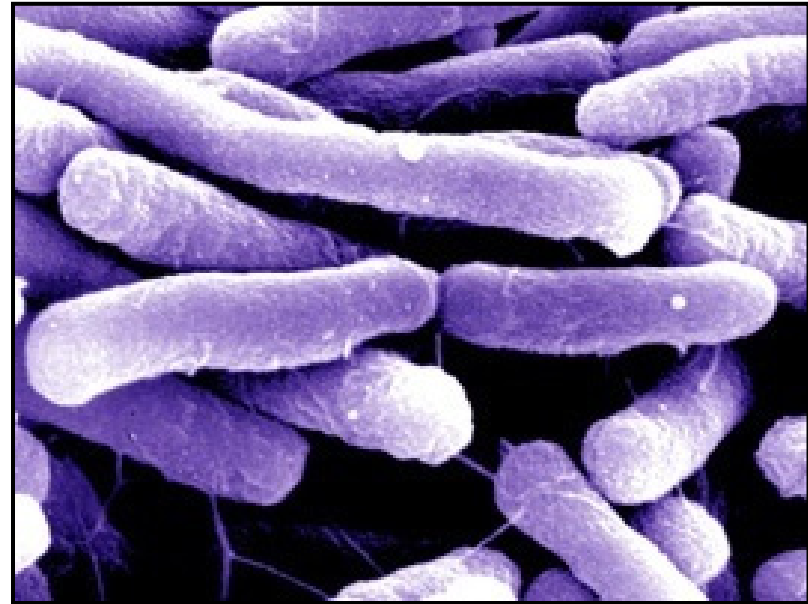
Beach monitoring makes sure that all public swimming beaches reporting elevated levels of pathogens or bacteria, including *E. coli*, are closed until in attainment with water quality standards.

***Next Steps:***

Through DNA testing the County has identified pets and urban wildlife, like raccoons, skunks, and cats, as a major contributor to the *E. coli* challenge. Education is key to mitigating this problem, focusing on pet waste cleanup/reduction, monitoring and controlling pets and/or securing them indoors, removal/securing of outdoor trash and food waste storage and compost.

Continue the ongoing efforts of the Illicit Discharge Elimination Program. Work to incorporate the results of DNA testing into planned strategies for the reduction of pathogen and bacteria contaminants in the water system. Work toward developing an ecosystem based as opposed to an urban area based approach to confront this challenge.

**Figure 13: *E. coli***



Source: <http://www.organicovertune.com/pathogens.html>, Oct. 2006

### ***Challenge # 13 Temperature, Volume and Rate***

The source of high surface water temperatures can be traced to impervious surfaces, land clearing, land use alterations and soil compaction. Impervious and compacted surfaces prevent rainfall and snowmelt from percolating into the ground. Instead, storm water accumulates and is discharged off-site as surface runoff. This fundamentally alters the balance between surface and ground water feeding lakes and streams. Groundwater enters streams at a relatively constant temperature (between 49 and 54 degrees Fahrenheit) regardless of the season. Surface water is much closer to the ambient air temperature. As a watershed develops, its lakes and streams receive a much greater proportion of warm surface water runoff, and less cold groundwater. Higher summer temperatures alter in-stream habitat for fish, invertebrates and other aquatic life. Not only is the water warmer, but also its capacity to store oxygen is lower. As temperatures rise, sensitive species, those not able to adapt to their warmer environment, decline and disappear altogether.

Excessive flow and volume issues can also be traced to impervious surfaces, land clearing, land use alterations and soil compaction. Precipitation prevented from percolating into the soil accumulates and is discharged as surface water runoff. As a creekshed develops, runoff volumes increase and water is delivered to receiving waters at a much faster rate. The cumulative impact of urban development throughout the watershed can be measured in the receiving waterways. In-stream hydraulics and stream channel structure, or morphology, are altered in fundamental ways.

### ***Temperature, Volume, and Rate Response Objective:***

Minimize behaviors and activities that increase the volume and velocity of storm water runoff and create negative impacts on the aquatic life and habitat in Washtenaw County.

### ***Temperature, Volume, and Rate Response Assessment:***

Most urban streams and many urbanizing streams show the negative impacts of increased flows. The Adopt-a-Stream program is conducting some monitoring for flow; the remainder is being conducted within the scope of specific projects. No trend information is available. However, it is realistic to assume that the rapid increase in impervious surface in the county is unlikely to be fully mitigated by current BMPs. Site design and storm water management standards that better mimic natural systems must be put into place at an accelerated pace. We have little local data regarding the effectiveness of our current BMPs.

### ***What protection activities address the challenge of temperature, volume and rate?***

- ◆ Michigan Drain Code
- ◆ Watershed Management Planning
- ◆ Local Ordinances
- ◆ Open Space Acquisition
- ◆ NREPA

The County Drain Commissioner's Rules (design standards) set specific temperature criteria for certain watersheds when thermal impacts are of paramount concern. New standards will also promote the infiltration of smaller storm events, and are expected to substantially improve stream channel protection. The rules also control the rate of storm water flow from all new developments. More aggressive approaches to low impact development are needed through local planning, zoning, and site design criteria.

Watershed Management Plans outline steps necessary to address temperature, volume, and rate issues through the implementation of BMPs. This includes rain gardens, storm water infiltration techniques, and natural feature protection, among other recommendations. The problem remains however, that low impact design and innovative stormwater management approaches are not routinely part of new land use proposals.

Local Ordinances for storm water, wetlands, setbacks, and natural features protection help with runoff reduction and flow management. Local governments in Washtenaw County require that new developments adhere to the Drain Commissioner's rules or standards for storm water system design. Several are looking at more aggressive ordinances promoting infiltration.

Open space acquisition is currently being undertaken by the Washtenaw County Parks Department and is focused on placing a priority on riparian corridors. Ann Arbor's Greenbelt program is also preserving farmland and open space.

NREPA PA 457 of 1994 requires many proactive surface water protection measures including protection of inland lakes and streams, wetland protection, construction sedimentation and erosion control, and more.

***Next Steps:***

Develop a strategy to implement development standards that will better mimic natural systems. Focus efforts not only on new development but also on retrofitting and removing old impervious surfaces. Lead by example and look to implement new standards on public right of ways. Work with the Adopt-a-Stream program to expand flow monitoring. Look for opportunities to link effort with specific project monitoring.

### ***Challenge # 14 Pharmaceuticals***

Pharmaceuticals and related chemicals are an emerging issue in water quality. Historically, water treatment plants have not been required to test or treat for these substances so they traveled from home disposal into the water supply without treatment or removal. With pharmaceutical use on the rise, coupled with increased development patterns, the effect of pharmaceutical waste on water quality could potentially become a major challenge to preserving and attaining Water Quality Standards.

#### ***What protection activities address the challenge of pharmaceuticals?***

- ◆ Educational Materials
- ◆ Pharmaceuticals “take back” program under development

#### ***Pharmaceutical Response Objective:***

Minimize the exposure to and consumption of water with elevated levels of pharmaceuticals in Washtenaw County.

#### ***Pharmaceutical Response Assessment:***

Washtenaw County has developed educational materials for residents on the disposal of pharmaceuticals and the possible effects of improper disposal. The County is currently working to develop and expand “take back” programs, where pharmacies can receive for disposal (and in some cases, reuse) unused prescription drugs. However, study shows that excretion accounts for approximately 90% of the problem. There is no current strategy to address this concern.

**FIGURE 14: Pharmaceutical Waste**



Source: <http://www.roadssafeeurope.com/clinical.htm>, May 2006

#### ***Next Steps:***

Continue to research and report on the effects of pharmaceuticals in the waste stream. Encourage water monitoring and sampling for pharmaceuticals. Continue to develop and distribute educational materials that can potentially mitigate a downward trend from developing.

### ***Challenge # 15 Point Source Discharges***

Point source waste discharges to surface waters are regulated by the Clean Water Act via the National Pollutant Discharge Elimination System (NPDES). Municipal NPDES permits specify the quality and quantity of treated wastewater permitted to be discharged at a particular location. There are 47 NPDES permits for surface water discharges in Washtenaw County. Information can be found at the following sites:

- EPA Envirofacts Data Warehouse
  - [http://www.epa.gov/enviro/index\\_java.html](http://www.epa.gov/enviro/index_java.html)
- DEQ NPDES
  - <http://www.michigan.gov/deqnpdes>

### ***Point Sources Discharges Response Objective:***

Control the discharge of regulated pollutants, to maintain or attain WQS in Washtenaw County, and to minimize public exposure to waters with elevated levels of contaminants resulting from pipe discharges.

### ***Point Source Discharges Response Assessment:***

The NPDES permitting system is in place and effectively regulates point source pollutant discharges to surface waters. It is the primary response to point source discharges and has historically been used effectively.

#### ***What protection activities address the challenge of point source pollution?***

- ◆ Clean Water Act
- ◆ Water Monitoring
- ◆ Illicit Discharge Elimination

The Illicit Discharge Elimination Program is in place and ongoing to find and remediate those discharges that accidentally or intentionally evade the permitting program. In 2005, 150 drains were inspected and 17 illicit discharges connections were identified and corrected

The Huron River has a Total Maximum daily Load (TMDL) for Phosphorus upstream of Ford and Belleville Lakes.

Point source dischargers to the Huron River between Portage Lake and Belleville Lake are implementing voluntary limits below permit levels for phosphorus. This effort is part of an overall strategy to reduce the occurrence of algae blooms in Ford and Belleville Lakes. See the Middle Huron Initiative at: <http://www.hrwc.org/program/mid.htm>

### ***Point Source – Wastewater Treatment Plants***

Wastewater treatment plants are an example of regulated pollutant discharge. In Washtenaw County there are eleven municipal wastewater treatment plants (WWTP), also known as Publicly Owned Treatment Works (POTWs). POTWs have a significant effect on water quality because they discharge treated wastewater primarily into rivers and to a lesser extent the groundwater. The wastewater discharged at these facilities receives physical, biological and chemical treatment, yet still contains various contaminants. POTWs are not able to treat all industrial chemicals, so industries that are permitted to discharge chemicals to a POTW must meet specific requirements through an Industrial Pretreatment Program. For all these various reasons, POTWs are closely monitored at the Federal, State and County level.

Monitoring of point source discharges is performed by permit holders, and in isolated areas, sporadically by the MDEQ. There is no comprehensive ongoing surface water quality monitoring program. Without systematic and strategic water monitoring a complete assessment is not possible.

***Next Steps:***

Successful programs like the NPDES permitting program should continue to be implemented and enforced; however, given the difficulty of monitoring and implementing TMDLs an effort should be made to regulate new discharges and hold new use allocations to a more stringent set of criteria than currently used.

**Challenge # 16 Community Wastewater Systems**

Community wastewater systems (CWWS) are any system that treats and disposes of sewage and is privately owned. Typically, CWWS are proposed to allow greater density, create open space, provide for more economical means of treatment, or overcome site conditions. These systems can be small in terms of number of users to large servicing thousands of users. Smaller systems – less than 70 homes, are typically proposed as a large septic system. Larger ones are similar to municipal sewage treatment plants and often discharge to surface water via NPDES permit.

Once built, ownership most frequently is turned over to a homeowner association representing the users who are responsible for the operation and maintenance.

Challenges to groundwater can come from poor site selection, poor design, poor construction, and lack of monitoring and maintenance. Each element can contribute to improperly treated sewage contaminating groundwater and surface water.

**Community Wastewater Systems Response Objective:**

Assure CWWS are properly located, designed, and maintained to prevent groundwater and surface water contamination.

**Community Wastewater Systems Response Assessment:**

CWWS have not proliferated in the past due to a prerequisite by MDEQ that the local unit of government pass a resolution accepting liability in the event of failure. Recent Court decisions and State regulation has removed that requirement and the number of proposals has escalated.

In an attempt to address the issue, Washtenaw County government and several Washtenaw County townships have enacted ordinances and regulations to address these critical points.

**Next Steps:**

Regulations that assure CWWS are properly located and operated should be enacted and enforced. Educational efforts to assure individual users are aware of the type of systems they are connected to and the dos and don'ts of how their actions can impact the system operation should be provided. Monitoring to assure systems are meeting design parameters must be a part of any CWWS. State legislation requiring prior zoning approval should be enacted.

*What protection activities address the challenge of community wastewater systems?*

- 💧 Clean Water Act
- 💧 Water Monitoring