

# **STORMWATER MANAGEMENT PROGRAM PLAN**



**WAUCONDA TOWNSHIP**  
LAKE COUNTY, ILLINOIS

# SMPP

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# Overview of the Stormwater Management Program Plan



**Des Plaines River – Lake County, IL** Photo by Dave Piasecki

## 1.1 Introduction

This Stormwater Management Program Plan (SMPP) was developed by the Township based on a SMPP template provided by the Lake County Stormwater Management Commission. The purpose of the SMPP is to meet the minimum standards required by the United States Environmental Protection Agency (USEPA) under the National Pollutant Discharge Elimination System (NPDES) Phase II program. Federal regulations through the USEPA require that all Municipal Separate Storm Sewer Systems (MS4s), partially or fully in urbanized areas based on the 2000 census, obtain stormwater permits for their discharges into receiving waters. Illinois EPA has issued a new version of its MS4 Permit. The new version of the permit became effective on March 1, 2016. According to the new permit, MS4s have 180 days from the effective date of the permit to comply with any changes or new provisions contained in the permit.

The SMPP describes the procedures and practices that can be implemented by the Township, with the goal of reducing the discharge of pollutants within stormwater runoff in order to comply with Federal standards. Compliance with the plan is intended to protect water quality thus contributing to the following amenities:

- cleaner lakes and streams,
- improved recreational opportunities and tourism,



- flood damage reduction,
- better aesthetics and wildlife habitat, and
- a safer and healthier environment for the citizens.

The SMPP addresses the primary program elements, including the manner in the Township:

- reviews, permits and inspects construction activity within its limits;
- manages the planning, design and construction of projects performed within its limits;
- maintains its facilities and performs its day-to-day operations;
- works toward protecting the receiving waters from illicit discharges;
- provides public education and outreach;
- trains its employees in carrying out and reporting program activities; and
- continually monitors and evaluates the program.

## 1.2 History



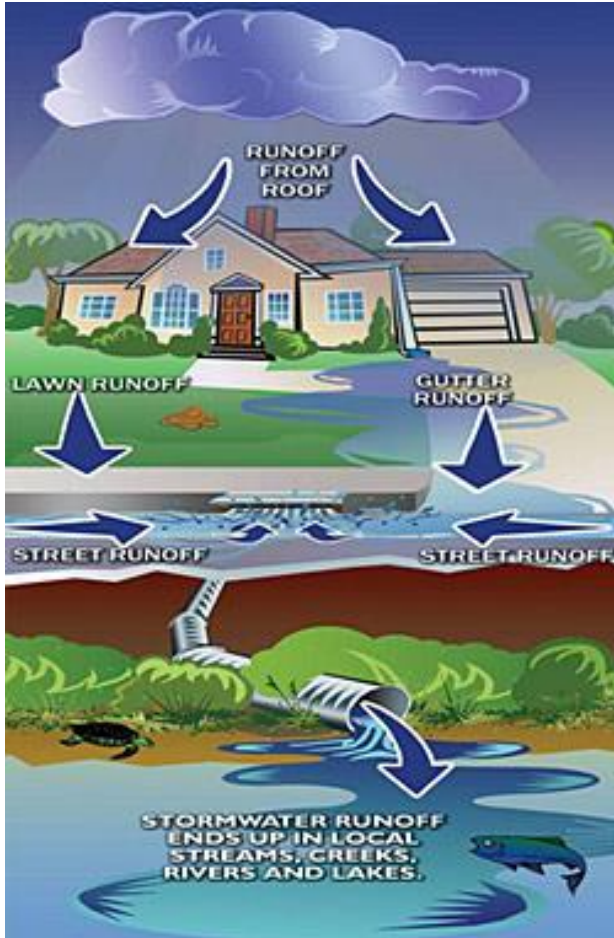
In 1948 the Federal Water Pollution Control Act was enacted to encourage water pollution control at the state and local levels. Between 1949 and 1969 the Cuyahoga River in Ohio caught fire ten times.

To better protect these public assets the 1948 Act was amended in 1972. The focus of the '72 Act was to obtain fishable and swimmable waters and eliminate the discharge of point source pollutants into navigable waters (such as industrial and waste water treatment plant outfalls). This was the beginning of the National Pollutant Discharge Elimination System (NPDES) program.

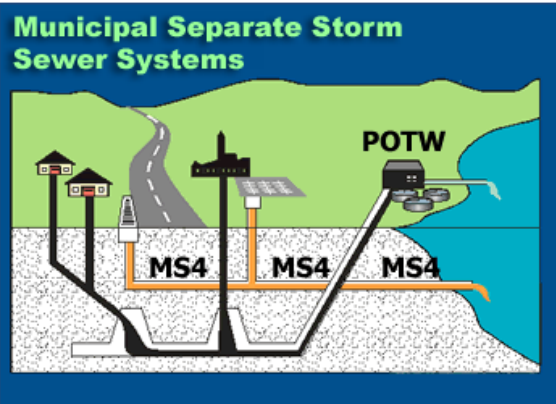


James Thomas  
Cleveland Press Collection  
Cleveland State University Library

The Act was further refined in 1977, to extend deadlines and better define types of pollutants. It became commonly referred to as the Clean Water Act (CWA).



In 1987 the NPDES permit program was expanded to also regulate discharges from Municipal Separate Storm Sewer Systems (MS4) as point source discharges instead of non-point source discharges.



The NPDES permit process regulates the discharge from MS4s, construction sites and industrial activities based on amendments to CWA in 1987 and the subsequent 1990 and 1999 regulations by the U.S. Environmental Protection Agency (USEPA). In Illinois, the USEPA has delegated administration of the federal NPDES program to the Illinois Environmental Protection Agency (IEPA). On December 20, 1999 the IEPA issued a general NPDES Phase II permit for all MS4s. Under the General Permit each MS4 was required to submit a Notice of Intent (NOI) declaring compliance with the conditions of the permit by March 10, 2003. The original NOI describes the proposed activities and best management practices that occurred over the original 5-year period toward the ultimate goal of developing a compliant SMPP. At the end of the 5<sup>th</sup> year (March 1, 2008) the components of the SMPP were required to be implemented; per the ILR40 permit. The IEPA reissued the ILR 40 permit on April 1, 2009 and again on March 1, 2016, including revisions each time.

Additionally, under the General ILR10 permit also administered IEPA, all construction projects that disturb greater than 1 acre of total land area are required to obtain an NPDES permit from IEPA prior to the start of construction. Municipalities covered by the General

ILR40 permit, are automatically covered under ILR10 30 days after the IEPA receives the NOI from the municipality.

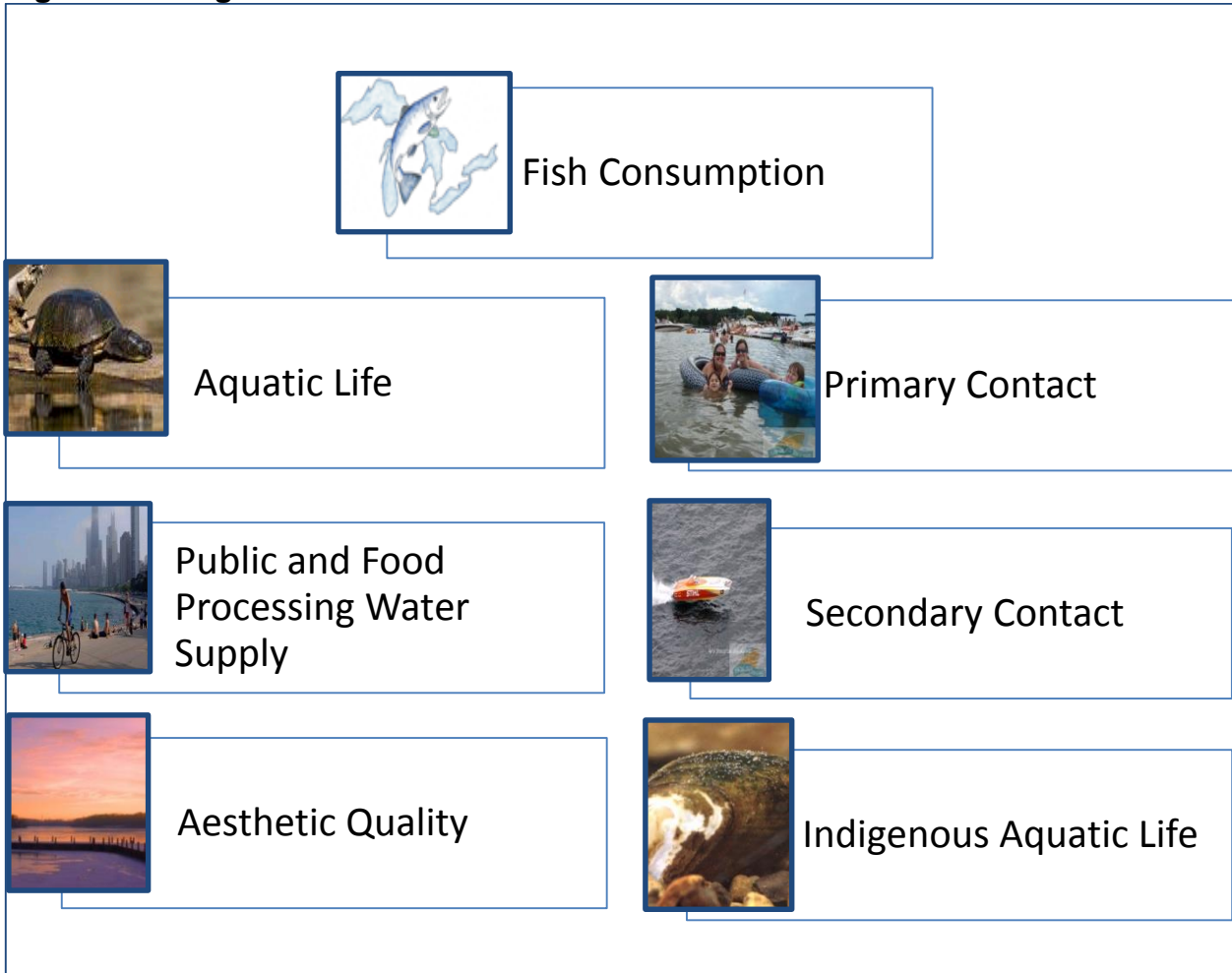
## **1.3 Water Quality Standards**

The 1987 Water Quality Act also established new requirements and funding, through the Clean Water Act Section 319, for states to develop and implement nonpoint source pollution control. Specifically, Section 319 required each state to: (1) identify navigable waters that, without government action to control non-point sources of pollution, cannot be reasonably expected to maintain applicable water quality standards or goals; (2) identify nonpoint sources that add significant amounts of pollution to affected waters; and (3) develop a nonpoint source water pollution plan on a watershed-by-watershed basis. The Illinois Environmental Protection Agency (IEPA) created a program to comply with these federal regulations. This program has 3 basic components.

### **1.3.A Designated Uses**

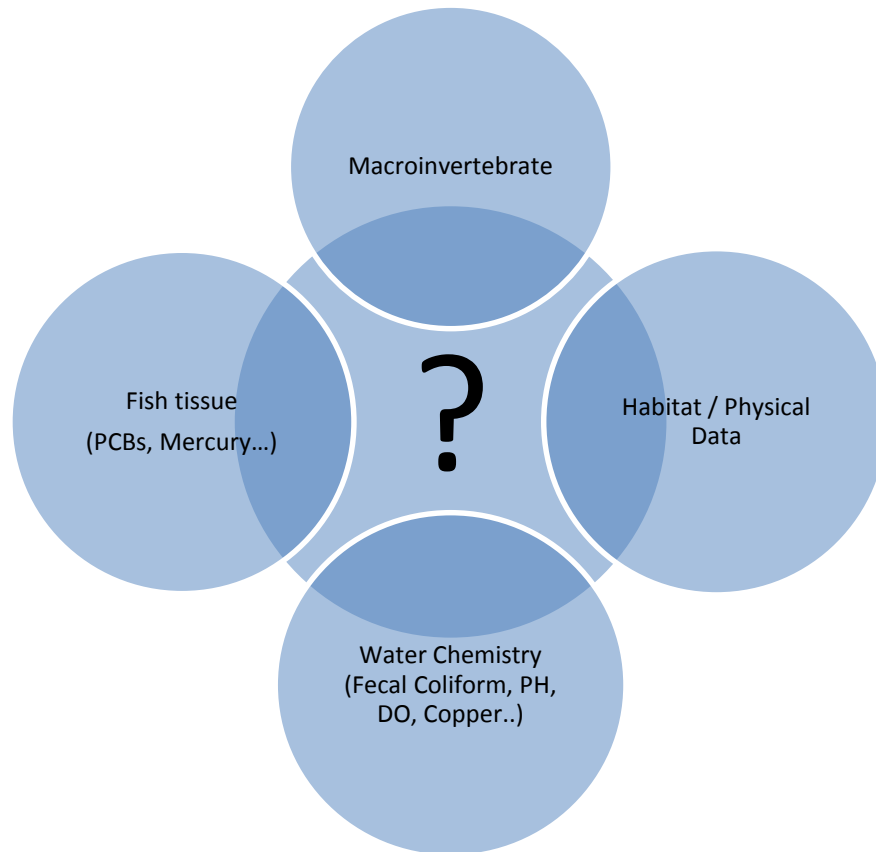
One of IEPA's first steps in achieving compliance with the Act was to identify all uses its waters should support. IEPA identified 7 designated uses, as depicted on **Figure 1**. Then each navigable water was evaluated to identify the designated uses it should support.

**Figure 1: Designated Uses**



### 1.3.B Water Quality Criteria

IEPA determined a set of water quality criteria that need to meet based on each of the 7 designated uses. Some criteria are applicable for multiple Designated Uses.

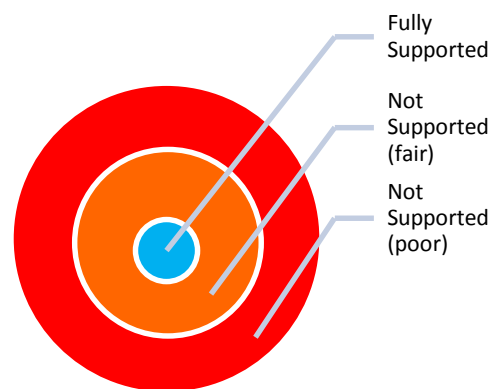


### 1.3.C Monitoring

IEPA is required to conduct a monitoring program for all of its receiving streams based on the water quality criteria it should be meet for each of its designated uses according to the following process.

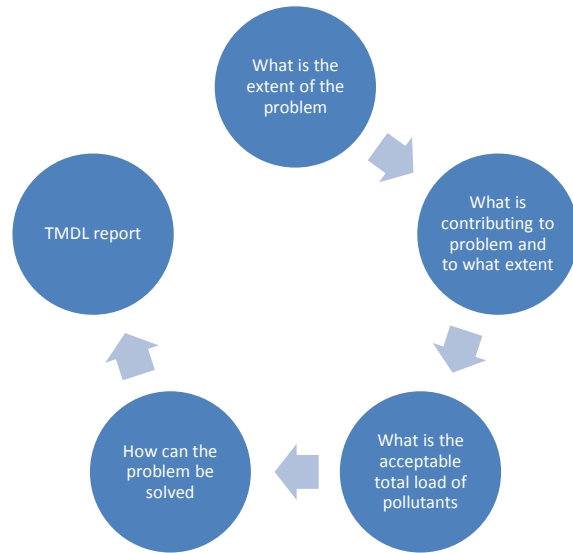
- Conduct Monitoring per Designated Use
- Determine if Water Quality Criteria are met
- Include Non-Supporting Waters on Impaired Waters report
- Rank non-supporting waters based on severity of problem.

IEPA is required to submit the monitoring results [305(b) report] to USEPA every 2 years. The impaired waters report [303(d) report] and ranking are part of this report.



### 1.3.D Total Maximum Daily Load (TMDL)

Total Maximum Daily Load (TMDL) reports are created by IEPA for impaired waters. These reports are created by IEPA based on severity. IEPA creates TMDL reports for impaired waters with the highest ranks. The majority of impaired waters do not yet have TMDL reports. This graphic identifies the pieces of a TMDL report. Once the TMDL report is approved by the USEPA, the recommended strategies should be implemented by the affected MS4.



### 1.4 Watersheds, Subwatersheds and Receiving Waters



**Figure 2: Mississippi River Watershed**

All storm water runoff from the Township discharges into the Fox River, a tributary to the Mississippi River. Topographic characteristics of the Township are typical of those in northeastern Illinois. Floodplains tend to be broad and flat with relatively small channels.

**Watershed:** The land area that contributes storm water to one of the four major Rivers in Lake County.

**Sub-Watershed:** The land area that contributes storm water to one of the receiving waters tributary to a major River.

**Receiving Water:** A natural or man-made system into which storm water or treated wastewater is discharged, including the four major rivers in Lake County, their tributary stream systems and other Waters of the U.S.

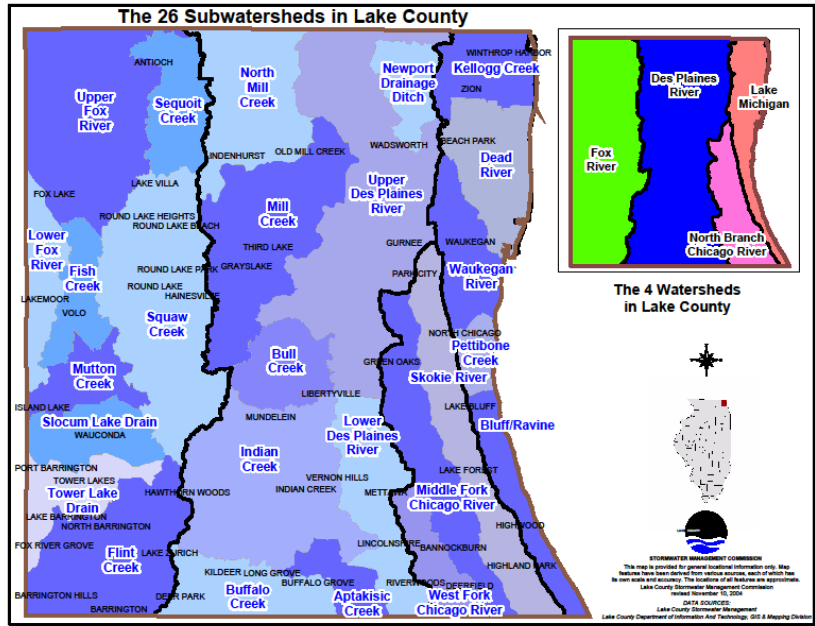


Figure 3: Lake County's Watersheds & Subwatersheds

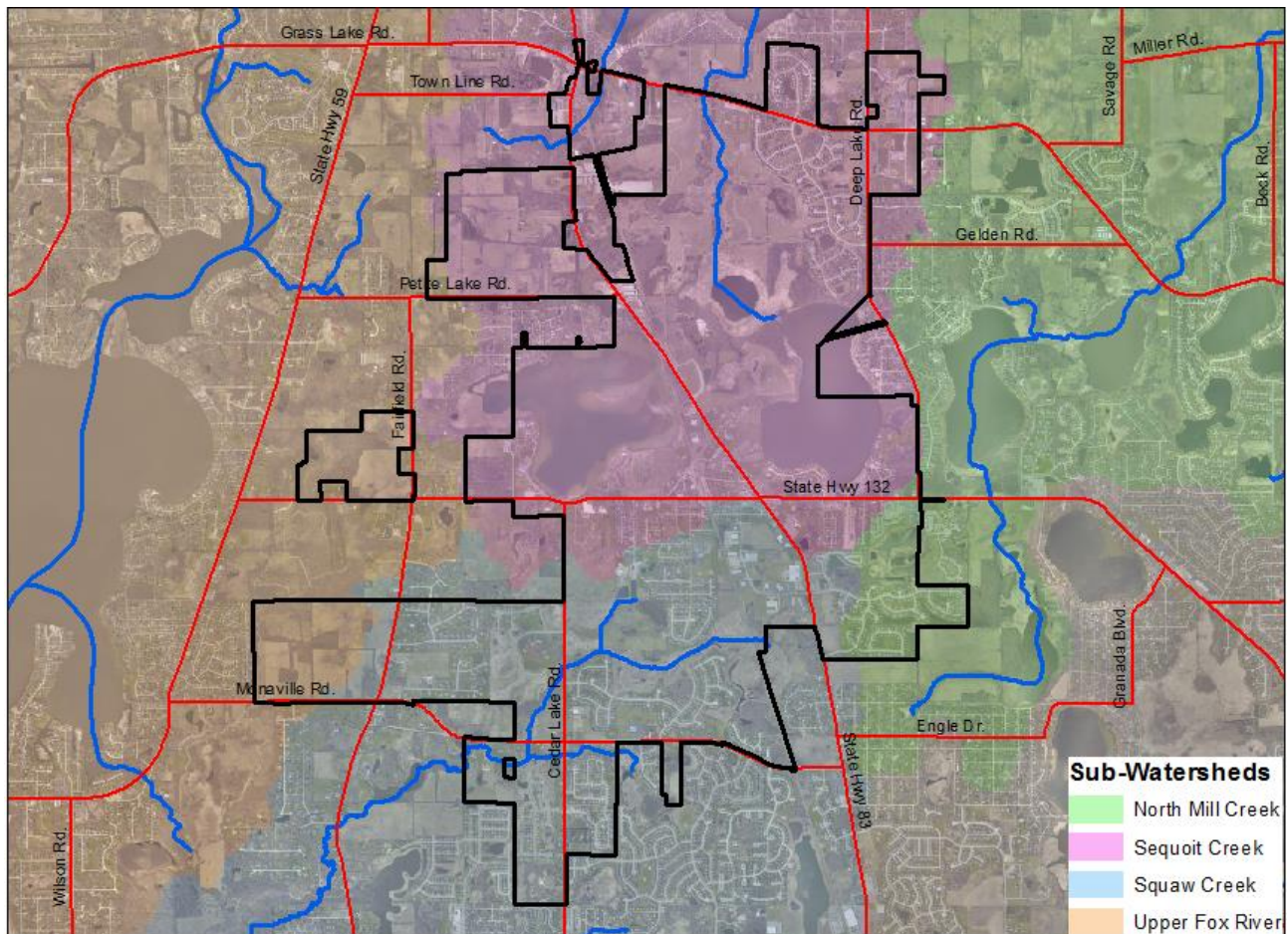


Figure 4: Major Sub-watersheds and Receiving Streams

## 1.4.A Watershed Descriptions

### ***Fox River Watershed***

The Fox River originates about 15 miles northwest of Milwaukee, Wisconsin. The river enters the northwest corner of Lake County in the Chain O'Lakes area and then enters McHenry County, but reenters Lake County south of Fox River Valley Gardens. About 163 square miles of Lake County drains to the Fox River.

Along the Fox River from the state line to Algonquin, the terrain is flat and contains many lakes and low-lying wetlands. The upland areas of the watershed include gently sloping topography to steep hilly terrain.

Major tributaries to the Fox River in Lake County include the Chain O'Lakes, Sequoit Creek, Squaw Creek, Fish Lake Drain, Mutton Creek, Slocum Lake Drain, Tower Lake Drain and Flint Creek. The area around the Chain O'Lakes is substantially developed around the many lakes, while the middle of the watershed is experiencing an increase in suburbanization. The same can be said for the southern area of the watershed, which includes new development within estate and rural estate land use.

The Fox River watershed includes all or portions of the communities of Antioch, Barrington, Barrington Hills, Deer Park, Fox Lake, Fox River Grove, Grayslake, Hainesville, Hawthorn Woods, Island Lake, Lake Barrington, Lake Villa, Lake Zurich, Lakemoor, Mundelein, North Barrington, Port Barrington, Round Lake, Round Lake Beach, Round Lake Heights, Round Lake Park, Tower Lakes, Volo and Wauconda.

## 1.4.B Identifying Outfalls (BMP C.1)

An Outfall means the point where a municipal separate storm sewer discharges into a "receiving water". Open conveyances connecting two municipal storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other Waters of the United States are not considered Outfalls. For the purposes of this manual the following definitions shall be used:

***Outfall: Storm sewer outlet, or other open conveyance point discharge location, that discharges into a Waters of the U.S, receiving stream or another MS4.***

Regulated systems include the conveyance or system of conveyances including roads with drainage systems, municipal streets, catch basins, gutters, ditches, swales, manmade channels or storm sewers.

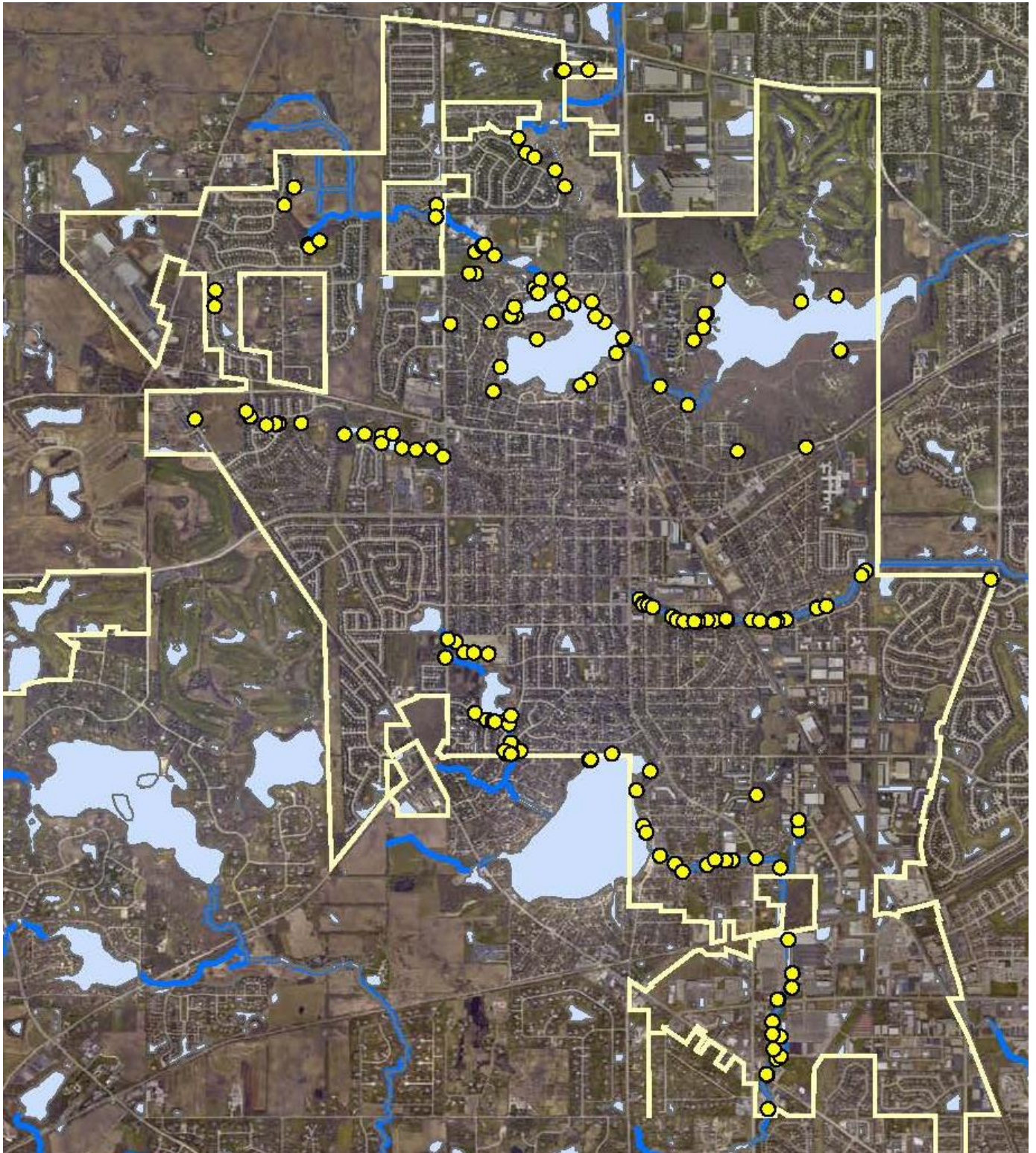


The outfall map should be revised to incorporate permitted outfalls associated with new developments. An outfall inventory should be performed every 5 years in conjunction with pre-screening efforts (Chapter 3.4.D.2); the focus of this effort is to search for new outfalls.

Measurable Goal(s):

- Maintain outfall inventory, searching for new outfalls every 5 years.
- Identify high priority outfalls

**Figure 5: Significant Outfall Locations**



## 1.5 Countywide Approach to NPDES Compliance

The Lake County Stormwater Management Commission (SMC) is a countywide governmental agency created by county ordinance under the authority of Illinois Revised Statute 55/5-1062. SMC's goals include the reduction of flood damage and water quality degradation. Another purpose of SMC is to assure that new development addresses non-point source pollution, does not increase flood and drainage hazards to others, or create unstable conditions susceptible to erosion. To accomplish this, the SMC works cooperatively with individuals, groups, and units of government as well as serving as the corporate enforcement authority for the Lake County Watershed Development Ordinance. SMC enforces the Watershed Development Ordinance (WDO) in non-certified communities on behalf of the municipality. The municipality is responsible for enforcing the WDO in Certified Communities. A municipality is considered a Certified Community after its petition is approved by SMC. SMC utilizes technical assistance, education programs and watershed planning to increase public awareness of natural resources and the impacts of urbanization on stormwater quality. In addition, SMC provides solutions to problems related to stormwater and identifies effective ways of managing natural resources.

The General Permit allows for MS4s to take credit for activities being performed by a Qualifying Local Program (QLP) toward meeting its permit requirements. The Lake County Stormwater Management Commission (SMC) is a Qualifying Local Program for MS4s in Lake County. As part of their ongoing services, SMC performs some functions related to each of the six minimum control measures (MCM). SMC has been providing services under four of the six minimum control categories since it began implementing a comprehensive, countywide stormwater program in 1991. However, MS4s are required to provide additional services for each of the Minimum Control Measures with the greatest effort in the Illicit Discharge Detection and Elimination and Pollution Prevention/Good Housekeeping categories. A detailed discussion of the QLP program is described in **Chapter 3.1**.

# Program Management

This Chapter describes the organizational structures of Wauconda, the County and IEPA. It further discusses the roles and responsibilities of the various involved parties.

## 2.1 Implementation of this SMPP

The SMPP includes detailed discussions on the types of tasks that are required to meet the permit conditions under the NPDES II program and how to perform these tasks. The tracking forms are broken out into three categories (based on the frequency of occurrence). There are three different tracking forms included: Annual, As-Needed and On-Going. These forms should be printed annually and the progress of all tasks tracked. At the end of the yearly reporting period (March 1 – February 28/29) the forms should be filed in a binder to document SMPP related activities to IEPA, or their authorized agent, in the case of an audit. It is anticipated that implementation of this SMPP constitutes compliance with the program. The SMPP must be posted on the Township website.

Annual Reports, Monitoring Data, NOI and Stormwater Management Plans shall be kept for a minimum of 5-years after the expiration of this permit (March 1, 2022).

## 2.2 Intra-Department Coordination

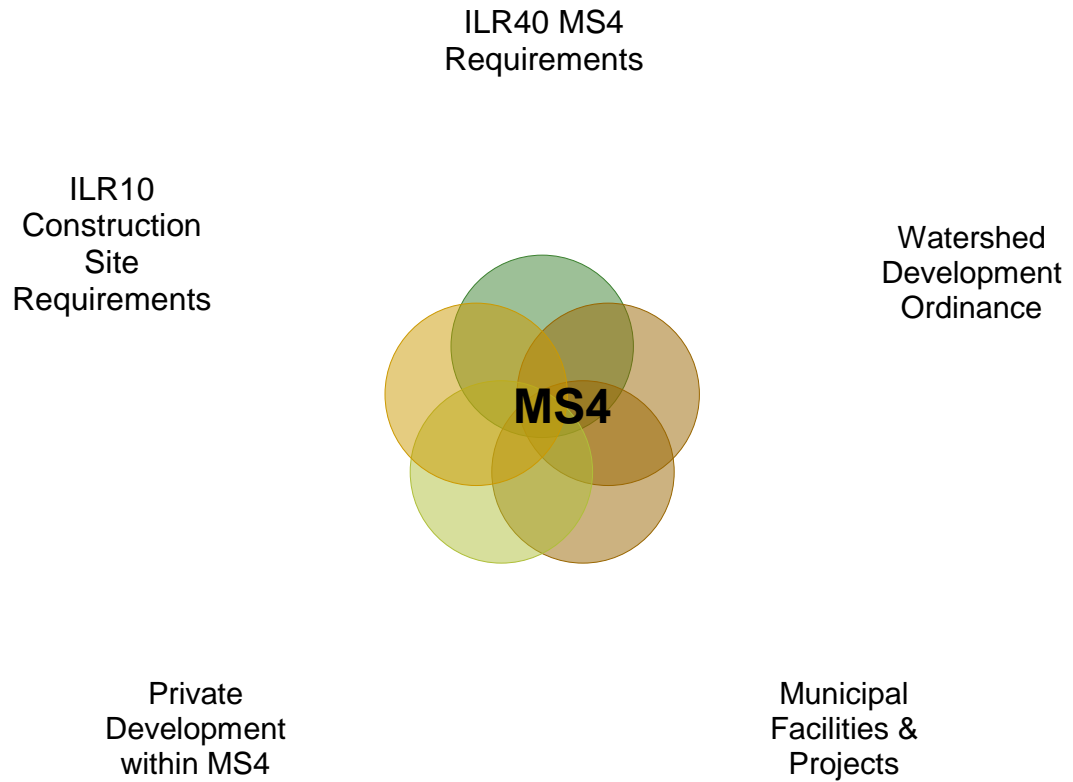
The Board of Trustees is the policy and budget setting authority for the Township. The Stormwater Coordinator has primary responsibility for managing the overall program.

### 2.2.A Stormwater Coordinator

The Highway Commissioner is the Stormwater Coordinator and is responsible for the oversight and implementation of this SMPP. The Stormwater Coordinator has many different responsibilities, he/she:

- is the lead contact for coordination with the Lake County Stormwater Management Commission, the Illinois Environmental Protection Agency, contractors, the development community and other external regulatory agencies;
- understands the requirements of ILR40, ensures that the SMPP meets the requirements of the permit and that the Township effectively implements the SMPP;
- ensures that the Facilities comply with all minimum ILR40 permit requirements; and,
- understands the role illicit discharges play in the overall NPDES II program. In general, an incidence of non-compliance must be filed with IEPA for illicit discharges exiting an MS4's outfall into a receiving water. Additionally, if the

illicit discharge is generated by a construction site, it may be necessary for both the applicant and the MS4 to file the ION form with IEPA.



**Example Roles of MS4 (provided by Gewalt Hamilton & Associates)**

## **2.2.B Highway Department**

Infrastructure maintenance activities within the Township are carried out by Highway Department personnel. Highway Department personnel are designated as the primary entity responsible for performing the duties specified under Chapter 3.4 Illicit Discharge Detection and Elimination and Chapter 3.7 Pollution Prevention and Good Housekeeping.

## **2.3 Coordination with Lake County Stormwater Management Commission**

Coordination between the Township and the Lake County Stormwater Management Commission (SMC) occurs through both participation in the SMC sponsored MAC. The Township's Stormwater Coordinator is the lead contact for participation in the MAC forums.

SMC is the primary entity responsible for meeting Public Education and Outreach and Public Participation and Involvement MCMs. Additionally, SMC has the lead responsibility for Construction Site Runoff Control and Post Construction Runoff Control MCMs in Non-Certified Communities.

## **2.4 Watershed Work Groups**

### *2.4.1 Fox River Study Group*

The Fox River Study Group (FRSG) is a diverse coalition of stakeholders working together to assess water quality in the Fox River watershed. Participants include Friends of the Fox River, Sierra Club, Fox River Water Reclamation District (Elgin), Fox Metro Water Reclamation District (Aurora), Fox River Ecosystem Partnership, Illinois Environmental Protection Agency (IEPA) and Blackberry Creek Watershed Plan Implementation Council as well as representatives from Algonquin, Aurora, Batavia, Crystal Lake, Elgin, Geneva, Island Lake, Kane County, Lake in the Hills, St. Charles and Yorkville.

The FRSG began meeting in the summer of 2001 to plan how to prepare for the upcoming Total Maximum Daily Load (TMDL) study on the river. A TMDL study is required by federal law because three segments of the Fox River appeared on the Illinois Environmental Protection Agency's list of impaired waters (the 1998 303(d) list). These segments, which lie between Holiday Hills and North Aurora, were listed because results from at least one water sample suggest there are water quality concerns. The most common concerns include low dissolved oxygen levels or high concentrations of fecal coliform bacteria. The 303(d) listing was updated in 2002, and now includes the entire length of the Fox River from the Wisconsin state line to the river's mouth at Ottawa with the most numerous causes listed as flow alteration, habitat alteration, low dissolved oxygen, nutrients, organic enrichment, PCBs, siltation or suspended solids.

The mission of the Fox River Study Group is to bring together a diverse coalition of stakeholders to work together to preserve and/or enhance water quality in the Fox River watershed.

The activities of the Fox River Study Group shall include, but are not limited to, the following:

- Participation in water quality monitoring efforts in the Fox River watershed;
- Development of a computer model of the Fox River watershed;
- Maintenance of the computer model as a management tool to promote efficient use of taxpayer and private money on watershed projects, assess the effect of various development options throughout the watershed, educate stakeholders, evaluate management priorities, identify sensitive regions within the watershed, develop continuing monitoring programs;
- Development of a plan to preserve and/or enhance the water quality of the Fox River; and
- Promotion, as needed, of the adoption of the watershed plan by appropriate entities who have the authority for its implementation.

Additional information and a copy of the Fox River Implementation Plan can be found at <http://www.foxriverstudygroup.org/index.htm>.

## **2.5 Coordination with Consultants**

The Township may enlist the services of consultants to assist in the implementation of the WDO.

## **2.6 Coordination of Contractors**

The Township also has a responsibility to hire contractors who are knowledgeable of the applicable requirements of the ILR40 and ILR10 permits.

## **2.7 Coordination with the IEPA**

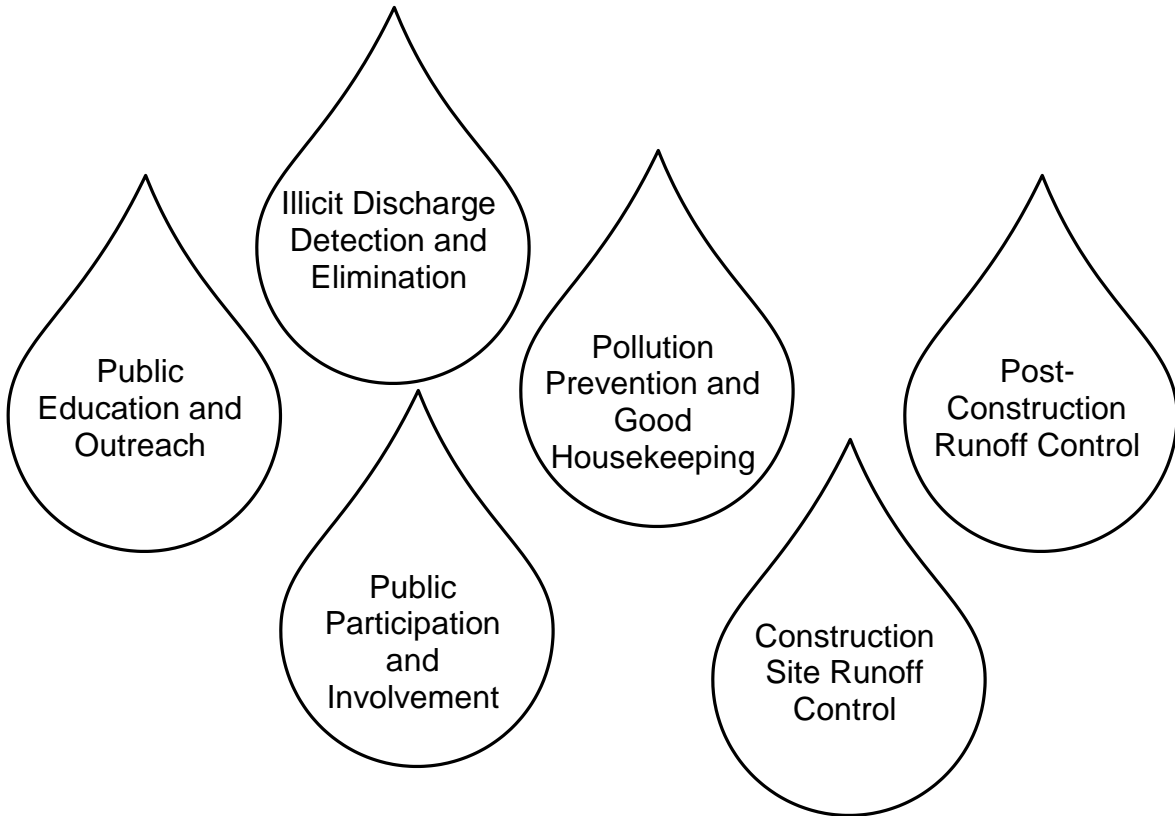
The Township is required to complete annual reports which describes the status of compliance with the ILR40 permit conditions and other related information as presented on the annual report template provided by the QLP. The annual report must be posted on the Township website and submitted to the IEPA by the first day of June each year. Annual reporting to IEPA should consist of “implemented SMPP” for all tasks completed in accordance with this SMPP. Additional information should be provided for areas of enhancement or tasks not completed.

Records regarding the completion and progress of the SMPP commitments must be kept by the community. The tracking form, described in Chapter 2.1, should be updated throughout the year. The completed forms should be located in a binder with necessary

supporting documentation. The binder must be available for inspection by both IEPA and the general public.



# The Program



This Stormwater Management Program Plan includes six Minimum Control Measure (MCM) categories, each of which is necessary in an effort to reduce/eliminate stormwater pollution in receiving water bodies. The QLP role in addressing each MCM is described in Chapter 3.1. Additional MS4 efforts are described in the subsequent chapters. Chapter 3.2 describes the efforts to educate the public about stormwater pollution and stormwater pollution prevention. The manner in which the Township incorporates public participation and involvement into the SMPP is explained in Chapter 3.3. Chapter 3.4 describes the approach to detecting and eliminating stormwater illicit discharges. Lastly, Chapter 3.5 discusses responsibilities for the care and upkeep of its general facilities, associated maintenance yards, and municipal roads and to minimize pollution. This chapter also discusses necessary training for employees on the implementation of the SMPP.

### 3.1 Qualified Local Program

SMC requires – through the Lake County Watershed Development Ordinance – local stormwater management programs to implement one or more of the minimum control measures specified in the Illinois Environmental Protection Agency’s (IEPA’s) General NPDES Permit No. ILR40 (MS4 Permit), making it a Qualifying Local Program (QLP). Consistent with the County’s comprehensive, countywide approach to stormwater management, as a QLP, SMC has been working since the early 2000’s, when began the process of expanding its NPDES Stormwater Program to include small MS4s, to assist Lake County MS4s in developing and implementing efficient and effective stormwater management programs. Although SMC is not itself an MS4, as it does not own or operate a separate storm sewer system, it does perform activities related to each of the six minimum control measures (MCMs) described in Illinois EPA’s General NPDES Permit No. ILR40. SMC remains committed to performing a variety of stormwater management activities across the County – which are described in more detail below – to provide Lake County with a baseline Countywide stormwater management program that can be built upon by each of the individual MS4s. In addition to the stormwater management activities described below, SMC program is continually evolving, to better assist Lake County MS4s in meeting the requirements of the new 2016 MS4 Permit.

Measurable Goal(s):

- Provide NOI template in accordance with 2016 ILR40s permit
- Provide yearly annual reporting template including a description of QLP activities for the applicable permit year.
- Research, compile, and make available information regarding receiving waters, impaired waters, pollutants causing such impairments, and the status of TMDL development on such waters. Expand the “State of Lake County Water’s segment of the annual report template accordingly.
- Provide Stormwater Pollution Plan template for use Lake County MS4s.

#### 3.1.A Public Education and Outreach

SMC will continue to support Lake County MS4s in the development and implementation of their stormwater management programs by performing activities related to the Public Education and Outreach MCM, as described below.

##### *3.1.A.1 Distributed Paper Material (BMP A.1)*

SMC compiles, develops, and distributes throughout Lake County a variety of materials related to stormwater management. SMC has produced a number of pamphlets and brochures related to stormwater management and prepares a quarterly newsletter, “Mainstream,” as well as an Annual Report, which highlight successful stormwater management activities conducted throughout Lake County. SMC also prepares project fact sheets that provide information about ongoing and recently completed stormwater management projects. In addition, SMC has developed or collaborated on a number of

manuals related to stormwater management, such as “Riparian Areas Management: A Citizen’s Guide,” “A Citizen’s Guide to Maintaining Stormwater Best Management Practices,” and the “Streambank Stabilization Manual,” and will continue to develop or collaborate on such manuals or manual updates on an as-needed basis.

Additionally, SMC researches and compiles materials related to stormwater management from a variety of sources including the QLP, IEPA, USEPA, Center for Watershed Protection, Chicago Metropolitan Agency for Planning “CMAP”(previously Northeastern Illinois Planning Commission “NIPC”), University of Wisconsin Extension, Solid Waste of Lake County (SWALCO) and other agencies and organizations. SMC is a clearing house for MS4 communities by making available the following types of materials available through their take-a-way rack or web-site:

- Informational sheets/pamphlets regarding storm water best management practices including cost-benefits and implementation guidance,
- Informational sheets/pamphlets regarding water quality best management practices,
- Informational sheets/pamphlets regarding construction site activities (soil erosion and sediment control best management practices),
- Storage and disposal of fuels, oils and similar materials used in the operation of or leaking from, vehicles and other equipment;
- Use of soaps, solvents or detergents used in the outdoor washing of vehicles, furniture and other property,
- Paint and related décor;
- Lawn and garden care; and
- Winter de-icing material storage and use.
- Informational sheets/pamphlets regarding green infrastructure strategies such as green roofs, rain gardens, rain barrels, bioswales, permeable piping, dry wells and permeable pavement.
- Informational sheets/pamphlets regarding the hazards associated with illegal discharges and improper disposal of waste and the manner in which to report such discharges.

Measurable Goal(s):

- Distribute informational materials from “take away” rack at SMC.
- Upon request, distribute informational materials directly to Lake County MS4s for local distribution.

### *3.1.A.2 Speaking Engagement (BMP A.2)*

SMC provides educational presentations related to IEPA's NPDES Stormwater Program on a regular basis at Municipal Advisory Committee (MAC) meetings. Upon request, SMC will provide educational presentations related to IEPA's NPDES Stormwater Program to Lake County MS4s.

Measurable Goal(s):

- Provide educational presentations related to IEPA's NPDES Stormwater Program at MAC meetings.
- Upon request, provide educational presentations related to IEPA's NPDES Stormwater Program (e.g., "The Big Picture: Water Quality, Regulations & NPDES") to Lake County MS4s.

### *3.1.A.3 Public Service Announcement (BMP A.3)*

A public service announcement related to IEPA's NPDES Stormwater Program will be included in SMC's quarterly newsletter, "Mainstream," at least once each year. SMC will coordinate with the Lake County Department of Transportation (LCDOT) to post watershed identification signage in watersheds where watershed planning or project implementation efforts have occurred or are occurring.

SMC also utilizes social media to reach out to additional target audiences. Both Facebook and Twitter feeds are updated to include relevant water quality information and promote educational opportunities across the County.

Measurable Goal(s):

- Include public service announcement related to IEPA's NPDES Stormwater Program in its quarterly newsletter, "Mainstream," at least once each year.
- Post watershed identification signage in cooperation and collaboration with LCDOT.
- Provide information via social media (Facebook and Twitter).

### *3.1.A.4 Outreach Events (BMP A.4)*

SMC regularly sponsors and co-sponsors educational and technical training workshops on a variety of stormwater management-related topics. Each year, SMC will sponsor or co-sponsor at least one workshop on a topic related to IEPA's NPDES Stormwater Program, such as soil erosion and sediment control or stormwater best management practices (BMPs) that can be used to protect and improve water quality. SMC also offers an annual deicing workshop and a training workshop on green infrastructure practices; made available to both public employees and contractors.

Measurable Goal(s):

- Sponsor or co-sponsor workshop(s) on a topics related to IEPA's NPDES Stormwater Program.
- Track workshops and events.

### *3.1.A.5 Classroom Education Material (BMP A.5)*

Upon request, SMC will contribute to the development and compilation of materials for inclusion in a stormwater education kit that can be distributed to local students and teachers and/or other local stakeholders. Additionally, upon request, SMC will provide information, materials, and training to local students and teachers and/or other local stakeholders interested in conducting storm drain stenciling.

Measurable Goal(s):

- Upon request, develop and compile materials for inclusion in a stormwater education kit.
- Upon request, provide information, materials, and training to local students, teachers and/or stakeholders interested in conducting storm drain stenciling.

### *3.1.A.6 Other Public Education – Web Site (BMP A.6)*

SMC maintains a website that contains a variety of materials and resources related to stormwater management. The website provides information about IEPA's NPDES Stormwater Program, provides information about stormwater best management practices (BMPs), allows for download of stormwater management-related publications and documents, provides notices of upcoming meetings and ongoing projects, includes watershed plans and watershed workgroup information, and provides links to a number of other stormwater management-related resources including materials described in 3.1.A.1.

SMC will research, compile and make available materials about the impacts of climate change on precipitation and stormwater runoff and the pollution prevention practices that can be used by private property owners, and an evaluation of the impacts of climate change on existing flood control techniques and practices used to achieve runoff volume reduction. A link to the USEPA's climate change website <http://www3.epa.gov/climatechange> is included on SMC's website.

Measurable Goal(s):

- Maintain and update the portion of the SMC website dedicated to IEPA's NPDES Stormwater Program with resources such as model ordinances, case studies, brochures, and links including information related to climate change.
- Make "The Big Picture: Water Quality, Regulations & NPDES" presentation available to Lake County MS4s.

## **3.1.B Public Participation/Involvement**

SMC will continue to support Lake County MS4s in the development and implementation of their stormwater management programs by performing activities related to the Public Participation/Involvement MCM, as described below.

### *3.1.B.1 Public Panel (BMP B.1)*

SMC provides procedural guidance and implements its Citizen Inquiry Response System (CIRS) for receiving and taking action on information provided by the public regarding post-construction stormwater runoff control. SMC coordinates and conducts public meetings as well as committee meetings that are open to the public. A monthly Stormwater Management Commission meeting is open to the public and involves the SMC Board of Commissioners, which includes six municipal representatives and six county board members.

The Technical Advisory Committee (TAC) was created in 1992 to assist in the development, review, and revision of the Watershed Development Ordinance (WDO) and the associated administrative policies and procedures. TAC is made up of representatives from the development, environmental, municipal, and consulting engineering fields. TAC meetings are held monthly or on an as-needed basis.

The Municipal Advisory Committee (MAC) is made up of municipal, township, drainage district, consulting firm, and county representatives. MAC has worked to discuss, coordinate, and collaborate on the implementation of IEPA's NPDES Stormwater Program. MAC will continue to meet quarterly or as needed to assist Lake County MS4s with the implementation of IEPA's NPDES Stormwater Program.

The Watershed Management Board (WMB) meets annually to make recommendations on stormwater BMP project funding. WMB members include chief municipal elected officials, township supervisors, drainage district chairs, and county board members from each district within each of Lake County's four major watersheds.

Measurable Goal(s):

- Implement and provide guidance on existing CIRS procedures.
- Provide notice of public meetings on SMC website.
- Track number of meetings conducted

### *3.1.B.2 Stakeholder Meeting (BMP B.3)*

SMC is actively involved in watershed planning throughout Lake County. SMC believes that the watershed planning process cannot happen and will not be successful without the input, interest, and commitment of the watershed stakeholders. Watershed stakeholders may include municipalities, townships, drainage districts, homeowner associations, lakes management associations, developers, landowners, and local, county, state, and federal agencies.

Measurable Goal(s):

- Provide notice of stakeholder meetings on SMC website.
- Track number of watershed committee meetings conducted.
- Establish watershed planning committees for each new watershed planning effort.

### *3.1.B.3 Program Involvement (BMP B.6)*

Consistent with Lake County's comprehensive, countywide approach to stormwater management, SMC serves as a Qualifying Local Program (QLP) for all Lake County MS4s. In this role, in 2002, SMC proactively formed the Municipal Advisory Committee (MAC) to provide a forum for representatives of local MS4s, which include municipalities, townships, and drainage districts, to discuss, among other topics, the implementation of IEPA's NPDES Stormwater Program. SMC will continue to facilitate quarterly MAC meetings and will continue to provide general support to Lake County MS4s as they continue to develop and implement their stormwater management programs. SMC will prepare an annual report on its stormwater management activities and will provide guidance to Lake County MS4s in preparing their own annual reports.

Measurable Goal(s):

- Track number of MAC meetings conducted.
- Prepare annual report template for use by Lake County MS4s including a description of the Qualifying Local Program stormwater management activities.
- Prepare SMPP template for use by Lake County MS4s in creating their own SMPP.

### **3.1.C Illicit Discharge Detection and Elimination**

SMC will continue to support Lake County MS4s in the development and implementation of their stormwater management programs by performing activities related to the Illicit Discharge Detection and Elimination MCM, as described below. Note, however, that the primary responsibility for the implementation of the Illicit Discharge Detection and Elimination MCM lies with the MS4.

Measurable Goal(s):

- Continue to make available information regarding prioritization of outfalls for illicit discharge screening activities.
- Continue to make available compiled GIS data related to the County's existing stormwater infrastructure (e.g. storm sewer atlases, stream inventories and detention basin inventories).

#### *3.1.C.1 Regulatory Control Program (BMP C.2)*

SMC provides local MS4s with model and example illicit discharge ordinances that prohibit all non-stormwater discharges, including illegal dumping, to the storm sewer system. Additionally, the WDO includes provisions that prohibit illicit discharges to the storm sewer system during construction (i.e., prior to final site stabilization) on development sites.

Measurable Goal(s):

- Provide model and example illicit discharge ordinances to Lake County MS4s.
- Continue to administer and enforce the WDO.

### *3.1.C.2 Other Illicit Discharge Controls (BMP C.10)*

SMC regularly sponsors and co-sponsors educational and technical training workshops on a variety of stormwater management-related topics. Each year, SMC will sponsor or co-sponsor an illicit discharge detection and elimination workshop or other training workshop related to IEPA's NPDES Stormwater Program and track the number of attendees that attend the workshop as previously described in Chapter 3.1.A.4.

Additionally, as part of its public education and outreach efforts, SMC distributes informational materials throughout Lake County about the hazards associated with illegal discharges and the improper disposal of waste.

As described in Chapter 4.1 the Lake County Health Department's Lake Management unit performs extensive monitoring of inland lakes and Lake Michigan Beaches. Upon receiving a request for service, LMU staff investigates possible pollution sources, fish kills and other lake or pond related inquires throughout the county. Although the Lakes Management Unit is not an enforcement agency, they direct non-jurisdictional issues to appropriate agencies for enforcement, if necessary.

Measurable Goal(s):

- Sponsor or co-sponsor and track the number of attendees at an Illicit Discharge Detection and Elimination workshop or other training workshop related to IEPA's NPDES Stormwater Program.
- Distribute informational materials about the hazards of illicit discharges and illegal dumping from "take away" rack at SMC and SMC website.

### **3.1.D Construction Site Runoff Control**

The goal of the Lake County Watershed Development Ordinance (WDO) is to ensure that new development does not increase existing stormwater problems or create new ones. The WDO establishes countywide standards for runoff maintenance, detention sites, soil erosion and sediment control, water quality, wetlands and floodplains. These provisions are only applicable for regulated development activities as defined by the WDO. Applicants that hydrologically disturb greater than 1-acre are also required to seek coverage under the statewide construction general permit by filing a Notice of Intent (NOI) with IEPA.

The WDO is implemented primarily at the local level. The majority of the fifty-three municipalities in the county were "Certified Communities." The designation allows those communities to enforce WDO standards within their own jurisdictions. Note, however, that the primary responsibility for the implementation of the Construction Site Runoff Control MCM in certified communities (i.e., communities certified by SMC to administer and enforce the provisions of the WDO) lies with the MS4.



SMC will continue to support Lake County MS4s in the implementation of the Construction Site Runoff Control MCM by administering and enforcing the WDO and performing other stormwater management activities, as described below. SMC administers the WDO and issues permits for the developments within the Non-Certified Communities.

### *3.1.D.1 Regulatory Control Program (BMP D.1)*

The WDO is the regulatory mechanism that requires the use of soil erosion and sediment controls on development sites throughout Lake County. The soil erosion and sediment control provisions are included in Article 6 of the WDO. At a minimum, these standards apply to any development project that hydrologically disturbs 5,000 square feet of land or more.

SMC has also created a Designated Erosion Control Inspector (DECI) program. The purpose of the program is to facilitate positive communication between the permit issuing agency, whether such agency be SMC or a certified community, and the permit holder, by creating a single point of contact for the discussion and resolution of site soil erosion and sediment control issues and concerns. Furthermore, the program is intended to improve site conditions, minimize environmental impacts, and educate contractors, developers, and inspectors about the use of soil erosion and sediment control BMPs. It is worth noting that the DECI program was designed to closely mirror the inspection requirements of IEPA's General NPDES Permit No. ILR10.

Measurable Goal(s):

- Continue to administer and enforce the WDO.
- Continue to administer the Designated Erosion Control Inspector (DECI) program outlined by the WDO.

### *3.1.D.2 Erosion and Sediment Control BMPs (BMP D.2)*

§600 of the WDO specifies the soil erosion and sediment control measures that must be used in conjunction with any land disturbing activities conducted on a development site. Ordinance provisions include but are not limited, to the following:

- Grading, soil erosion and sediment control plan. The plan must:
  - Minimize soil disturbance
  - Prevent discharge of sediment from the site through the implementation of soil erosion control practices, primarily, and sediment control secondarily
  - Protect receiving waters, natural areas and adjacent properties from damage which may result from the proposed grading
  - complete installation of soil erosion and sediment control features prior to commencement of hydrologic disturbance
  - stabilize disturbed areas within 7 days of active disturbance
  - avoid disturbance of streams whenever possible

- use controls that are appropriate for the size of the tributary drainage area
  - protect functioning storm sewers from sediment
  - prevent sediment from being tracked onto adjoining streets
  - limit earthen embankments to slopes of 3H:1V
  - identify soil stockpile areas
  - utilize statewide standards and specifications as guidance for soil erosion and sediment control.
- Waste control;
  - Runoff Volume Reduction Hierarchy and Water Quality;
  - Established inspection duties for the applicant and procedures for inspections;
  - Record keeping and reporting procedures;
  - Security deposits to ensure faithful performance;
  - Enforcement measures to achieve compliance; and
  - One year warranty period, for applicable developments.

SMC has maintains technical guidance documents to accompany the WDO. The guidance documents and the Illinois Urban Manual 2014 are used to guide the creation of development plans that are in compliance with the provisions of the WDO and provides detailed information on the use of soil erosion and sediment control BMPs.

As part of the permit review process, applicants that hydrologically disturb greater than 1-acre are also required to seek coverage under the statewide construction general permit by filing a Notice of Intent (NOI) with IEPA. During construction, applicants are required to submit to IEPA Incidence of Noncompliance (ION) forms, as necessary. After the site is substantially stabilized, the applicant is required to submit a Notice of Termination (NOT).

Measurable Goal(s):

- Continue to administer and enforce the WDO.
- Continue to maintain technical guidance documents.

### *3.1.D.3 Other Waste Control Program (BMP D.3)*

The WDO includes several provisions that address illicit discharges generated by construction sites. The applicant is required to prohibit the dumping, depositing, dropping, throwing, discarding or leaving of litter and construction material and all other illicit discharges from entering the stormwater management system.

Measurable Goal(s):

- Continue to administer and enforce the provisions of the WDO related to the control of waste and debris during construction on development sites.

### *3.1.D.4 Site Plan Review Procedures (BMP D.4, E.4)*

A community's designated enforcement officer is responsible for reviewing and permitting development plans and for administering and enforcing the provisions of the WDO. Within certified communities (i.e., communities certified by SMC to administer and enforce the provisions of the WDO), responsibility for reviewing and permitting development plans and for administering and enforcing the provisions of the WDO lies with the MS4; within non-certified communities, the designated enforcement officer is SMC's chief engineer. All designated enforcement officers must pass an exam in order to qualify to act as such. SMC administers this enforcement officer program, providing training on an as-needed basis to all enforcement officers to assist them in passing the exam, and maintains an up-to-date list identifying each community's designated enforcement officer. In addition to administering the enforcement officer program, SMC periodically reviews each community's WDO administration and enforcement records, using the results of such review to evaluate the performance of certified communities and designated enforcement officers.

SMC maintains technical guidance documents to accompany the WDO. These documents are used to guide the creation of development plans that are in compliance with the provisions of the WDO and provides additional guidance on the administration and enforcement of the ordinance.

#### Measurable Goal(s):

- Administer the Enforcement Officer (EO) program outlined by the WDO.
- Maintain an up-to-date list identifying each community's designated enforcement officer.
- Periodically review each community's WDO administration and enforcement records.
- Continue to maintain technical guidance documents.

### *3.1.D.5 Site Inspection/Enforcement Procedures (BMP D.6, E.5)*

Article 5 of the WDO contains both recommended and minimum requirements for the inspection of development sites. Within certified communities, the community's designated enforcement officer is responsible for conducting these inspections; within non-certified communities, SMC's chief engineer is responsible for conducting these inspections. Per the ordinance, these inspections may be conducted by a community's designated enforcement officer at any stage in the construction process. For major developments, as defined by the WDO, the enforcement officer conducts site inspections, at a minimum, upon completion of installation of soil erosion and sediment controls, prior to the start of any other land disturbing activities, and after final stabilization and landscaping, prior to the removal of soil erosion and sediment controls.

Article 12 of the WDO specifies the legal actions that may be taken and the penalties that may be imposed if the provisions of the WDO are violated. If development activities on a development site are not in compliance with the requirements of the WDO, the enforcement officer may issue a stop work order on all development activity on the development site or on the development activities that are in direct violation of the WDO. In addition, failure to comply with any of the requirements of the WDO constitutes a violation of the WDO, and any person convicted of violating the WDO may be fined.

Measurable Goal(s):

- Document and track the number of site inspections conducted by SMC.

### *3.1.D.6 Public Information Handling Procedures (BMP D.5)*

SMC provides a number of opportunities for the receipt and consideration of information submitted by the public. SMC's Citizen Inquiry Response System (CIRS) documents and tracks the resolution of problems and complaints reported by the public. SMC's website provides information on "who to call" for various stormwater-related problems and concerns. An Interagency Coordination Agreement between SMC, the US Army Corps of Engineers, and the National Resources Conservation Service specifies that if any of these agencies receive a report of a soil erosion and sediment control issue, they will relay such report to SMC. SMC will then investigate the report and prescribe appropriate corrective actions, sharing the results of such investigation with the property owner and any applicable local, state, or federal agencies. Within certified communities, such investigations are coordinated with the community's designated enforcement officer.

Measurable Goal(s):

- Document and track the number of soil erosion and sediment control-related complaints received and processed by SMC.

### **3.1.E BMP Reference Information**

Reference information includes, but is not limited to, the following sources:

- Native Plant Guide,
- Lake County SMC's Technical Reference Manual,
- Illinois Urban Manual, 2014
- SMC's
  - soil erosion and sediment checklist,
  - soil erosion and sediment control notes,
  - typical construction sequencing,
- Construction details are available on the website,

- Center for Watershed Protection documents, and
- IEPA and USEPA publications.

### **3.1.F Post-Construction Runoff Control**

As described above, Lake County has adopted a countywide Watershed Development Ordinance (WDO) that establishes the minimum stormwater management requirements for development in Lake County, including requirements for post-construction runoff control. SMC will continue to support Lake County MS4s in the implementation of the Post-Construction Runoff Control MCM by administering and enforcing the WDO and performing other stormwater management activities, as described below. Note, however, that the primary responsibility for the implementation of the Post-Construction Runoff Control MCM in certified communities (i.e., communities certified by SMC to administer and enforce the provisions of the WDO) lies with the MS4.

#### *3.1.F.1 Regulatory Control Program (BMP E.2)*

The WDO requires all applicants to adopt stormwater management strategies for controlling post-construction stormwater runoff on development sites. As outlined in Se 5 of the WDO, all applicants must adopt stormwater management strategies that minimize increases in stormwater runoff rates, volumes, and pollutant loads from development sites. Proposed stormwater management strategies must address the runoff volume reduction requirements described in §503 of the WDO and must include appropriate stormwater BMPs to address the other applicable post-construction runoff control requirements of the WDO.

Measurable Goal(s):

- Continue to administer and enforce the WDO.

#### *3.1.F.2 Long Term O&M (BMP E.3)*

The WDO requires that maintenance plans be developed for all stormwater management systems designed to serve major developments, as defined by the WDO. Such maintenance plans must include: a description of all maintenance tasks; an identification of the party or parties responsible for performing such maintenance tasks; a description of all permanent maintenance easements or access agreements, overland flow paths, and compensatory storage areas; and a description of dedicated sources of funding for the required maintenance. The WDO also requires that all stormwater management systems be located within a deed or plat restriction (e.g., easement) to ensure that the system remains in place in perpetuity and that access to the system is maintained in perpetuity for inspection and maintenance purposes.

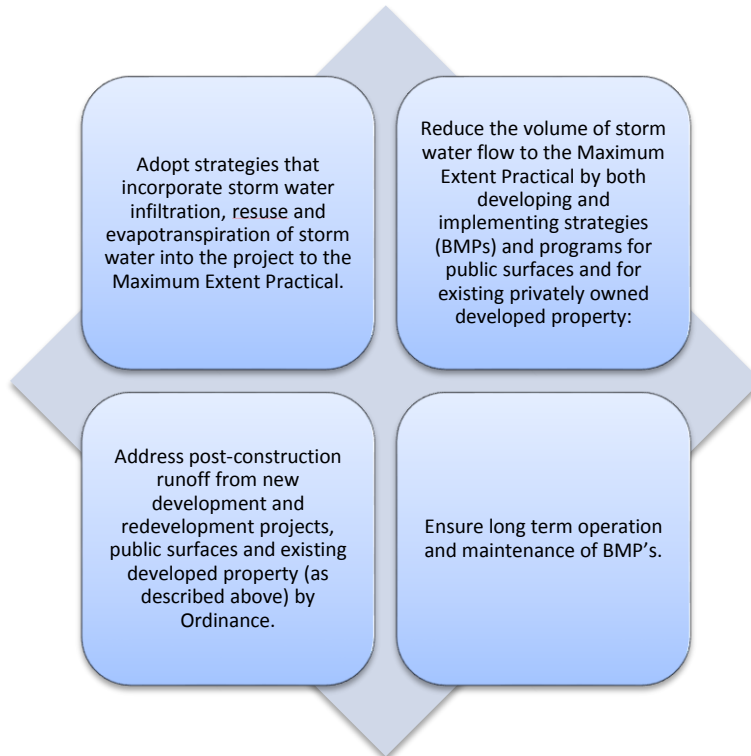
Concerns related to a completed development or re-development shall be route to the Enforcement Officer, or designee. Site inspections and/or follow-up maintenance recommendations will be made to the property owner on a case by case basis.

Measurable Goal(s):

- Continue to administer and enforce the WDO.

### 3.1.F.3 Runoff Volume Reduction Hierarchy (BMP E.4)

As described above, a community’s designated enforcement officer is responsible for reviewing and permitting development plans and for administering and enforcing the provisions of the WDO. This includes a review of the stormwater BMPs that will be used to meet the post-construction runoff control requirements of the WDO. Developments that exceed the thresholds identified in the WDO are required to quantify the RVR provided by the site design, including a combination of structural and/or non-structural BMPs that will reduce the discharge of pollutants, the volume and velocity of storm water flow to the maximum extent practicable. The permittee should ensure that the development plan addresses these provisions during the plan review process. The WDO was written to specifically address the following ILR40 permit requirements.



Each permittee is also required to adopt strategies that incorporate storm water infiltration, reuse and evapotranspiration of storm water into the project to the maximum extent practicable in accordance with the qualitative RVR provisions of the WDO. Types of techniques include green roofs, rain gardens, rain barrels, bioswales, permeable piping, dry wells and permeable pavement.

Measurable Goal(s):

- Continue to administer and enforce the WDO.

### *3.1.F.4 Other Post-Construction Runoff Controls (BMP E.7)*

Through the Watershed Management Board (WMB), SMC provides partial funding for flood damage reduction and surface water quality improvement projects. The WMB, which includes representatives from the Lake Michigan, North Branch of the Chicago River, Fox River, and Des Plaines River watersheds, meets annually to review potential projects and to make recommendations on stormwater BMP project funding. Members of the WMB include chief municipal elected officials, township supervisors, drainage district chairmen, and county board members from each district found within each of Lake County's four major watersheds. The goal of the WMB program is to maximize opportunities for local units of government and other groups to have input and influence on the solutions used to address local stormwater management problems. Previous WMB-funded projects have reduced flooding, improved surface water quality, and enhanced existing stormwater management facilities throughout Lake County.

Measurable Goal(s):

- Conduct annual WMB meeting.
- Contribute funding to flood damage reduction and water quality improvement projects through the WMB.

### **3.1.G Pollution Prevention / Good Housekeeping**

SMC will continue to support Lake County MS4s in the development and implementation of their stormwater management programs by performing activities related to the Pollution Prevention/Good Housekeeping MCM, as described below. Note, however, that the primary responsibility for the implementation of the Pollution Prevention/Good Housekeeping MCM lies with the MS4.

#### *3.1.G.1 Employee Training Program (BMP F.1)*

SMC will assist Lake County MS4s with the development and implementation of their employee training programs by maintaining a list of known employee training resources and opportunities, making available a software-based employee training program, and providing, upon request, technical assistance to local MS4s in developing and implementing their employee training programs. The Center for Watershed Protection's *URSM Manual 9: Municipal Pollution Prevention Practice* is a key resource. In addition, each year, SMC will sponsor or co-sponsor training workshops as previously described in Chapter 3.1.A.4.

Measurable Goal(s):

- Maintain a list of known employee training resources and opportunities.
- Make available the Excal Visual Storm Watch: Municipal Storm Water Pollution Prevention software-based employee training program.

- Sponsor or co-sponsor a training workshop related to pollution prevention/good housekeeping or another training workshop related to IEPA's NPDES Stormwater Program.

### *3.1.G.2 Flood Management / Assess Guidelines (BMP F.5)*

In working toward meeting its primary goals of flood damage reduction and surface water quality improvement, SMC follows a set of stormwater management policies that were created to define its roles and responsibilities for stormwater management in Lake County. One of these policies is to integrate multi-objective opportunities (e.g., flood damage reduction, surface water quality improvement, environmental enhancement) into SMC-sponsored projects. In accordance with this policy, SMC will evaluate all SMC-sponsored projects for multi-objective opportunities.

Measurable Goal(s):

- Track number of SMC-sponsored projects that are reviewed for multi-objective opportunities.

### *3.1.G.3 Winter Roadway Deicing (BMP F.6)*

Measurable Goal(s):

- Advise MS4 communities of watershed groups addressing issues associated with the use of chlorides (i.e. road salt).

## **3.1.H Watershed Plans**

SMC has collaborated on a number of watershed based plans throughout the County. Watershed plans are implemented by SMC and local communities and organizations as plan recommended best management practices and projects are fleshed out with designs and budgets and funding is secured.

These plans were created in part to identify opportunities for watershed communities to integrate multi-objective watershed management in community decisions and activities; establish an inventory of stormwater and pollutants; and to improve degraded conditions in the watershed by implementing best management practices and programs to retrofit existing flood control techniques and problem areas and prevent future problems from occurring. The adoption of these Plans will guide the successful implementation of a series of individual site-specific projects and watershed-wide programmatic actions to: improve water quality, reduce flood damage potential, protect and enhance natural resources including the watershed's lakes, streams and wetlands; and in addition, will provide watershed education and recreation opportunities and improve community cooperation and participation in watershed improvement activities.

The creation and adopted watershed based plans were completed on a voluntary basis and not to meet any ILR40 permit requirements. However, implementation of individual



site-specific projects or programmatic actions without the use of 319 funding can be cited by an MS4 community toward meeting ILR40 permitting requirements. The status of the County's watershed planning efforts is depicted on Figure 6 below.

### ***Des Plaines River Watershed***

The Lake County Stormwater Management Commission (SMC) has completed watershed management plans for the Indian Creek, Bull Creek/Bull's Brook, North Mill Creek-Dutch Gap Canal, Mill Creek, and Buffalo Creek sub-watersheds, and is currently developing an umbrella watershed-based plan for the entire Des Plaines watershed in Lake County that will be completed in 2018.

### ***Fox River Watershed***

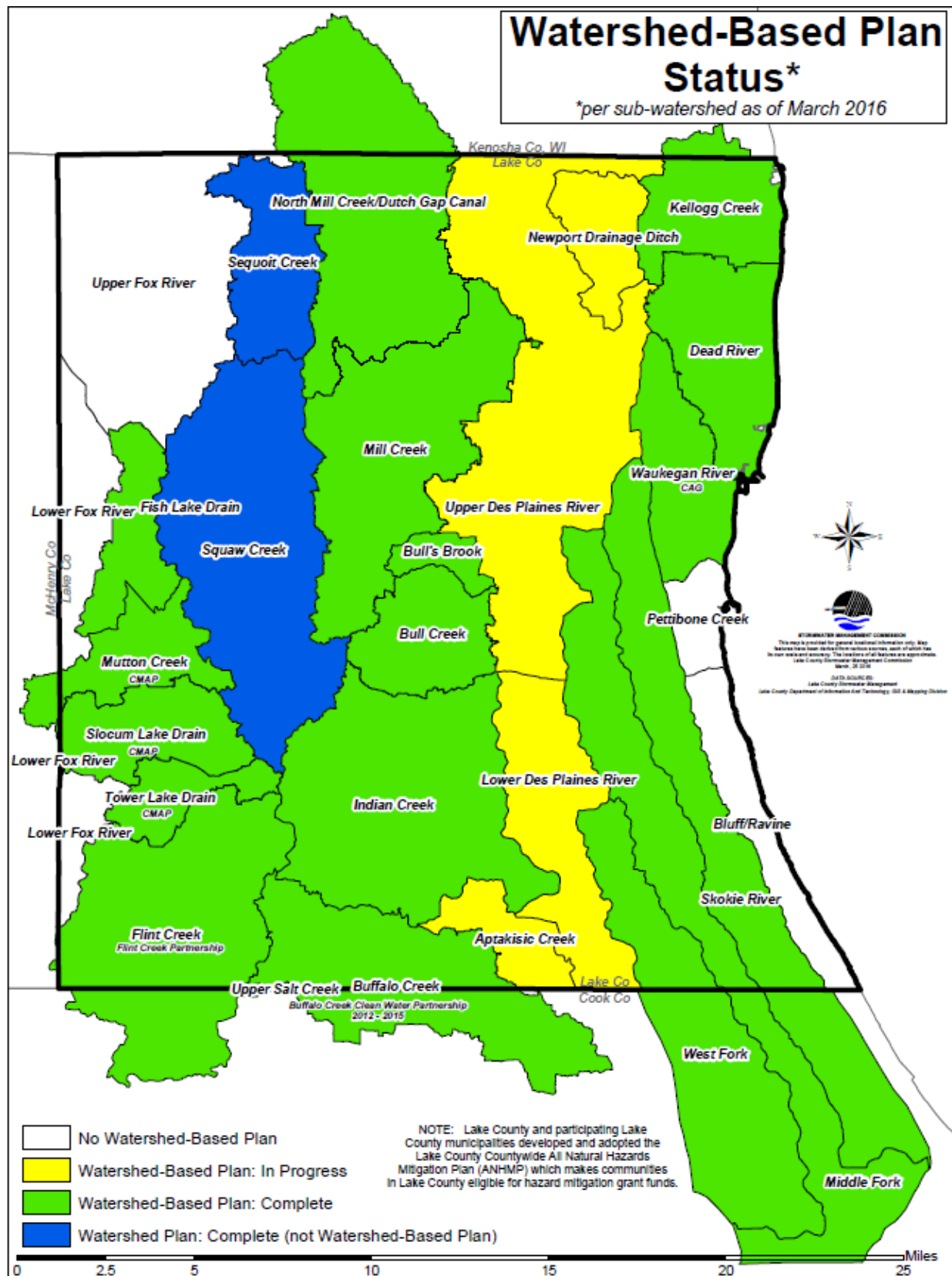
Watershed management plans have been completed for the Fish Lake Drain, Flint, Mutton, Sequoit, Slocum, Squaw and Tower Lake Drain, subwatersheds. The Sequoit and Squaw watershed plans are older and do not meet the current EPA requirements for an approved watershed-based plan.

### ***North Branch of the Chicago River Watershed***

Completed watershed plans include the North Branch of the Chicago River Watershed-Based Plan, North Branch Chicago River Open Space Plan and the Skokie River Headwaters/North Chicago Flood Damage Reduction Study.

### ***Lake Michigan Watershed***

Watershed-based plans have been completed and approved for the Dead River Kellogg Creek, and Waukegan subwatersheds. Extensive ravine and stream inventories have been completed for the entire Lake Michigan Watershed, excluding stream segments in the coastal plain of Illinois Beach State Park.



**Figure 6: Watershed Based Plan Status**

## 3.2 Public Education and Outreach



In addition to the extensive QLP efforts, which are described in more detail in Chapter 3.1, the Township utilizes a variety of methods to educate and provide outreach to the public about the importance of managing pollutants that potentially could enter the stormwater system. The program includes the following activities which are discussed in greater detail in this chapter.

- Distribute information sheets regarding stormwater BMP, water quality BMP, and proper hazardous waste use and disposal.
- Maintain a water quality/stormwater section in the Township newsletter.
- Attend/sponsor outreach activities to homeowners / property owner associations, commercial / industrial facilities, schools, and other events.
- Coordinate, publicize, and participate in bi-annual SWALCO events.
- Maintain website which offers links to additional educational information, and ways to contact Township personnel.
- Advise on the potential impacts and effects on stormwater discharge due to climate change <http://epa.gov/climatechange>.

### 3.2.A Distribution of Paper Materials (BMP A.1)

In addition to the QLP's efforts to obtain and distribute informational materials throughout Lake County, the Township provides contact information on outreach publications to encourage residences to report environmental concerns and distributes the following additional types of materials:

- The “Guidelines for Draining Swimming Pools” door hanger,
- The “Protect Our Water” door hanger,
- Informational sheets/pamphlets regarding the hazards associated with illegal discharges and improper disposal of waste and the manner in which to report such discharges.
- Informational sheets/pamphlets published by SWALCO regarding proper hazardous waste use and disposal, and

Publications are provided in the following manner:

- At take-a-away racks,
- At outreach events,
- The municipal newsletter
- At scheduled meetings with the general public. These meetings are on an as needed or as requested basis and may be with the home owners associations, businesses, or local schools.

Measurable Goal(s):

- Support QLP efforts.
- Distribute informational materials from “take away” racks and other appropriate forms.
- Include SMPP related article in newsletter

### 3.2.B Other Public Education - Web Site (BMP A.6)



In addition to the QLP’s efforts to distribute information via its website, which are described in more detail in Chapter 3.1.A.6, maintain a website that contains materials and resources related to stormwater management.

Measurable Goal(s):

- Maintain and update the portion of the website dedicated to its stormwater management program including links to SMC, IEPA and SWALCO.

### 3.2.C Outreach Events (BMP A.1, A.4)

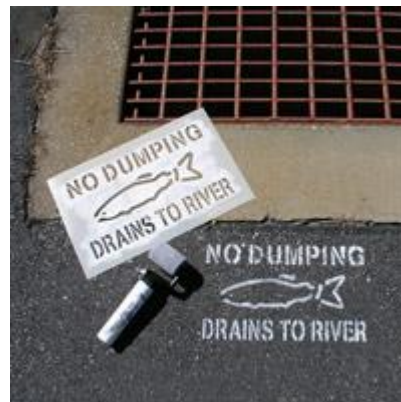


In addition to the QLP’s efforts to sponsor or co-sponsor workshops and provide educational presentations, which are described in more detail in Chapter 3.1, when possible attend and/or sponsors outreach events and scheduled meetings with the general public on stormwater management-related topics. Events sponsored by the QLP often offer the opportunity to share information and facilitate a collective focus on potential solutions to the challenges faced by the County, Townships, and other stakeholders. These events are held on an as needed or as requested basis. Audiences may include the home owners associations, lake associations, businesses, and neighborhood groups.

Measurable Goal(s):

- Support QLP efforts.

### 3.2.D Storm Drain Stenciling & Markers (BMP A.6, B.5)



The Township supports the efforts of private entities to stencil or apply stickers to inlets, and their purchase of factory stamped inlet grates. Stamped or stenciled inlets assist in educating the public about stormwater runoff pollution. Efforts may include:

- Providing the “Guide to Storm Drain Marking” (by SMC) to Home Owners Associations, school groups etc. that express interest.
- Requiring all new development to furnish stamped inlet grates.

- Encouraging Home Owners Associations to annually paint the embossed area, of any stamped inlet grates within the subdivision.
- Instituting a program to add “stickers” or other markers to existing inlets through the use of municipal staff or private groups.

Measurable Goal(s):

- Support QLP and private efforts.

### 3.2.E Household Hazardous Wastes (BMP A.4)



The average garage contains a lot of products that are classified as hazardous wastes, including paints, stains, solvents, used motor oil, pesticides and cleaning products. While some household hazardous waste (HHW) may be dumped into storm drains, most enters the storm drain system as a result of outdoor rinsing and cleanup. Improper disposal of HHW can result in acute toxicity to downstream aquatic life. The desired neighborhood behavior is to participate in HHW collection days, and to use appropriate pollution prevention techniques when conducting rinsing, cleaning and fueling operations.

Support the efforts of the Solid Waste Agency of Lake County (SWALCO) to implement programs throughout Lake County. These programs are aimed at reducing our reliance on landfills through source reduction, recycling and energy recovery. In general, the programs help residents dispose of problem wastes, such as household chemicals, electronic equipment, and yard waste. Their recycling programs are targeted at both commercial and residential markets in order to divert as much solid waste as possible from reaching landfills. They also administer a public information and education program including the “Earth Flag” and “Earth Flag Every Day” programs in the schools, promoting SWALCO events, and publishing various resources and public service announcements. As part of these waste management efforts, SWALCO:

- Conduct dozens of household hazardous chemical waste and electronic collection events each year at various locations throughout the county.
- Mass media campaigns to educate residents about proper outdoor cleaning/ rinsing techniques
- Conventional outreach materials notifying residents about HHW and collection days
- Providing curbside disposal options for some HHW
- Providing mobile HHW pickup

Measurable Goal(s):

- Support and publicize SWALCO efforts.

### 3.2.F Vehicle Fluid Maintenance (BMP A.6)



Dumping of automotive fluids into storm drains can cause major water quality problems, since only a few quarts of oil or a few gallons of antifreeze can severely degrade a small stream. Dumping delivers hydrocarbons, oil and grease, metals, xylene and other pollutants to streams, which can be toxic during dry-weather conditions when existing flow cannot dilute these discharges. The major culprit has been the backyard mechanic who changes his or her own automotive fluids. The Township may utilize a range of tools to minimize illicit discharges:

- Outreach materials distributed at auto parts store and service stations
- Community oil recycling centers
- Directories of used oil collection stations
- Free or discounted oil disposal containers
- Pollution hotlines
- Fines and other enforcement actions

Measurable Goal(s):

- Promote safe vehicle maintenance through previously described BMPs: *Distribution of Paper Materials* (Chapter 3.2.A), *Web Site* (Chapter 3.2.B) and *Outreach Events* (Chapter 3.2.C)

### 3.2.G Car / Outdoor Washing (BMP A.6)

Car washing is a common neighborhood behavior that can produce transitory discharges of sediment, nutrients and other pollutants to the curb, and ultimately the storm drain.

Communities have utilized many innovative outreach tools to promote environmentally safe car washing, including:

- Media campaign
- Brochures promoting nozzles with shut off valves
- Storm drain plug and wet vac provisions for charity car wash events
- Water bill inserts promoting environmentally safe car washing products
- Discounted tickets for use at commercial car washes

Measurable Goal(s):

- Promote safe car washing through previously described BMPs: *Distribution of Paper Materials* (Chapter 3.2.A), Web Site (Chapter 3.2.B) and Outreach Events (Chapter 3.2.C)

### **3.2.H Lawn and Garden Care (BMP A.6)**

Our yards are our outdoor homes: fun, beautiful, great spaces for relaxing. Fertilization decisions should be based on the nutritional and growth requirements of plant and the soil conditions. Adding unneeded fertilizer in the yard does not benefit plants and could end up in the storm water system or polluting streams, lakes, and aquifers. By taking care of our lawns and gardens properly, we can save money, time and help the environment. Green Scaping encompasses a set of landscaping practices that can improve the health and appearance of your lawn and garden while protecting and preserving natural resources. This is further described in EPA's [Green Scaping Publication](https://www.epa.gov/sites/production/files/2014-04/documents/greenscaping_-_the_easy_way_to_a_greener_healthier_yard.pdf).

[https://www.epa.gov/sites/production/files/2014-04/documents/greenscaping\\_-\\_the\\_easy\\_way\\_to\\_a\\_greener\\_healthier\\_yard.pdf](https://www.epa.gov/sites/production/files/2014-04/documents/greenscaping_-_the_easy_way_to_a_greener_healthier_yard.pdf)

Measurable Goal(s):

- Promote healthy lawn care through previously described BMPs: *Distribution of Paper Materials* (Chapter 3.2.A), Web Site (Chapter 3.2.B) and Outreach Events (Chapter 3.2.C)

### **3.2.I Green Infrastructure (BMP A.6)**

Encourage residents' use of storm water infiltration, reuse and evapotranspiration of storm water practices on their properties. Types of techniques include green roofs, rain gardens, rain barrels, bioswales, permeable piping, dry wells and permeable pavement.

Measurable Goal(s):

- Promote the use of green infrastructure on private property through previously described BMPs: *Distribution of Paper Materials* (Chapter 3.2.A), Web Site (Chapter 3.2.B) and Outreach Events (Chapter 3.2.C)



### 3.2.J Pool Dewatering (BMP A.6)



Chlorinated water discharged to surface waters, roadways or storm sewers has an adverse impact on local stormwater quality. High concentrations of chlorine are toxic to wildlife, fish and aquatic plants. The pH of the water should be between 6.5 and 8.5. Algaecides such as copper or silver can interrupt the normal algal and plant growth in receiving waters and should not be present when draining. Prepare appropriately before draining down a pool. It is recommended that one of the following measures be used:

- 1) De-chlorinate the water in the pool prior to draining through mechanical or chemical means; these types of products are available at local stores.
- 2) De-chlorinate the water in the pool through natural means. Pool water must sit at least 2 days with a reasonable amount of sun, after the addition of chlorine or bromine. It is recommended that the chlorine level be tested after 2 days to ensure that concentrations are at a safe level (below 0.1-mg/l).
- 3) Drain the pool slowly over a several day period across the lawn; or drain directly into the sanitary sewer using the following additional guidelines:
  - a) Avoid discharging suspended particles (e.g. foreign objects blown into the pool like leaves, seedlings, twigs etc) with pool water.
  - b) When draining your pool, do not discharge directly onto other private properties or into public right-of-way **including storm sewer inlets**.

Measurable Goal(s):

- Promote safe pool dewatering through previously described BMPs: *Distribution of Paper Materials* (Chapter 3.2.A), *Web Site* (Chapter 3.2.B) and *Outreach Events* (Chapter 3.2.C). Efforts should be targeted each fall, preferably September and may incorporate the use of Pool ***Dewatering Fact Sheet***.

### 3.3 Public Participation and Involvement

The public participation and involvement program allows input from citizens during the development and implementation of the SMPP.

### **3.3.A Stakeholder Meeting (BMP B.3)**

The QLP is actively involved in watershed planning throughout Lake County. Watershed stakeholder meetings are regularly held throughout Lake County as part of new and/or ongoing watershed planning and/or project implementation efforts. When the Township is a stakeholder in a watershed planning and/or project implementation effort (i.e., any part of the Township is located within boundaries of a watershed subject to a planning and/or project implementation effort), the MS4 participates in scheduled stakeholder meetings.

Measurable Goal(s):

- Support QLP efforts.
- Participate in stakeholder/watershed groups, as appropriate.

### **3.3.B Public Review Process (BMP B.4)**

In addition to the QLP's efforts to coordinate and conduct public meetings as well as committee meetings that are open to the public throughout Lake County, the Township presents each year's annual report to the Board during an open meeting and provide for input from the public as to the adequacy of the permittee's MS4 program. Comments are evaluated for inclusion and incorporated into the next revision of the SMPP as appropriate.

Measurable Goal(s):

- Present each year's annual report to the Board during an open meeting and provide for input from the public as to the adequacy of the permittee's MS4 program.
- Support QLP efforts.

#### *3.3.B.1 Environmental Justice Areas*

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. EPA has this goal for all communities and persons across this nation. It will be achieved when everyone enjoys:

- the same degree of protection from environmental and health hazards, and
- equal access to the decision-making process to have a healthy environment in which to live, learn, and work.

"Potential" EJ communities have been identified based on IEPA guidance to include communities with a low-income and/or minority population greater than twice the statewide average. In addition, a community may be considered a potential EJ community if the low-income and/or minority population is less than twice the state-wide average but greater than the statewide average and that has identified itself as an EJ community. If the low-income and/or minority population percentage is equal to or less than the statewide average, the community should not be considered a potential EJ community. The

following web application is another resource that can be used to determine if an area would qualify for consideration as an environmental justice community.

<https://ejscreen.epa.gov/mapper/index.html>.

Measurable Goal(s):

- Identify EJA, if any, within the community and ensure that BMP efforts are targeted at these areas.

### *3.3.B.2 Complaints, Suggestions and Requests (BMP B.7)*



The Township encourages the submission of complaints, suggestions and requests related to its stormwater program. Calls are screened, logged and routed to the appropriate department for action. General program related calls are directed to the Stormwater Coordinator, or designee. Construction activity related telephone calls are directed to the Enforcement Officer, or designee

Measurable Goal(s):

- Encourage submission of complaints, suggestions and requests by publicizing contact information on previously described BMPs: Distributed Paper Materials (Chapter 3.2.A.) and on the Website (Chapter 3.2.B).

### **3.3.C Program Involvement (BMP B.6, C.6)**

As described in Chapter 3.1.B.3, SMC proactively formed the Municipal Advisory Committee (MAC) to provide a forum for representatives of local MS4s to discuss, among other topics, the implementation of IEPA's NPDES Stormwater Program. SMC facilitates quarterly MAC meetings to bring Lake County MS4s together to discuss the implementation of IEPA's NPDES Stormwater Program. The Township will continue to attend and participate in the quarterly MAC meetings.

Measurable Goal(s):

- Attend and participate in MAC meetings
- Support QLP efforts.

### **3.3.D Illicit Discharge/Illegal Dumping Hotline (BMP B.7, D.5)**



The community maintains, operates and publicizes a call in phone number where parties can contact the Township with environmental concerns. Primary advertisement venues include the website and all related municipal publications.

Measurable Goal(s):

- Investigate potential illicit discharges

### 3.4 Illicit Discharge Detection and Elimination<sup>1</sup>



Currently, illicit discharges (defined in 40 CFR 122.26(B)(2)) contribute considerable pollutant loads to receiving waters. There are two primary situations that constitute illicit discharges; these include non-stormwater runoff from contaminated sites and the deliberate discharge or dumping of non-stormwater. Illicit discharges can enter the storm sewer system as either an indirect or direct connection.

Program objectives and procedures for the identification and removal of direct connections of pollutants into the storm water management systems (including wetlands and receiving waters) are included in this manual. Step-by-step instructions for identifying storm sewers suspected of containing pollutants, suggestions for actions to be taken to determine the sources of identified pollutants, and steps for correcting identified problems are provided.

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The results of the procedures presented in this manual are intended to serve as indicators of pollution, rather than to provide specific quantitative analysis. If the presence of pollutants is indicated, the detective work of identifying the source of the discharge can begin. Once the source is identified, it can then be corrected.

### **3.4.A Regulatory Authority (BMP C.2)**

Effective implementation of an IDDE program requires adequate legal authority to remove illicit discharges and prohibit future illicit discharges. This regulatory authority is achieved through adoption of the Lake County Watershed Development Ordinance (WDO) and the local IDDE Ordinance. Additionally, IEPA has regulatory authority to control pollutant discharges and can take the necessary steps to correct or remove an inappropriate discharge over and above MS4 jurisdiction.

#### *3.4.A.1 Watershed Development Ordinance*

Several provisions of the Lake County Watershed Development Ordinance (WDO) prohibit illicit discharges as part of the development process. These provisions are only applicable for regulated development activities as defined by the WDO. Regulated developments are required to meet the soil erosion and sediment control standards of the WDO. Furthermore, the WDO requires that the applicant prohibit illicit discharges into the stormwater management system generated during the development process.

Measurable Goal(s):

- Support QLP efforts.
- Enforce Watershed Development Ordinance

#### *3.4.1.2 Illicit Discharge Ordinance*

The Township created and adopted an Illicit Discharge Ordinance. The Ordinance is the mechanism to allow for the execution and enforcement of the SMPP and is enforced.

Measurable Goal(s):

- Enforce Illicit Discharge Ordinance

### **3.4.B Understanding Outfalls and Illicit Discharges**

Understanding the potential locations and the nature of illicit discharges in urban watersheds is essential to find, fix and prevent them.

#### *3.4.B.1 Potential Sources of Illicit Discharges*

Inspecting storm water outfalls during dry-weather conditions reveals whether non-storm water flows exist. If non-storm water flows are observed, they can be screened and tested to determine whether pollutants are present.

There are two primary situations that constitute illicit discharges; these include non-storm water runoff from contaminated sites and the deliberate discharge or dumping of non-storm water. Deliberate discharge or dumping can enter the storm sewer system in two ways:

- direct connections – through direct piping connections to the storm sewer system, and
- indirect connections – through subtle connections, such as dumping or spillway of materials into storm sewer drains.

Direct connections are more likely to result in continuous pollutant discharges than indirect connections, which often produce limited, intermittent discharges of pollutants. USEPA guidance indicates that direct connections to storm sewer systems most likely originate from commercial/industrial facilities. Thus, the focus of this manual is the identification of illicit discharges from commercial/industrial facilities.

### *3.4.B.2 Exclusions*

It is noted that not all dry-weather flows are considered inappropriate discharges. Under certain conditions, the following discharges are not considered inappropriate by USEPA or IEPA:

- Water line flushing,
- Landscaping irrigation,
- Diverted stream flows,
- Rising groundwaters,
- Uncontaminated groundwater infiltration,
- Uncontaminated pumped groundwater,
- Discharges from potable water sources,
- Flows from foundation drains,
- Air conditioning condensation,
- Irrigation water,
- Springs,
- Water from crawl spaces,
- Lawn watering,
- Individual car washing,
- Flows from riparian habitats and wetlands,
- Dechlorinated swimming pool water, and
- Street wash water.

- Discharges from dewatering activities, if managed by appropriate controls as specified in a project's SMPP, erosion and sediment control plan, or stormwater management plan.

### 3.4.B.3 Prohibited Discharges

It is noted the following non-stormwater discharges are prohibited by the ILR40 permit:

- Concrete and wastewater from washout of concrete (unless managed by an appropriate control),
- Drywall compound,
- Wastewater from washout and cleanout of stucco
- Paint
- Form release oils
- Curing compounds and other construction materials
- Fuels
- Oils or other pollutants used in vehicle and equipment O&M,
- Soaps, solvents, or detergents,
- Toxic or hazardous substances from a spill or other release
- Any other pollutant that could cause or tend to cause water pollution

### 3.4.B.4 Pollutant Indicators

#### PHYSICAL POLLUTANT INDICATORS

Adapted from New Hampshire Estuaries Project and the IDDE Guidance Manual by the Center for Watershed Protection.

#### *Odor*

Water is a neutral medium and does not produce odor; however, most organic and some inorganic chemicals contribute odor to water. Odor in water may originate from municipal and industrial waste discharges, from natural sources such as decomposition of vegetative matter, or from associated microbial activity.

**Table 1: Odor or Potential Illicit Discharges (adapted from CWP)**




<b>Odor</b>	<b>Possible Cause</b>
Sewage	Wastewater treatment facilities, domestic waste connected into storm drain, failing septic system
Sulfide (rotten eggs)	Decaying organic waste from industries such as meat packers, dairies and canneries
Rancid/sour	Many chemicals, including pesticides and fertilizers, emit powerful odors that may produce irritation or stinging sensations.

Petroleum/gas	Industry associated with vehicle maintenance or petroleum product storage; gas stations
Laundry	Laundromat, dry cleaning, household laundry

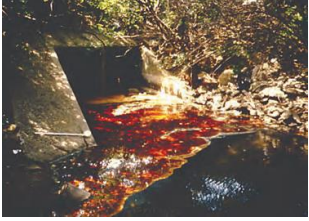

*Color*

Color is a numeric computation of the color observed in a water quality sample, as measured in cobalt-platinum units. Both industrial liquid wastes and sewage tend to have elevated color values. Unfortunately, some “clean” flow types can also have high color values. A color value higher than 500 units may indicate an industrial discharge.



**Table 2: Color of Potential Illicit Discharges** (adapted from CWP)

<b>Water Color</b>	<b>Possible Cause</b>	<b>Images</b>
<b>Brown Water</b> – water ranging in color from light-tea to chocolate milk; it may have a rotten egg odor.	Human causes may be eroded, disturbed soils from constr. sites, animal enclosures, destabilized stream banks and lake shore erosion due to boat traffic.	
<b>Yellow</b> –	Human causes may include textile facilities, chemical plants or pollen.	
<b>Gray Water</b> – water appears milky and may have a rotten egg smell and/or soap odor. There may also be an appearance of cottony slime.	Human causes may be illicit connections of domestic wastewater; untreated septic system discharge; illegal boat discharge; and parking lot runoff.	
<b>Green Water</b> – ranging from blue green to bright green color and may impart odor. Conditions typically occur from May to October.	Human causes may be over-fertilizing lawns, boat discharges, septic systems, agriculture operations, or discharging poorly treated wastewater.	



<p><b>Orange/Red -</b></p>	<p>Human causes may include meat packing facilities or dyes.</p>	
<p><b>Green Flecks –</b> resembling floating blue-green paint chips or grass clippings. These <i>Blooms</i> and are potentially toxic.</p>	<p>Human cause is excessive nutrients. Fertilizers used on lawns can contaminate surface and ground water.</p>	

**Table 2 (continued)**

Water Color	Possible Cause	Images
<b>Green Hair-Like Strands</b> - bright or dark green, resembling cotton candy and often in floating mats.	Human causes are excessive nutrients from fertilizers or failed on-shore septic systems.	
<b>Multi-Color Water</b> – various or uniform color, other than brown, green or gray. For rainbow sheen see floatables.	Human causes include oil or hazardous waste spill, paint and paint equipment rinsed into storm drains or into failing septic systems.	

*Turbidity*

Turbidity is a measure of the clarity of water. Turbidity may be caused by many factors, including suspended matter such as clay, silt, or finely divided organic and inorganic matter. Turbidity is a measure of the optical properties that cause light to be scattered and not transmitted through a sample. The presence of turbidity is to be assessed by comparing the sample to clean glass sample container with colorless distilled water.

Turbidity and color are related terms but are not the same. Remember, turbidity is a measure of how easily light can penetrate through the sample bottle, whereas color is defined by the tint or intensity of the color observed.

**Figure 7 Turbidity Severity Examples**

(adapted from CWP)



Turbidity  
Severity 1



Turbidity  
Severity 2



Turbidity  
Severity 3

## *Floatables*

The presence of sewage, floating scum, foam, oil sheen, or other materials can be obvious indicators of an illicit discharge. However, trash originating from areas adjacent to the outfall is this section.

- If you think the floatable is sewage, you should automatically assign it a severity score of three since no other source looks quite like it.
- Suds are rated based on their foaminess and staying power. A severity score of three is designated for thick foam that travels many feet before breaking up. Natural foam breaks apart easily, can be brown, black or yellowish and may smell fishy or musty.
- Surface oil sheens are ranked based on their thickness and coverage. In some cases, surface sheens may not be from oil discharges, but instead created by in-stream processes. A petroleum sheens doesn't break apart and quickly flows back together.

**Figure 8: Natural Sheen Versus Synthetic**  
(adapted from CWP)



Sheen from natural bacteria forms a swirl-like film that cracks if disturbed



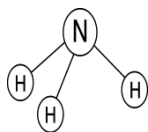
Synthetic oil forms a swirling pattern

**Table 3: Floatables in Potential Illicit Discharges** (adapted from CWP)

<p><b>Floatables</b></p>	
<p>Sewage</p> 	<p>Human causes include connection of domestic wastewater, leaking sanitary sewers or failing septic systems.</p>
<p>Suds and Foam –</p> 	<p>Common human causes of unnatural foam include leaking sewer lines, boat discharges, improper sewer connections to storm sewers and detergents from car washing activities.</p>
<p>Petroleum (oil sheen)</p> 	<p>Human causes may include leaking underground storage tank or illegal dumping.</p>
<p>Grease</p> 	<p>Common human causes include overflow from sanitary systems (due to clogging from grease) and illegal dumping.</p>

## CHEMICAL POLLUTANT INDICATORS

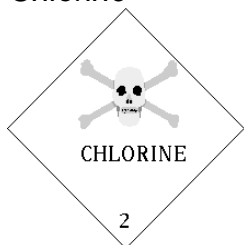
### *Ammonia*



Ammonia is a good indicator of sewage, since its concentration is much higher there than in groundwater or tap water. High ammonia concentrations (>50 mg/l) may also indicate liquid wastes from some industrial sites. Ammonia is relatively simple and safe to analyze. Some challenges include the potential generation of wastes from non-human sources, such as pets or wildlife.

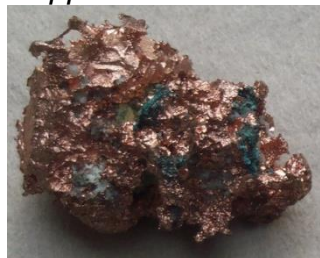
Potential ID NH<sub>3</sub>-N: > 0.1 mg/L

### *Chlorine*



Chlorine is used throughout the country to disinfect tap water, except where private wells provide the water supply. Chlorine concentrations in tap water tend to be significantly higher than most other discharge types. Unfortunately, chlorine is extremely volatile, and even moderate levels of organic materials can cause chlorine levels to drop below detection levels. Because chlorine is non-conservative, it is not a reliable indicator, although if very high chlorine levels are measured, it is a strong indication of a water line break, swimming pool discharge, or industrial discharge from a chlorine bleaching process.

### *Copper*



Concentrations of copper in dry-weather flows can be a result of corrosion of water pipes or automotive sources (for example, radiators, brake lines, and electrical equipment). The occurrence of copper in dry-weather flows could also be caused by inappropriate

discharges from facilities that either use or manufacture copper-based products. A copper value of  $>0.025\text{-mg/L}$  indicates an industrial discharge is present.

Industrial sources of copper include the following:

- Copper manufacturing (smelting),
- Copper metal processing/scrap remelting,
- Metal plating,
- Chemicals manufacturing,
- Analytical laboratories,
- Power plants,
- Electronics,
- Wood preserving, and
- Copper wire production.

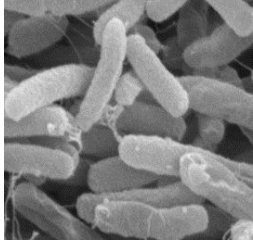
In each of these industries, wastes containing copper would normally be discharged to a treatment facility. Sludge from the waste treatment facility, whether on-site (including lagooning) or publicly operated treatment facilities, would contain copper. If the sludge (or the treatment process) is not managed properly, copper could enter the storm sewer system.

### *Detergents*



Most illicit discharges have elevated concentration of detergents. Sewage and wash water discharges contain detergents used to clean clothes or dishes, whereas liquid wastes contain detergents from industrial or commercial cleansers. The nearly universal presence of detergents in illicit discharges, combined with their absence in natural waters or tap water, makes them an excellent indicator. Research has revealed three indicator parameters that measure the level of detergent or its components-- surfactants, fluorescence, and surface tension. Surfactants have been the most widely applied and transferable of the three indicators. Fluorescence and surface tension show promise, but only limited field testing has been performed on these more experimental parameters; therefore these are not tested. Refer to Boron and Surfactants descriptions.

### *E. coli, Enterococci and Total Coliform*



Each of these bacteria is found at very high concentrations in sewage compared to other flow types, and is a good indicator of sewage or seepage discharges, unless pet or wildlife sources exist in the subwatershed. Overall, bacteria are good supplemental indicators and can be used to find “problem” streams or outfalls that exceed public health standards.

Potential ID Range: Fecal Coliform > 2,000 mg/L indicates waste water contamination.

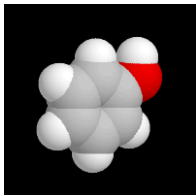
Potential ID Range: E. coli bacteria > 1,000/100 ml indicates waste water contamination.

### *Fluoride*



Fluoride, at a concentration of two parts per million, is added to drinking water supplies in most communities to improve dental health. Consequently, fluoride is an excellent conservative indicator of tap water discharges or leaks from water supply pipes that end up in the storm drain. Fluoride is obviously not a good indicator in communities that do not fluorinate drinking water, or where individual wells provide drinking water. Fluoride levels greater than 0.6-mg/L indicate a potable water source is connected to the stormwater system.

### *Phenol*



Phenol is a very commonly occurring chemical and can be found in foods, medicines, and cleaning products, as well as industrial products and by-products. Generally, the appearance of phenols in stormwater would indicate a misconnected industrial sewer to a storm drain or ditch. Exceptions would include runoff from treated wood storage yards (for example, treated lumber and telephone poles) and improper disposal (flash dumping) of cleaning products. A phenol value greater than 0.1-mg/L indicate an illicit discharge is present.

Industrial sources of phenol include the following:

- Chemical manufacturing (organic),
- Textile manufacturing,
- Paint and coatings manufacturing,
- Metal coating,
- Resin manufacturing,
- Tire manufacturing,
- Plastics fabricating,
- Electronics,
- Oil refining and re-refining,
- Naval stores (turpentine and other wood treatment chemicals),
- Pharmaceutical manufacturing,
- Paint stripping (for example, automotive and aircraft),
- Military installations (rework and repair facilities),
- Coke manufacturing,
- Iron production, and
- Ferro-alloy manufacturing.

Other sources of phenol include improper handling and disposal of cleaning compounds by institutions such as hospitals and nursing homes.

### pH



Most discharge flow types are neutral, having a pH value around 7, although groundwater concentrations can be somewhat variable. pH is a reasonably good indicator for liquid wastes from industries, which can have very high or low pH (ranging from 3 to 12). The pH of residential wash water tends to be rather basic (pH of 8 or 9). The pH of a discharge is very simple to monitor in the field with low cost test strips or probes. Although pH data is often not conclusive by itself, it can identify problem outfalls that merit follow-up investigations using more effective indicators.

Potential ID Range: <6.5 and > 8.5

### *Phosphorus*

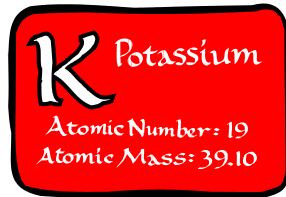
Phosphorus is recognized as the controlling factor in plan and algae frown. Small increases in phosphorus can fuel substantial increases in aquatic plant and algae grown. In addition to reducing the recreational use of the water body the increased plant and algae growth lowers dissolved oxygen levels. Low dissolved oxygen levels often results in



the death of certain fish, invertebrates and other aquatic animals, reduce recreational use, property values and public health. A key source of phosphorus comes from runoff pollution, as rain or melting snow wash over fertilized areas or manure.

Potential ID Range: >1 mg/L

### Potassium



Potassium is found at relatively high concentrations in sewage, and extremely high concentrations in many industrial process waters. Consequently, potassium can act as a good first screen for industrial wastes, and can also be used in combination with ammonia to distinguish wash waters from sanitary wastes. An ammonia to potassium ratio of >1 or <1 indicate waste water or wash water discharge respectively. A potassium value of >20-mg/l is a good indicator for industrial discharges.

### Surfactants



Surfactants are the active ingredients in most commercial detergents, and are typically measured as Methyl Blue Active Substances (or MBAS). They are a synthetic replacement for soap, which builds up deposits on clothing over time. Since surfactants are not found in nature, but are always present in detergents, they are excellent indicators of sewage and wash waters. The presence of

surfactants in cleansers, emulsifiers and lubricants also makes them an excellent indicator of industrial or commercial liquid wastes. A surfactant value of  $> 0.25\text{-mg/L}$  within residential areas indicates that either a sewage or wash water is present in the stormwater; a value of  $>5\text{-mg/L}$  within non-residential areas indicates that there is an industrial discharge (refer to Table 46 from the Illicit Discharge Detection and Elimination manual by the Center for Watershed Protection for use in determining industrial flow types).

### 3.4.C Indirect Connection Program (BMP C.3)



Indirect connections are subtle connections, such as dumping or spillage of materials into storm sewer drains. Flash dumping is a common type of indirect connection. Generally, indirect modes of entry produce intermittent or transitory discharges, with the exception of groundwater seepage. There are five main modes of indirect entry for discharges.

Upon observing or receiving notification of a potential illicit discharge, the Illicit Discharge Incident Tracking Form is used to log and investigate the incident. Appropriate procedures found within this chapter are implemented in the event an illicit discharge has been confirmed.

#### Measurable Goal

- Track efforts related to indirect illicit discharges.

#### 3.4.C.1 Groundwater Seepage

Seepage discharges can be either continuous or intermittent, depending on the depth of the water table and the season. Groundwater seepage usually consists of relatively clean water that is not an illicit discharge by itself, but can mask other illicit discharges. If storm drains are located close to sanitary sewers, groundwater seepage may intermingle with diluted sewage. Addressing seepage that is observed during the outfall screening process is described in more detail in this chapter.

#### 3.4.C.2 Spills

These transitory discharges occur when a spill travels across an impervious surface and enters a storm drain inlet. Spills can occur at many industrial, commercial and transport-related sites. A very common example is an oil or gas spill from an accident that then travels across the road and into the storm drain system. The Spill Response Plan is described in Chapter 3.7.B.

### *3.4.C.3 Dumping*

Dumping a liquid into a storm drain inlet: This type of transitory discharge is created when liquid wastes such as oil, grease, paint, solvents, and various automotive fluids are dumped into the storm drain. Liquid dumping occurs intermittently at sites that improperly dispose of rinse water and wash water during maintenance and cleanup operations. A common example is cleaning deep fryers in the parking lot of fast food operations. The Storm Drain Stenciling, Household Hazardous Wastes, Vehicle Fluid Maintenance and Pool Dewatering programs are designed to minimize dumping; these programs were previously described in Chapter 3.2. The procedure for handling a dumping incident is described in Chapter 3.7.B.2.

### *3.4.C.4 Outdoor Washing Activities*

Outdoor washing may or may not be an illicit discharge, depending on the nature of the generating site that produces the wash water. For example, hosing off individual sidewalks and driveways may not generate significant flows or pollutant loads. On the other hand, routine washing of fueling areas, outdoor storage areas, and parking lots (power washing), and construction equipment cleanouts may result in unacceptable pollutant loads. Individual washing activities are addressed through the Public Education and Outreach Program in Chapter 3.2 whereas observed/documentated routine washing activities should be addressed through the Removal of Illicit Discharges Procedure in Chapter 3.4.D.4.

### *3.4.C.5 Non-Target Irrigation from Landscaping or Lawns*

Irrigation can produce intermittent discharges from over-watering or misdirected sprinklers that send tap water over impervious areas. In some instances, non-target irrigation can produce unacceptable loads of nutrients, organic matter or pesticides. The most common example is a discharge from commercial landscaping areas adjacent to parking lots connected to the storm drain system. This type of discharge is addressed by the Public Education and Outreach Program in Chapter 3.2.I.

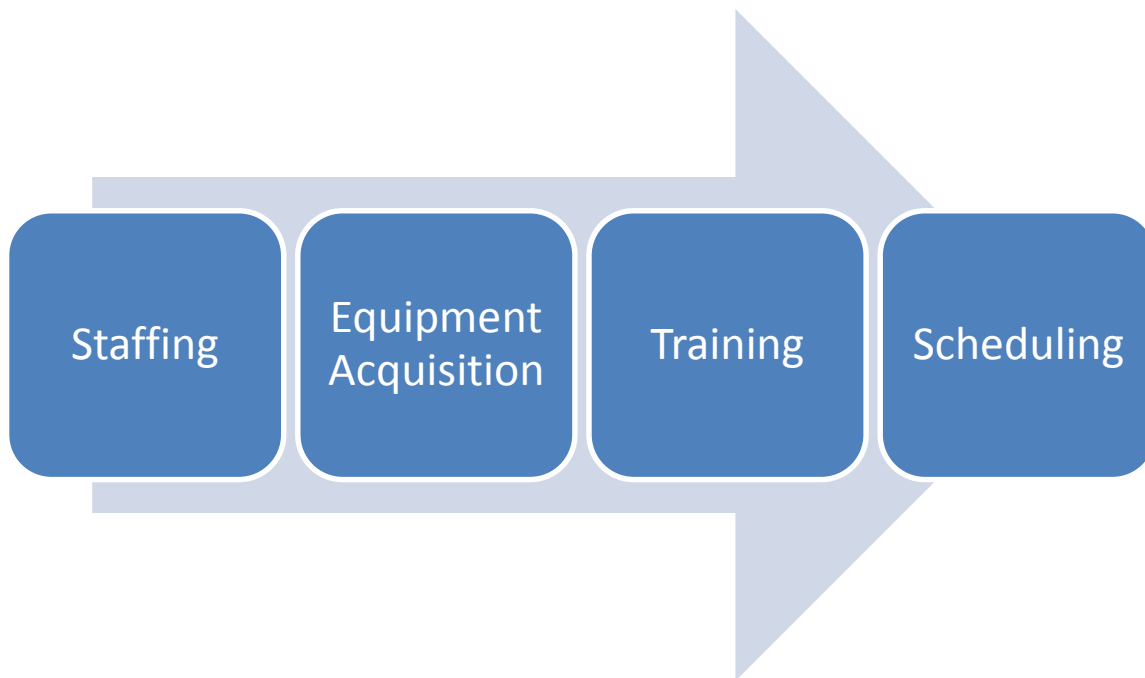
### 3.4.D Direct Connection Illicit Discharge Program (BMP C.3 – C.8)



Direct connections enter through direct piping connections to the storm sewer system, and since direct connections exist regardless of whether or not a stormwater event (e.g. rain or melting snow) is occurring, they are most easily detected during dry-weather periods. Inspection of stormwater outfalls during dry-weather conditions reveals whether non-stormwater flows exist. If non-stormwater flows are observed, they can be screened and tested to determine whether pollutants are present. If the presence of pollutants is indicated, the detective work of identifying the source of the discharge can begin. Once the source is identified, it can then be corrected. A direct connection illicit discharge program consists of three principal components: 1) outfall inspection, and 2) follow-up investigation and 3) removal.

#### *3.4.D.1 Program Planning*

Program Planning involves the office work, planning, and organization required to conduct outfall screening and follow-up investigative activities of the program. This includes the identification of the staffing and equipment needed to conduct the outfall screening and scheduling inspection activities. Program planning also identifies the regulatory authority to remove directly connected illicit discharges and the identification of the outfalls and receiving waters in the municipality (both discussed earlier in this chapter).



#### STAFFING



Personnel for an outfall inspection screening program are required for program administration, effort for conducting the outfall screening, and any follow-up investigations. Typically, a two-member crew is required for the outfall screening and follow-up portions of the program.

#### EQUIPMENT NEEDS



General field equipment and specialized outfall screening equipment are required for IDDE programs. The method of collecting and managing inspection screening data is driven by available technology. A complete list of recommend equipment and supplies is found on ***Stormwater Outfall Screening Equipment Checklist***. Field Crews carry basic safety items, such as cell phones, surgical gloves, and first aid kits. Additional safety precautions are described following the Equipment Checklist,

#### SCHEDULING

Perform all pre-screening and follow-up inspections preceding a dry-weather period, a period of 72 hours of dry weather. A period of 72 hours is selected to allow local detention facilities to drain and local groundwater flows to recede after precipitation events. However, some judgment may be exercised in evaluating the 72-hour period to sampling. For example, if very light rain or drizzle occurred and no runoff was experienced, it is likely that dry-weather conditions would exist and outfall inspection could be conducted.

#### **Pre-Screening:**

Pre-screening is on-going, in coordination with the outfall inventory, refer to Chapter 3.4.D.2.a. High priority dry weather flow locations will be identified in 2016, in accordance with the new ILR40 permit. It is recommended that all outfalls be re-screened in 2022 and every 5 years thereafter.

Pre-screening should generally take place during the late summer or fall months, ideally in August, September, or October, although other summer months may be acceptable, depending on weather conditions. This time period is generally warm, which improves field efficiency as well as reliability and consistency of field-testing. This time period is also more likely to have extended dry periods with little or no precipitation, which is required for the inspection activities.

#### **Outfall Inspections:**

Upon completion of the pre-screening efforts, review collected data to identify outfalls with observed dry weather flow or other indicators of an illicit discharge, refer to Chapter 3.4.D.2.b. Schedule outfall inspections so that all identified outfalls with potential illicit

discharges are investigated within the following 5-years, ensuring that outfalls with the greatest potential for the presence of an illicit discharge are investigated first. Annual inspection of all high priority outfalls, as identified in Chapter 1.4.A, is required.

### *3.4.D.2 Outfall Inspection (BMP C.3, C.7, C.8)*



The identification of potential illicit discharge locations is primarily a two part process, pre-screening and follow-up inspections. Pre-screening is performed by a rapid inspection of all outfalls in a pre-determined area such as along a receiving water. Follow-up inspections are required for those pipes found to have dry weather flow. Once probable illicit discharges are found, identify the sources of illicit discharges and correct per the removal procedure of Chapter 3.4.D.4. Outfall inspection consists of the following tasks:

- (1) Pre-Screening
- (2) Outfall Inspection, and
- (3) Outfall Assessment and Documentation.

#### PRE-SCREENING

Pre-screening consists of a rapid inspection of outfalls, during dry weather flow conditions. During pre-screening basic information should be obtained for each outfall. Recommended information includes basic data about the structure (such as size, shape, material, condition), presence of dry weather flow determination and a photograph. The Outfall Inventory was previously described in Chapter 1.4.A

#### Measurable Goal

- Pre-screen outfalls and search for new outfalls, repeat every five years.

#### OUTFALL INSPECTION



An outfall inspection is required for those outfalls identified during pre-screening inspections with dry weather flow or other indicators of a potential illicit discharge. The intent is to gather additional information to determine if an illicit discharge is present. Upon arriving at an outfall, the field crew should inspect the outfall by approaching the outfall on foot to a proximity that allows for visual observations to be made. Outfalls should be screened to determine which one of the three following conditions applies:

- The outfall is dry or damp with no observed flow,
- Flowing discharges are observed from the outfall, or
- The outfall is partially or completely submerged with no observed flow or is inaccessible.

The field crew should photograph the outfall and complete applicable sections of the **Storm Water Outfall Inspection Data Form**. The need for on-site testing and obtaining grab samples for laboratory analysis is determined by using the flow chart as guidance. Testing results are used to identify potential sources. Instructions for Completing the Storm Water Outfall Inspection Data Form and an associated Outfall Inspection Procedure Flow Chart (used to identify applicable sections of the form that must be filled out). Initial testing results are NOT intended to document the event for future removal and/or enforcement actions. If the initial testing results identify a potential illicit discharge, proceed to the follow-up investigation procedures discussed in Chapter 3.4.D.3.

Locating an upstream sampling point may be required if any of the following conditions exist at an outfall:

- The outfall discharge is submerged or partially submerged due to backwater conditions,
- Site access and safety considerations prevent sample collection,
- Other special considerations.



Make reasonable efforts to location upstream sampling location(s) using the available storm sewer atlas and development plan information. Manholes, catch basins, or culvert crossings can be used for upstream sampling locations. If no dry weather flow is present (i.e. the submerged outfall is based solely on a backwater condition, follow the above Scenario 1 procedure. If dry weather flow is identified in an upstream manhole, follow the above Scenario 2 procedure. If the upstream manhole(s) are inaccessible, resolve the problem in the office with appropriate supervisory personnel.

#### Measurable Goal

- Inspect outfalls identified during pre-screening inspections with dry weather flow or other indicators of a potential illicit discharge over a 5-year period.
- Inspect all high priority outfalls, as identified in Chapter 1.4.A annually.

 <p>Submerged: More than ½ below water</p>	 <p>Partially submerged: Bottom is below water</p>	 <p>Fully submerged: Can't see outfall</p>
 <p>Outfall fully submerged by debris</p>	 <p>Fully submerged from downstream trees trapping debris</p>	 <p>Partially submerged by leaf debris "back water"</p>
 <p>Trickle Flow: Very narrow stream of water</p>	 <p>Moderate Flow: Steady stream, but very shallow depth</p>	 <p>Significant flow (Source is a fire hydrant discharge)</p>

**Figure 9: Characterizing Submersion and Flow (taken from CWP)**

OUTFALL ASSESSMENT AND DOCUMENTATION

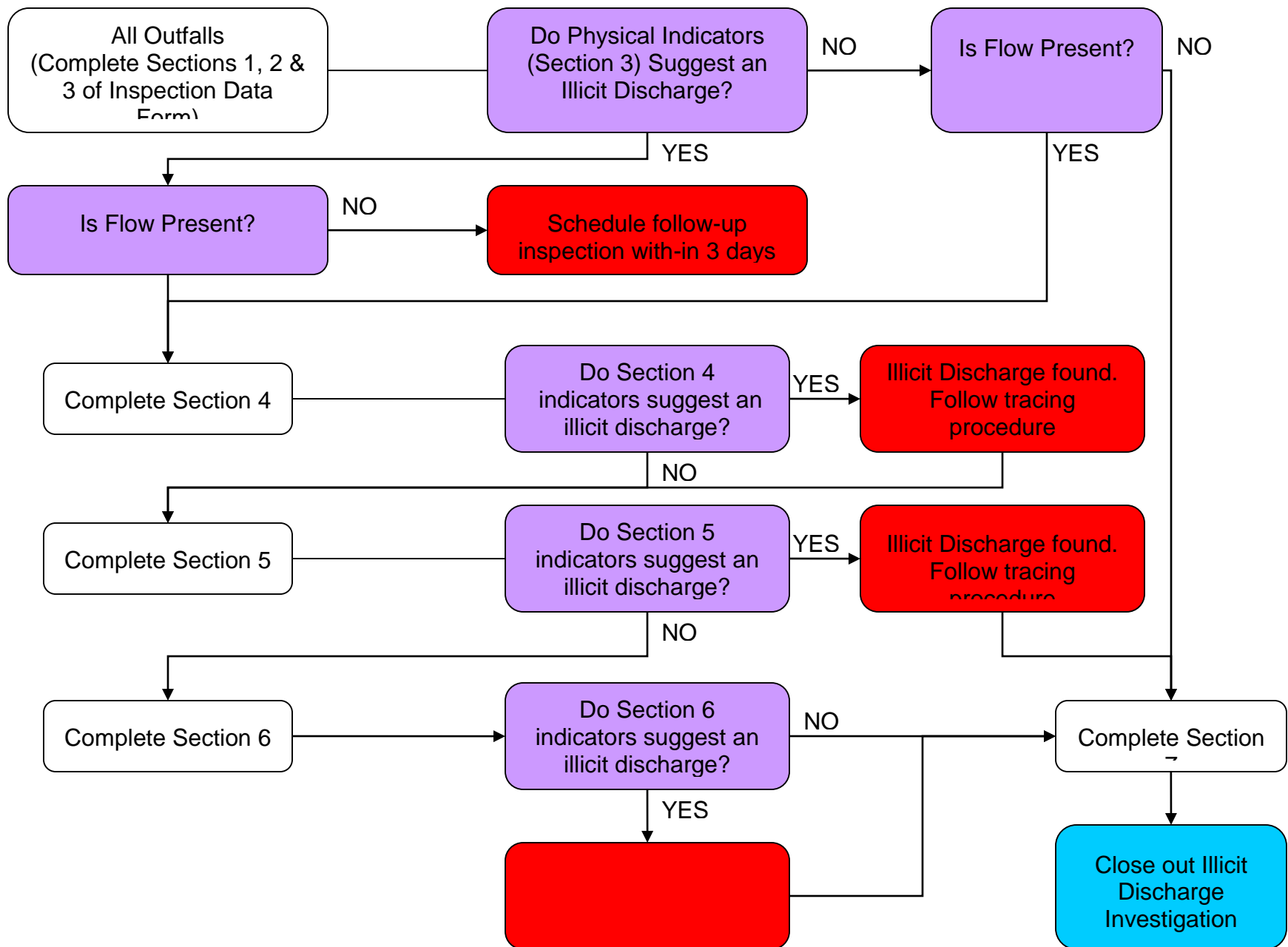
Complete the **Storm Water Outfall Inspection Data Form** for all outfall screening and grab sampling activities. All completed forms must be dated, legible, and contain accurate documentation of each outfall inspection. *A separate data form must be completed for each outfall.* It is recommended that non-smearing pens be used to complete the forms

and that all data be objective and factual. Once completed, these data forms are considered accountable documents and are maintained as part of the municipality's files. In addition to standard information, the data form is used to record other information that is noted at the time the outfall inspection is conducted. For example, observations of dead or dying plants, fish kills, algal blooms (excessive algae growth), construction activities, and other activities that might provide information regarding the potential for illicit connections or inappropriate discharges should be recorded on the form.

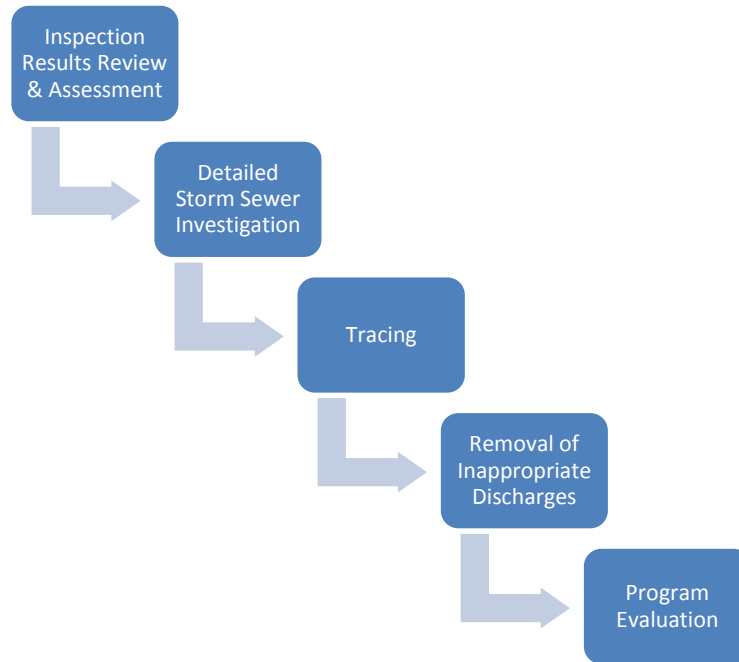
#### Measurable Goal

- Document all outfall inspections.

**Figure 11: Outfall Inspection Procedure Flow Chart**



### 3.4.D.3 Follow Up Investigation – Program Evaluation (BMP C.4)



#### Measurable Goal

- Continue investigation for outfalls identified through outfall inspection efforts to have a potential illicit discharge.

#### OUTFALL SCREENING RESULTS REVIEW AND ASSESSMENT

Follow up inspections are required for outfalls identified to have potential illicit discharges during the outfall inspection procedure. This is accomplished by reviewing the **Stormwater Outfall Inspection Data Forms** collected during outfall investigations to determine which outfalls require a follow up investigation, target sewer system areas (using available mapping and atlas information) for detailed investigation.

#### INDEPENDENT VERIFICATION



If the initial outfall assessment identifies potential illicit discharges (through either the on-site or off-site testing procedures), additional sampling is required. The results of the

inspection and testing should be discussed with the Stormwater Coordinator. Contract an independent laboratory to take and test an additional sample and verify preliminary finding. Use the established procedure to coordinate the independent laboratory sample and testing.

#### SOURCE IDENTIFICATION

Follow up investigation is required for all outfalls with positive indicators for pollutant discharges during the pre-screening efforts.

#### **Mapping and Evaluation (BMP C.1)**

For each outfall to be investigated, a large-scale working map should be obtained (digitally or in paper form) that includes the entire upstream storm sewer network, outfall locations and parcel boundaries indicated. This map product is based on information from the storm sewer atlas and outfall inventory. Land use information is evaluated to determine the types of residential, commercial, and industrial areas that might contribute the type of pollution identified at the outfall. Make attempts to match detected indicators with upstream activities.

#### **Storm Sewer Investigation**



After conducting the mapping evaluation, a manhole-by-manhole inspection is conducted to pinpoint the location of the inappropriate discharge, into the storm sewer / conveyance system. This inspection requires a field crew to revisit the outfall where the polluted dry-weather discharge was detected. The field crew should be equipped with the same testing and safety equipment and follow similar procedures as used during the outfall inspection.

After confirming that dry-weather flow is present at the outfall, the field crew continues moving to the next upstream manhole or access point investigating for dry weather flow. In cases where more than one source of dry-weather discharge enters a manhole, the field crew records this information on the screening form and then tracks each source separately. All sources are tracked upstream, manhole-by-manhole, until the dry-weather discharge is no longer detected. Finally, the last manhole where dry-weather flow is present is identified and potential sources to that manhole are accessed. This data is important for source identification.

The field crew should also determine whether there has been a significant change in the flow rate between manholes. If the flow rate appears to have changed between two manholes in the system, the illicit connection likely occurs between the two manholes. Changes in the concentration of pollutant parameters could also aid in confirming the presence of an illicit connection between the two manholes.

## Tracing



Once the manhole inspection has identified the reach area, between two manholes suspected of containing an inappropriate discharge, testing may be necessary. If there is only one possible source to this section of the storm sewer system in the area, source identification and follow-up for corrective action is straightforward. Multiple sources, or non-definitive sources, may require additional evaluation and testing in order to identify the contributing source. The method of testing must be approved by the PWD Director prior to testing. Potential testing methods include fluorometric dye testing, smoke testing, and/or remote video inspections. Once identified, clearly log the contributing source.

### *3.4.D.4 Removal of Illicit Discharges (BMP C.5, C.8)*

Removal of illicit discharge connections is required at all identified contributing sources. Eight steps are taken to definitively identify and remove an inappropriate discharge to the storm sewer system. These steps are as follows:

- Step 1. Have an outside laboratory service take a grab sample and test for the illicit discharge at the manhole located immediately downstream of the suspected discharge connection.
- Step 2: Conduct an internal meeting with appropriate personnel including Highway Commissioner, Building Department Code Enforcement Officer, and Stormwater Coordinator to discuss inspection and testing results and remedial procedures.
- Step 3: The Public Works Administration shall send a notification letter to the owner/operator of the property/site suspected of discharging a pollutant. The letter should request that the owner/operator describe the activities on the site and the possible sources of non-stormwater discharges including information regarding the use and storage of hazardous substances,

chemical storage practices, materials handling and disposal practices, storage tanks, types of permits, and pollution prevention plans.

Step 4: Arrange a meeting for an inspection of the property with Public Works Personnel, the Building Department Code Enforcement Officer, and the owner/operator of the property where the pollution source is suspected. Most illicit connections and improper disposal can probably be detected during this step. Notify the site owner/operator of the problem and instruct them to take corrective measures.

Step 5: Conduct additional tests as necessary if the initial site inspection is not successful in identifying the source of the problem. The Highway Commissioner is responsible for determining the appropriate testing measure to pinpoint the source.

Step 6: If the owner/operator does not voluntarily initiate corrective action, the Building Department Code Enforcement Office issues a notification of noncompliance. The notification includes a description of the required action(s) a time frame in which to assess the problem and take corrective action. Upon notification of noncompliance, the owner can be subject to any penalties stipulated in the IDDE Ordinance.

Step 7: Conduct follow-up inspections after stipulated time frame has elapsed to determine whether corrective actions have been implemented to: 1) remove the illicit connection or 2) eliminate the improper disposal practice.

Step 8: If corrective actions have been completed (i.e. and the illicit discharge has been eliminated) the Public Works Administration sends a notification of compliance letter to the owner/operator of the property/site suspected of discharging a pollutant.

If corrective actions have not been completed an additional internal meeting with appropriate municipal) personnel (likely including involved Public Works Personnel, Highway Commissioner, Building Department Code Enforcement Officer, and Stormwater Coordinator) is held to determine appropriate steps to obtain compliance. Appropriate actions may include monetary or other penalties.

#### Measurable Goal

- Administer Removal Procedures for outfalls with illicit discharges.

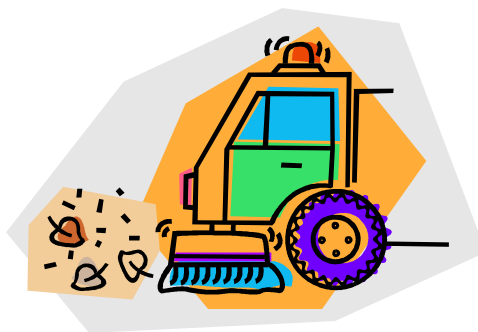


### 3.5 Pollution Prevention and Good Housekeeping



The Township is responsible for the care and upkeep of the general facilities, municipal roads, its general facilities and associated maintenance yards. Many maintenance activities are most regularly performed directly by staff; however from time to time contractors are employed to perform specific activities. This chapter describes how the compliance with permit requirements is achieved by incorporating pollution prevention and good housekeeping stormwater quality management into day-to-day operations. On-going education and training is provided to ensure that all of its employees have the knowledge and skills necessary to perform their functions effectively and efficiently.

#### 3.5.A Inspection and Maintenance Program



This chapter described the Communities Good House Keeping Program by describing areas/items that require inspection and their recommended inspection frequency. It further details recommended maintenance activities and subsequent tracking procedures for each of the tasks.

Measurable Goal for all of 3.7.A

- Implement the SMPP

### *3.5.A.1 Drainageways (BMP E.7, F.2)*

Drainageways include any river, stream, creek, brook, branch, natural or artificial depression, ponded area, lakes, flowage, slough, ditch, conduit, culvert, gully, ravine, swale, wash, or natural or man-made drainageway, in or into which surface or groundwater flows, either perennially or intermittently. Primary drainageways are described in Chapter 1.4. Minor drainageways include roadside and sideyard swales, overland flow paths, pond outlets, etc.

#### DRIVEWAY CULVERTS

Maintenance and replacement of driveway culverts is the property owner's responsibility. A minimum 12" diameter culvert is required per Code. Permits are required for culvert replacement; a soil erosion and sediment control plan may be required as part of the permit. The Public Works may rod/clean culverts on an as needed basis.

#### CATCH BASINS (BMP C.7)

Catch basin locations are identified on the **Storm Sewer Atlas**. The goal is to annually clean approximately 20% of all catch basins, to a minimum sump depth of 2 feet. If catch basin debris is at the invert elevation of the downstream pipe (i.e. has completely filled the sump area), then the downstream storm sewer system is also cleaned. Likewise, if a water main break or other heavy flow occurs that flushes potential illicit discharges into the storm sewer system, the receiving storm sewer lines are inspected and then cleaned as necessary. Spoil waste obtained from catch basin cleaning is disposed of in the spoil waste area. Locations of cleaned catch basins are tracked.

Catch basins found to have structural deficiencies are noted. Necessary remedial actions are completed or incorporated into a capital project.

#### OTHER INLET AND GRATE CLEANING

Cleaning of these areas occurs on an as-needed basis (e.g. complaints, incidences, standing water, etc). Spoil waste that is obtained from inlet and grate cleaning or vacuuming is disposed of at is disposed of in the spoil waste area. Any waste jetted out is picked up with a clapper bar if possible.

#### SWALES AND OVERLAND FLOW PATHS

Document observed or reported erosion or sediment accumulation. Areas of significant concern are incorporated into a maintenance program.

Privately Owned Drainage Swales (side/rear yard): Document observed or reported erosion or sediment accumulation in privately owned swales. Notify the property owner on an as needed basis for appropriate remediation.

### *3.5.A.2 Landscape Maintenance*



Maintain general facilities, roads, associated maintenance yards, and other public areas. Township staff is responsible for litter and debris.

#### LITTER AND DEBRIS (BMP F.4)

Litter and debris can accumulate on Township property and roadway right-of-ways and should be removed. The Highway Department is responsible for the cleanup of their respective facilities.

### *3.5.A.3 Snow Removal and Ice Control (BMP F.3)*



During snow removal and ice control activities, salt, de-icing chemicals, abrasives and snow melt may pollute stormwater runoff. To address these potential pollutants, the following procedures for the “winter season” (November 1 through May 1) are implemented.

Participate in watershed groups, as identified by the QLP, organized to implement control measures which will reduce chloride concentrations in receiving waters.

#### ROADWAY ICE CONTROL

Use the minimal amount of salt, de-icing chemicals and additives necessary for effective control. Prior to November 1, preparation work to obtain seasonal readiness is completed. These tasks include: inspecting and re-conditioning of spreaders and spinners, install these items onto snow removal vehicles, performing test operations, calibrating distribution rates per National Salt Institution Application Guidelines, and conducting better driver training. The completion of these preparatory tasks helps to ensure that only the necessary level of salt is applied.

Consider the additional use of Calcium Chloride if the ambient temperature is below 20-degrees Fahrenheit, to improve the efficiency of snow melting efforts. Incorporate pre-wetting and alternative deicing methods if appropriate.

#### SALT DELIVERY AND STORAGE

Steps are taken to ensure that the delivery, storage and distribution of salt does not pollute stormwater runoff. The floor of the enclosed salt storage building, and adjacent receiving/unloading area is constructed of impervious material. Push back the limits of the salt pile away from the door opening to minimize potential illicit runoff.

## SNOW PLOWING

Snow plowing activities direct snow off the pavement and onto the parkways to reduce the amount of salt, chemical additives, abrasives or other pollutants that go directly into the storm sewer system. When deemed necessary, haul accumulated snow to designated stockpile locations. These locations are asphalt surface areas. Snow blowing, plowing or dumping into drainageways is not allowed. Once the snow has melted, the stockpile areas are cleaned with a street sweeper removing any debris deposited.

## VEHICLE WASHING

Vehicle washing, wheel wash water, and other wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge.

## VEHICLE MAINTENANCE

Vehicle maintenance procedures and practices are designed to minimize or eliminate the discharge of petroleum based pollutants to the stormwater management system, including receiving waters. This chapter discusses proper handling and disposal of vehicle maintenance by-products such as waste oil, antifreeze, batteries and tires.

### **Waste Oil**

Used motor oil, transmission fluids, gear lubes, brake fluids and other vehicle fluids (except antifreeze) are collected and stored. Typically, the waste oil tank is emptied and the contents removed for recycling.

### **Antifreeze**

Store used antifreeze. When container is full, contact a special waste hauler for collection and disposal.

### **Batteries**

Store used batteries are stored in an enclosed covered container. Typically, the batteries are collected bi-monthly from a local vendor.

### **Tires**

Used tires are disposed of quarterly by a local vendor.

#### *3.5.A.4 Animal Nuisance Control (BMP F.4)*

Upon receiving notification, collect “road kill” from right-of-way areas. The carcasses are disposed of in the Highway Department garbage dumpsters.

#### *3.5.A.5 Waste Management (BMP F.4)*



Waste Management consists of implementing procedural and structural practices for handling, storing and disposing of wastes generated by a maintenance activity. This helps prevent the release of waste materials into the stormwater management system including receiving waters. Waste management practices include removal of materials such as asphalt and concrete maintenance by-products, excess earth excavation, contaminated soil, hazardous wastes, sanitary waste and material from within the triple basins.

#### SPOIL STOCK PILE

Asphalt and concrete maintenance by-products and excess earth excavation materials are temporarily stored in the stock pile. Attempts are made to recycle asphalt and concrete products prior to storage in the spoil stock pile. Licensed waste haulers are contracted to remove and dispose the contents of the spoil stock pile at a licensed landfill. Surface runoff from this area is largely contained.

#### CONTAMINATED SOIL MANAGEMENT

Collect or manage contaminated soil/sediment generated during an emergency response or identified during construction activities for treatment or disposal. Attempts are made to avoid stockpiling of the contaminated soil. If temporary stock piling is necessary, place the stockpile on an impermeable liner. Additionally, BMP (presented in the SMC’s Technical Reference Manual or the Illinois Urban Manual, 2014) are used to protect the downslope of the stockpiled area for erosion downstream. Locate the construction access on the upstream side of the temporary stock pile.

## HAZARDOUS WASTE

Store all hazardous wastes in sealed containers constructed of compatible material and labeled. The containers are located in non-flammable storage cabinets or on a containment pallet. These items include paint, aerosol cans, gasoline, solvents and other hazardous wastes. Do not overfill containers. Paint brushes and equipment used for water and oil-based paints are cleaned within the designated cleaning area. Contain associated waste and other cleaning fluids within an enclosed tank, the tank is maintained by a private licensed special waste company.

## SANITARY WASTE

Sanitary waste is discharged into the sanitary sewer.

### *3.5.A.7 Water Conservation & Irrigation*



Water conservation practices minimize water use and help to avoid erosion and/or the transport of pollutants into the stormwater management system.

### *3.5.A.7 Special Events (BMP F.4)*

Ensure that entities in charge of special events (such as parades, fairs) prohibit the dumping, depositing, dropping, throwing, discarding or leaving of litter and all other illicit discharges from entering the stormwater management system. The Highway Department will oversee clean-up activities to promote compliance with the SMPP.

### 3.5.B Spill Response Plan (BMP F.6, C.9)



Spill prevention and control procedures are implemented wherever non-hazardous chemicals and/or hazardous substances are stored or used. These procedures and practices are implemented to prevent and control spills in a manner that minimizes or prevents discharge to the stormwater management system and receiving waters. The following general guidelines are implemented, when cleanup activities and safety are not compromised, regardless of the location of the spill:

- Cover and protect spills from stormwater run-on and rainfall, until they are removed,
- Dry cleanup methods are used whenever possible,
- Dispose of used cleanup materials, contaminated materials and recovered spill material in accordance with the Hazardous Waste Management practices or the Solid Waste Management practices of this plan,
- Contaminated water used for cleaning and decontamination shall not be allowed to enter the stormwater management system,
- Keep waste storage areas clean, well-organized and equipped with appropriate cleanup supplies, and
- Maintain perimeter controls, containment structures, covers and liners to ensure proper function.

#### *3.5.B.1 Spill Prevention*

Ensure all hazardous substances are properly labeled. Store all hazardous wastes in sealed containers constructed of compatible material and labeled. Locate items, such as paint, aerosol cans, gasoline, solvents and other hazardous wastes, in non-flammable storage cabinets or on a containment pallet. Do not overfill containers. Provide secondary containers when storing hazardous substances in bulk quantities (>55gl). Dispense and/or use hazardous substances in a way that prevents release.



### *3.5.B.2 Non-Hazardous Spills/Dumping*

Upon observing or receiving notification of a potential illicit discharge, the Illicit Discharge Incident Tracking Form is used to log and investigate the incident. Appropriate procedures found within this chapter are implemented in the event an illicit discharge has been confirmed.

Non-hazardous spills typically consist of an illicit discharge of household material(s) into the street or stormwater management system. Upon notification or observance of a non-hazardous illicit discharge, implement the following procedure:

- Sand bag the receiving inlet to prevent additional discharge into the storm sewer system, as necessary. It may be necessary to sand bag the next downstream inlet.
- Check structures (immediate and downstream). If possible, materials are vacuumed out. The structure(s) are then jetted to dilute and flush the remaining unrecoverable illicit discharge.
- Clean up may consist of applying “Oil Dry” or sand and then sweeping up the remnant material.
- After containment and cleanup activities have been performed, fill out the **Spill Response Notice** and distribute to adjoining residences/businesses. In residential areas, the hanger should be provided to residences on both sides of the spill and on both sides of the street.
- Document the location, type of spill and action taken on the **Indirect Illicit Discharge Tracking Form**.
- If a person is observed causing an illicit discharge, appropriate citations are issued.

### *3.5.B.3 Hazardous Spills*

Upon notification or observance of a hazardous illicit discharge, the Highway Department follows the following procedure:

- Call 911, explain the incident. The Fire Department responds;
- Highway Department provides emergency traffic control, as necessary;
- The Fire Department evaluates the situation and applies “No Flash” or “Oil Dry” as necessary;
- The Fire Department’s existing emergency response procedure, for hazardous spill containment clean-up activities, is followed;
- Document the location, type of spill and action taken on the Illicit Discharge Incident Tracking Form; and,

### 3.5.C Employee Training (BMP F.1)



The QLP provides training materials and opportunities. Promote education and training employees (or contractors retained to manage Township infrastructure) to ensure that they have the knowledge and skills necessary to perform their functions effectively and efficiently. Employees are encouraged to attend all relevant training sessions offered by the QLP and other entities on topics related to the goals/objectives of the SMPP. Key educational topics include the following:

- Stormwater characteristics and water quality issues;
- The roles and responsibilities regarding implementation of the SMPP to consistently achieve Permit compliance;
- Activities and practices that are, or could be sources, of stormwater pollution and non-stormwater discharges;
- Managing and maintaining green infrastructure and low impact design features; and,
- How to use the SMPP and available guidance materials to select and implement best management practices.

Measurable Goal(s):

- Attend QLP offered training.
- Support QLP efforts by providing program information to staff.

#### *3.5.C.1 Training Approach*

Employees are encouraged to attend all relevant training sessions offered by the QLP and other entities on topics related to the goals/objectives of the SMMP. Make available training materials tailored to specific functional groups. The materials focus on storm water pollution prevention measures and practices involved in routine activities carried out by the various functional groups.

### *3.5.C.2 Training Schedule and Frequency*

Digital and hard copies of the training materials will be kept and shared with applicable new employees as part of their job introduction. Employees are encouraged to share information with other employees via email or other formats. Information may include:

- updates and news which might enhance pollution control activities,
- feedback from field implementation of best management practices, or
- new product information.

#### IDDE TRAINING

Personnel conducting the IDDE portion of the SMPP shall thoroughly read and understand the objectives of the IDDE subchapters of this manual prior to performing any outfall inspections or monitoring efforts.

# Program and Performance Monitoring, Evaluation and Reporting



The SMPP represents an organized approach to achieving compliance with the stormwater expectations of the NPDES Phase II program for both private and public activities. Land development, redevelopment and transportation improvement projects were required to comply with the provisions of the WDO prior acceptance of the SMPP. This SMPP documents and organizes previously existing procedures and incorporates the objectives of the WDO to create one cohesive program addressing pre-development, construction, post-development activities and municipal operations.

This chapter describes how the QLP and the Township will monitor and evaluate the proposed stormwater pollution prevention plan based on the above stated objective. As part of the stormwater management program, the Township:

- reviews its activities,
- inspects its facilities,
- oversees, guides, and trains its personnel, and
- evaluates the allocation of resources available to implement stormwater quality efforts.

## 4.1 Monitoring Program

There are extensive monitoring efforts already underway across the County including efforts by the LCHD to monitor numerous lakes, the Des Plaines River Watershed Workgroup and the Fox River Study Group.



The ISWS developed a calibrated QUAL2K water quality model application for the Fox River (Bartosova, 2013). This model was used to simulate future Fox River water quality in response to management actions considered in the FRIP. In 2016, the FRSG will develop a strategy for future data collection and prepare written plan(s) that may potentially include additional water quality monitoring and discussion with IEPA and IDNR of biological data to assess actual condition of aquatic community and potentially identify gaps in existing biological data.

The Township is committed to participating in the FRSG and supporting its efforts.

## 4.2 Program Evaluation (BMP C.6)

At the end of each year the BMPs implemented by the Township should be evaluated in order to determine the effectiveness of the program. Include a description of observed areas of program effectiveness, at the end of Part B **Stormwater Management Program Assessment** within each **Annual Report** submitted to IEPA. Program areas which do not appear to be improving should also be identified and described within this portion of the Annual Report. This information will be used to provide insight into how the program may need to evolve. The following are some indicators that the BMPs are appropriate.

- A reduced number of outfalls having positive indicators for potential pollutants.
- An improvement, or no change, in the annual monitoring results.
- Improved community awareness of water quality and other NPDES program aspects.
- Increased number of hits on website information related to the NPDES program.
- Increased quantities of Household Hazardous Wastes or Electronic collected by SWALCO.
- Reduced number of septic system failures.
- Increased stakeholder involvement.
- Reduced number of SE/SC violations.
- Increase in Streambank and Shoreline stabilization projects, or a decrease in the extent of projects necessary.
- Improved detention pond quality (including conversion of dry bottom or turf basins to naturalized basins; removal of excess sediment accumulation and a general increase in maintenance activity on detention ponds throughout the MS4).
- Reduced use of chloride and phosphorus by the MS4.
- Improved awareness of water quality and other NPDES program aspects by both Township staff and its contractors.

## 4.2.A Monitoring Program Evaluation

The results of the monitoring are used to further gauge the effects of the SMPP on the physical/habitat-related aspects of the receiving waters and the effectiveness of BMPs. Possible causes of any documented degradation will be investigated and any appropriate corrective actions will be incorporated into future Stormwater Management Program Plan (SMPP).

- As part of the QLP section of the Annual Report, SMC provides a detailed discussion of the State of Lake County Waters including a summary of TMDLs, an assessment of the regional water quality monitoring and watershed group efforts and an estimate of the effectiveness of the regional efforts.
- The Township is responsible for providing a discussion of any additional local monitoring efforts within the MS4 portion of the **Annual Report Part C Annual Monitoring and Data Collection**.

## 4.2.B IDDE Program Evaluation

Experience gained from the USEPA NPDES program indicates a lower chance of observing polluted dry-weather flows in residential and newer development areas, while older and industrial land use areas having a higher incidence of observed dry-weather flows. Review the results of the screening program to examine whether any trends can be identified that relate the incidence of dry-weather flow observations to the age or land use of a developed area. If so, these conclusions may guide future outfall screening activities.

Indirect or subtle discharges such as flash dumping are difficult to trace to their sources and can only be remedied through public education and reporting. Therefore, it is expected that to some degree they will continue although at a reduced magnitude and frequency. Although the outfall screening program will be successful in identifying and eliminating most pollutants in dry-weather discharges, the continued existence of dry-weather flows and associated pollutants will require an ongoing commitment to continue the outfall screening program.

The first phase of the program was to complete the MS4 wide pre-screening effort, investigate those outfalls exhibiting dry-weather flow and then eliminate identified illicit direct connections. The ILR40 permit, issued in 2016 requires that all high-priority outfalls be evaluated annually. It is logical to assume that completion of the Phase 1 efforts and several years of annual screening, the majority of the dry-weather pollution sources will be eliminated. However, new sources may appear in the future as a result of mistaken cross connections from redevelopment, new-development or remodeling. These efforts will determine the effectiveness of the program on a long-term basis and show ongoing improvement through a reduced number of outfalls having positive indicators of potential pollutants. Include a description of the screening and dry-weather flow investigation, in **Annual Report Part C IDDE Monitoring and Data Collection** submitted to IEPA annually.

## 4.2.C SMPP Document Evaluation

Evaluation of the SMPP. The following types of questions/answers are discussed periodically between the QLP, Stormwater Coordinator, Managers and field staff. Suggested improvements are noted and incorporated into a revised SMPP document, approximately every 5-years.

- Are proper stormwater management practices integrated into planning, designing and construction of both public and private projects?
- Are efforts to incorporate stormwater practices into maintenance activities effective and efficient?
- Is the training program sufficient?
- Is the SMPP sufficient with respect to both the BMPs and measurable goals described for each of the six MCM?
- Are the procedures for implementing the SMPP adequate?
- Are there any TMDL Reports within the community and if yes, is there an action plan for compliance?
- Were there any issues of non-compliance and if yes, determine the plan for achieving compliance with a timeline of actions