



Village of Kildeer

Storm Water Management Program

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1. Overview of Storm Water Management Program

1.1 Introduction

This Storm Water Management Program (SWMP) was developed by the Village of Kildeer for the purpose of meeting 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 storm water permits for their discharges into receiving waters. 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. Storm water runoff naturally contains numerous constituents; however, urbanization and urban activities (including municipal activities) typically increase concentrations to levels that may impact water quality. Pollutants associated with storm water include sediment, nutrients, bacteria and viruses, oil and grease, metals, organics, pesticides, and gross pollutants. In addition to private construction sites, the following is a list of municipal activities that have the potential for generating pollutants:

Fixed Facilities Activities	Sidewalk Surface Cleaning
Building Maintenance Repair	Sidewalk Repair
Parking Lot Maintenance	Controlling Litter
Landscape Maintenance	Fountain Maintenance
Minor Construction	Landscape Mowing/Trimming/Planting
Field Program Activities	Fertilizer & Pesticide Management
Street Sweeping & Cleaning	Controlling Illicit Connections
Street Repair & Maintenance	Controlling Illegal Dumping
Bridge & Structure Maintenance	Solid Waste Collection & Recycling

The SWMP describes the procedures and practices that can be implemented by the Village of Kildeer to effectively reduce the discharge of pollutants within storm water runoff and 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 SWMP addresses the primary program elements for all the Village of Kildeer activities, including the manner in which the Village of Kildeer:

- 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 State and Federal Regulations

Federal environmental regulations based on the 1972 Clean Water Act (CWA) require that MS4s, construction sites and industrial activities control polluted storm water runoff from entering receiving bodies of water (including navigable streams and lakes). The NPDES permit process regulates the discharge from these sources 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 ILR40 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 SWMP. After the 5th year, the components of the SWMP should be implemented; refer to Chapter 4.1 for Performance Milestones. The IEPA reissued the ILR40 permit on February 20, 2009 (effective April 1, 2009). The General ILR40 Permit is included in Appendix 5.16.

Additionally, under the General ILR10 Permit (see Appendix 5.17) also administered by 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 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 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 storm water quality. In addition, SMC provides solutions to problems related to storm water and identifies effective ways of managing natural resources.

In 2002, SMC formed an Ad Hoc Municipal Advisory Committee (MAC) specifically to advise MS4s on the NPDES Phase II Permit program. Municipalities, townships, drainage districts, consultants and county representatives comprise the MAC. SMC advised and assisted the MS4s in preparing their NOIs, but is not a permittee as it does not own or operate any sewer systems.

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. SMC has been providing services under four of the six minimum control categories since it began implementing a comprehensive, countywide storm water 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.

SMC sponsors informative workshops and roundtable discussions. It formed the Municipal Advisory Committee (MAC) to receive input on how SMC can best assist local governments during the permit application process and implementation period. Through these discussions, it was decided that each municipality (or MS4) submit its own "Notice of Intent" (NOI) to be covered under IEPA's statewide general permit. However, using the countywide approach, municipalities may take credit for the programs and ordinances developed by SMC as well as tailor specific local BMP programs for compliance with the Phase II rules.

As part of the countywide approach to comply with the NPDES Phase II program, SMC assists municipalities with the following:

- Supports NPDES II presentations to local boards,
- Develops model Notice of Intent (NOI),
- Provides countywide drainage system overview and receiving waters map,
- Provides general 5-year BMP Plan for NOI,
- Develops specific BMP Measurable Goals and program development tasks,
- Serves as a clearinghouse for all support information and acts as a liaison to IEPA and USEPA,
- Supports an on-going Municipal Advisory Committee (MAC),
- Drafts a model of the Annual Performance Report and specific BMP Measurable Goals for the subsequent years, and
- Provides model Illicit Discharge Ordinance language.
- Provides SWMP Template.

SMC countywide services qualify for credit under four of the six Minimum Control Measures. Additionally, SMC developed the SWMP template for revision/adoption by the MS4s. This template is intended to be reviewed, revised and accepted by MS4s within the county and describes a program intended to be in compliance with the ILR40 permit requirements. A general list below summarizes additional SMC services under the 6 minimum control categories:

Public Education and Outreach: SMC provides, through its Public Information Coordinator, various training workshops, homeowners workshops, brochures, training manuals, teacher/student education, videos, etc.

Public Participation and Involvement: SMC coordinates and participates in public meetings and committees, including the Municipal Advisory Committee (MAC), SMC Board of Commissioners, Technical Advisory Committee (TAC), citizen watershed planning committees, Watershed Management Board (WMB), and volunteer support.

Construction Site Runoff Control: SMC adopted the countywide Watershed Development Ordinance in 1992, which establishes the minimum storm water management requirements for development in Lake County. The WDO, which is enforced by SMC as well as by certified communities in the county, establishes standards for construction site runoff control.

Post-Construction Runoff Control: The Watershed Development Ordinance also establishes standards for post-construction runoff control.

1.4 Organization of SWMP

The SWMP identifies best management practices to be implemented in six different categories. These categories are:

- Public Education and Outreach,
- Public Participation/Involvement,
- Construction Site Runoff Control,
- Post-Construction Runoff Control,
- Illicit Discharge Detection and Elimination, and
- Pollution Prevention/Good Housekeeping.

Chapter 1: Overview of the Storm Water Management Program - discusses the format of the SWMP document and the regulations associated with NPDES II through county, state and federal agencies.

Chapter 2: Program Management - discusses the logistics of the Plan. This includes the organization, implementation and responsible parties necessary to achieve overall compliance with the SWMP and Permit. It also identifies how the Village of Kildeer coordinates with other county and state agencies and discusses the legal authority that the MS4s have to implement the Plan components.

Chapter 3: The Program - addresses storm water pollutant control measures implemented by the Village of Kildeer per the six minimum control categories established by the USEPA:

- Public Education and Outreach,
- Public Participation/Involvement,
- Construction Site Runoff Control,
- Post-Construction Runoff Control,
- Illicit Discharge Detection and Elimination, and
- Pollution Prevention/Good Housekeeping.

Chapter 4: Monitoring, Program Evaluation and Reporting - describes the monitoring, evaluation and reporting procedures associated with the program. The SWMP is a guide created to protect the Village of Kildeer's receiving waters from pollution and resultant degradation. This Chapter assists in identifying best management practices and processes that may require improvement and refinement as the document becomes an effective tool.

Chapter 5: Appendices – including forms, references, exhibits and bibliography.

1.5 Watersheds, Sub-Watersheds and Receiving Waters

The Village of Kildeer's storm water runoff falls primarily into the Des Plaines River Watershed. There are several receiving waters, tributary to the Des Plaines River, which are located within the Village. These streams include Indian Creek to the north and Buffalo Creek to the South. Lakes and other on-stream bodies of water are also considered part of the receiving water system.

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.

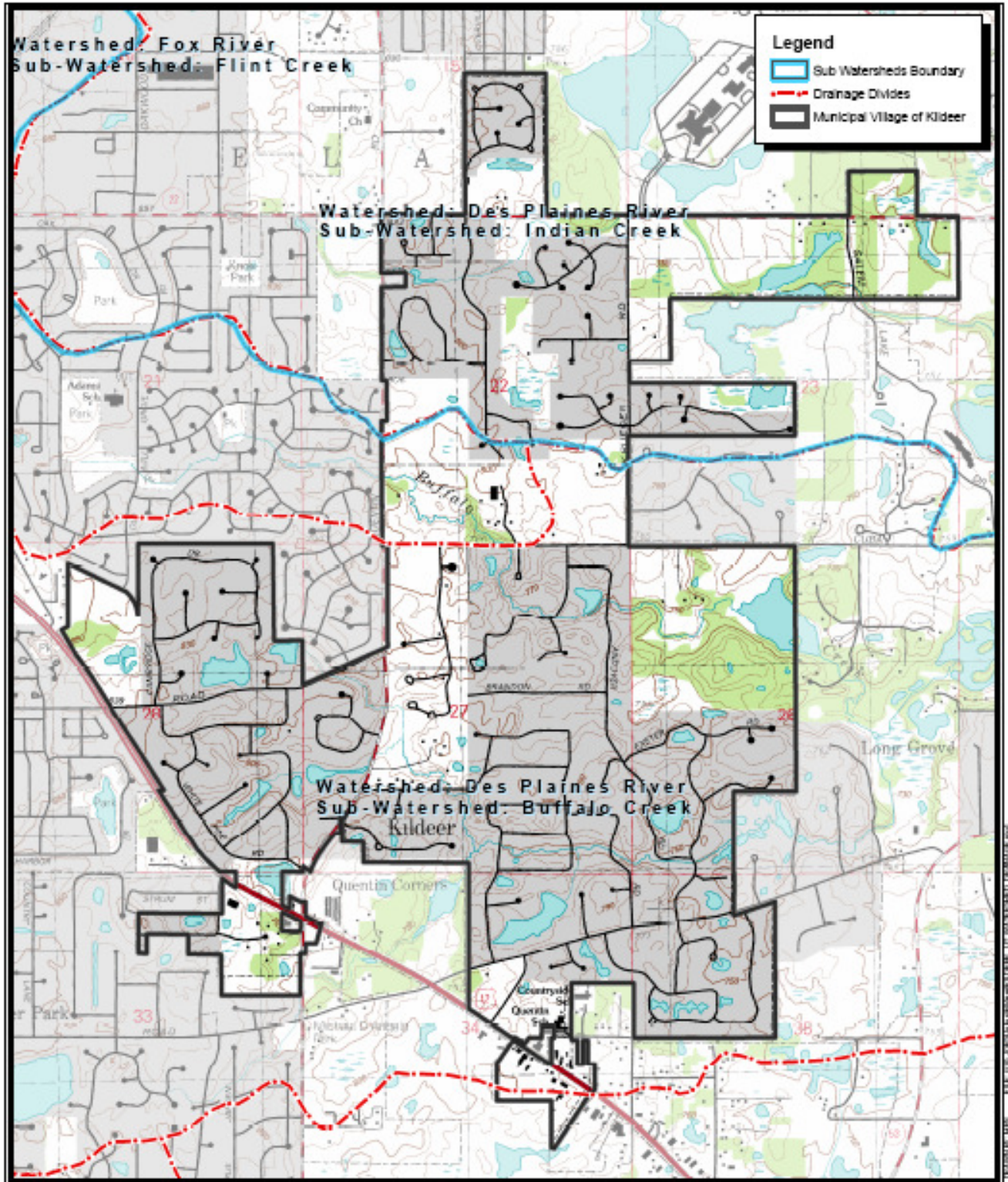
The major Watersheds and receiving waters are presented on Figure 1 Map of Major Sub-watershed and Receiving Water

Des Plaines River Watershed: The Des Plaines River watershed originates in Racine and Kenosha Counties in Wisconsin flowing south into Illinois. The Des Plaines watershed in Lake County drains an area of approximately 202 square miles or 129,577 acres. It is the largest of the county's four major watersheds. The topography of the watershed is dominated by a gently rolling landscape with numerous wet marshy areas. The Lake County portion of the watershed is divided into nine sub-watersheds.

The Des Plaines River watershed wholly or predominantly includes the communities of Arlington Heights, Buffalo Grove, Deer Park, Grayslake, Gurnee, Hawthorn Woods, Indian Creek, Kildeer, Libertyville, Lincolnshire, Lindenhurst, Long Grove, Mettawa, Mundelein, Old Mill Creek, Riverwoods, Third Lake, Vernon Hills, Wadsworth and Wheeling. New development has centered on the many lakes in the watershed. Open space areas are concentrated along the Des Plaines River, where the Lake County Forest Preserve District has substantial holdings, which stretch uninterrupted from the Wisconsin-Illinois border into Cook County.

Watershed planning activities continue for the entire Des Plaines River watershed and planning sponsors include the Illinois Department of Natural Resources, U.S. Army Corps of Engineers, Lake, Cook and DuPage Counties. The Lake County Storm water Management Commission has completed watershed management plans for the Indian Creek, Bull Creek/Bull's Brook, and Squaw Creek sub-watersheds to date. As funding becomes available, future watershed planning efforts will be implemented.

Figure 1: Map of Major Sub-Watershed and Receiving Streams



Sources: USGS Lake Zurich Quad, 1989
1997 Contour Interval
This map is an aerial photo of a 1:24,000-scale published map
USGS National Hydrologic Dataset (NHD)
USGS Hydrologic Atlas Map Drainage Divides, 1988



USGS Topography, Watershed & Drainage Divide Exhibit
Village of Kildeer, Illinois

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2. Program Management

This Chapter describes the organizational structure of the Village of Kildeer, the County and the IEPA. It further discusses the roles and responsibilities of the various involved parties.

2.1 Implementation of this SWMP

The SWMP 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. Appendix 5.14 includes the monthly tracking forms. These forms should be completed monthly and printed annually to track the progress of the 6 minimum control measures. At the end of the yearly reporting period (March 1 – February 28/29) the forms should be filed in a binder to document SWMP related activities to IEPA, or their authorized agent, in the case of an audit. It is anticipated that implementation of this SWMP constitutes compliance with the program. The SWMP must be posted on the Village's website. Being that the Village of Kildeer has no Engineering or Public Works Department, the tasks and duties outlined by this SWMP will fall under the discretion of the administration of the Village of Kildeer.

2.2 Organizational Structure

The Village's President and Board of Trustees are the policy and budget setting authority for the Village of Kildeer. The Village does not have an engineering or public works department. Engineering responsibilities are contracted out to a consulting firm. The following outlines the organizational structure in the Village of Kildeer:

Village President
Trustees
Village Administrator
Village Clerk
Building Inspector
Police Chief

The Village Administrator, or designee, is the Storm Water Coordinator and is responsible for the oversight and implementation of this SWMP. The Storm Water 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 SWMP meets the requirements of the permit and that the Village effectively implements the SWMP;
- ensures, or assists the Enforcement Officer in ensuring, that the Village complies with all minimum Watershed Development Ordinance (WDO) provisions;
- ensures that the Municipal Facilities comply with all minimum ILR40 permit requirements;

- is aware when a Municipal Project is required to be authorized under the ILR10 permit. In these cases the Storm Water Coordinator should ensure that the NOI is received by IEPA at least 30 days prior to the start of construction;
- assists the development community in understanding when a ILR10 permit is required and whether construction sites comply with the general ILR10 and WDO permit conditions; and
- should understand 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.

Consulting Engineers support the Village in obtaining compliance with both the NPDES and WDO programs. The design and construction of all public projects shall comply with the WDO. As a certified community, the Village has the responsibility to concur that projects meet WDO standards prior to the issuance of permits, and oversee site inspections during construction. Refer to Chapter 3.4-3.5 for additional information on this process.

2.3 Coordination with Lake County Stormwater Management Commission

Coordination between the Village and the Lake County Stormwater Management Commission (SMC) occurs through both participation in the SMC sponsored MAC forums and through the Certified Community Status under the Lake County Watershed Development Ordinance (WDO). The Village's Storm Water Coordinator is the lead contact for participation in the MAC forums. Since the Village is a Certified Community, the Village's Enforcement Officer is responsible for enforcement of the WDO and is designated by the Village to the SMC.

2.4 Coordination with Consultants

The Village of Kildeer may enlist the services of consultants to assist in the implementation of the SWMP (including, but not limited to, plan review, site inspections and enforcement), and the design of Village projects. The Village Administrator has the responsibility of administering these contracts.

2.5 Coordination of Contractors

The Village may hire contracted services. The Village also has a responsibility to educate contractors hired by the municipality in the requirements of this SWMP and applicable requirements of the ILR40 and ILR10 permits. Furthermore, the municipality has a responsibility to ensure that the development community hire contractors which meet the qualifications necessary under the program, refer to Chapter 3.4 for additional information on qualified personnel.

2.6 Coordination with the Public

Coordination with the public occurs on several levels. The Public Education and Outreach Program of this SWMP is discussed in Chapter 3.1. The Public Participation and Involvement Program of this SWMP is discussed in Chapter 3.2. The Public has the

opportunity to comment on proposed preliminary and final plats through the Plan Commission and Village Board process established in the Village's Municipal Code.

2.7 Coordination with the IEPA

The Village of Kildeer is required to complete an annual report which describes the status of compliance with the ILR40 permit conditions. The annual report must be posted on the Village's website and submitted to the IEPA by the first day of June each year. Annual reporting to IEPA should consist of "implemented SWMP" for all tasks completed in accordance with this SWMP. Additional information should be provided for areas of enhancement or tasks not completed.

2.8 Coordination with the Development Community

The Village of Kildeer has a responsibility to assist the development community in understanding when an ILR10 permit is required and whether construction sites comply with the general ILR10 and WDO permit conditions. The Village should understand 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.

3. The Program

This Storm Water Management Program (SWMP) includes six components, each of which is necessary in an effort to reduce/eliminate storm water pollution in receiving water bodies.

- Public Education and Outreach
- Public Participation and Involvement
- Illicit Discharge Detection and Elimination
- Construction Site Runoff Control
- Post Construction Runoff Control
- Pollution Prevention and Good Housekeeping

Chapter 3.1 describes the Village of Kildeer's efforts to educate the public about storm water pollution and storm water pollution prevention. The manner in which the Village of Kildeer incorporates public participation and involvement into the SWMP is explained in Chapter 3.2. Chapter 3.3 describes the approach to detecting and eliminating storm water illicit discharges. Construction and post construction runoff control is addressed in Chapters 3.4 and 3.5. Lastly, Chapter 3.6 discusses the Village of Kildeer' responsibilities for the care and upkeep of its general facilities and municipal roads, and to minimize pollution. This Chapter also discusses necessary training for employees on the implementation of the SWMP.

3.1 Public Education and Outreach

The Village of Kildeer conducts public education programs that inform the community of potential impacts to receiving waters and the contributions the public can make to reduce pollutants in storm water runoff. The Village of Kildeer utilizes a variety of methods to educate and provide outreach to the public about the importance of managing pollutants that potentially could enter the storm water system. The program includes the following activities which are discussed in greater detail in this Chapter.

- Distribute information sheets regarding storm water BMPs, water quality BMPs, and proper hazardous waste use and disposal.
 - Include information on water quality and storm water Chapter in the Village of Kildeer newsletter distributed by the Village of Kildeer.
 - 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 the Village of Kildeer's website which offers links to additional educational information, and ways to contact Village of Kildeer personnel.

A. Distribution of Paper Materials

The Village of Kildeer actively pursues the acquisition of educational sheets prepared by the Lake County Stormwater Management Commission, 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. The Village maintains a list of available publications on the

website. The Village lists the Village's telephone number on all the Village outreach publications to encourage residences to contact the Village with environmental concerns.

Types of materials distributed include:

- The "Guidelines for Draining Swimming Pools" flier,
- The "Protect Our Water" flier,
- Informational sheets/pamphlets regarding storm water best management practices,
- Informational sheets/pamphlets regarding water quality best management practices,
- Informational sheets/pamphlets regarding construction site activities (soil erosion and sediment control best management practices), and
- Informational sheets/pamphlets published by SWALCO regarding proper hazardous waste use and disposal.

Publications are provided in the following manner:

- At take-a-away racks,
- At annual outreach events,
- The municipal newsletter, a quarterly publication,
- Earth Day/Green Day events held in the community, and
- At scheduled meetings with the general public. These meetings are on an as needed or as requested basis and may be with the homeowners associations, businesses, or local schools.

B. Website

The Village of Kildeer's website includes storm water quality specific elements. The website gives information regarding water quality, solid waste and hazardous material, storm water and general environmental health. The website is updated by the Village staff and tracked for hits. A significant amount of information is made available through links to other educational and informational sites.

This SWMP, the NOI and any previous annual reports shall be posted on the Village's website. Each year's annual report must be posted on the Village's website and submitted to the IEPA by the first day of June each year.

C. Outreach Events

When possible, the Village of Kildeer attends and/or sponsors outreach events and scheduled meetings with the general public. These events are held on an as needed or as requested basis. Audiences may include the homeowners associations, lake associations, businesses and neighborhood groups.

D. Technical Workshops

Periodically, the Lake County Stormwater Management Commission hosts or co-host workshops for the general public that focus on specific storm water topics. These

workshops typically discuss storm water topics currently of interest within the County. They offer the opportunity to share information and facilitate a collective focus on potential solutions to the challenges faced by the County, Villages, and other stakeholders. The Village of Kildeer publicizes these events at take-a-way racks and on the website.

E. Storm Drain Stenciling & Markers

The Village of Kildeer supports the efforts of private entities to stencil or apply stickers to inlets, and their purchase of factory stamped inlet grates. These efforts apply messages at storm drain inlets with the intent of assisting in educating the public about storm water runoff pollution. Village efforts include:

- Providing the “Guide to Storm Drain Marking” (by SMC) to Homeowners Associations, school groups etc. that express interest.
- The Village encourages all Homeowners Associations to annually paint the embossed area, of any stamped inlet grates within the subdivision.

F. Household Hazardous Wastes

The average garage contains numerous 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 hazardous waste can result in acute toxicity to downstream aquatic life. The desired neighborhood behavior is to participate in hazardous waste collection days, and to use appropriate pollution prevention techniques when conducting rinsing, cleaning and fueling operations. The Village provides support to the initiatives of the Solid Waste Agency of Lake County to employ a range of tools to improve resident participation. These include:

- 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.
- Provide recycling of oil based paint, oil, household batteries, latex paint, brush, and lead-acid batteries through Ela Township Recycling Program on the third Saturday of every month between the hours of 8 am and 12 pm at the Highway Department Garage located at 23605 North Echo Lake Road.

G. Solid Waste Agency of Lake County (SWALCO)

SWALCO provides solid waste management programs to Lake County (in both incorporated and unincorporated areas). Their 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 administers their own public information and education efforts include the “Earth Flag” and “Earth Flag Every Day” programs in the schools, promoting SWALCO events, and publishing various resources.

The Village of Kildeer is a member of SWALCO and coordinates with them to participate in at least two collections per year. These collections encourage the proper disposal of hazardous materials. Typically there is a spring through summer clean-up event that facilitates proper disposal of electronic devices and a fall event for disposal of paint and solvents. At a minimum, the Village of Kildeer encourages participation in the event by publicizing these special collections in local newspapers and on the Village of Kildeer website. The Village maintains a log of event dates and quantities collected.

H. Septic System Maintenance

Failing septic systems can be a major source of bacteria, nitrogen, and phosphorus, depending on the overall density of systems present in a subwatershed. Failure results in illicit surface or subsurface discharges to streams. Septic systems are a classic case of out of sight and out of mind. Many owners take their septic systems for granted, until they back up or break out on the surface of their lawn. Subsurface failures, which are the most common, go unnoticed. In addition, inspections, pump outs and repairs can be costly, so many homeowners tend to put off the expense until there is a real problem. Lastly, many septic system owners are not aware of the link between septic systems and water quality.

The Village of Kildeer employs a range of tools to improve septic system maintenance. These include:

- Media campaigns and conventional outreach materials to increase awareness about septic system maintenance and water quality (e.g. newspapers, brochures, bill inserts, and newsletters)

I. Vehicle Fluid Maintenance

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 flows cannot dilute these discharges. The major culprit has been the backyard mechanic who changes his or her own automotive fluids. The Village of Kildeer employs a range of tools to improve septic system maintenance. These include:

- Outreach materials distributed at Village Hall and on the website
- Fines and other enforcement actions

J. Pool Dewatering

Chlorinated water discharged to surface waters, roadways or storm sewers has an adverse impact on local storm water 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:

- De-chlorinate the water in the pool prior to draining through mechanical or chemical means; these types of products are available at local stores.
- 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).
- Drain the pool slowly over a several day period across the lawn; or drain directly into the sanitary sewer using the following additional guidelines:
 - Avoid discharging suspended particles (e.g. foreign objects blown into the pool like leaves, seedlings, twigs etc) with pool water.
 - When draining your pool, do not discharge directly onto other private properties or into public right-of-way including storm sewer inlets.

The Village has created a Pool Dewatering Fact Sheet (Appendix 5.10), stating the above information. Outreach efforts (such as including information in the newsletter, other mail-outs or adding information to the take-a-way racks) should occur each fall, preferably September.

3.2 Public Participation and Involvement

The public participation and involvement program allows input from citizens during the development and implementation of the SWMP. The SWMP should be evaluated annually. Major highlights and deficiencies should be noted annually and the plan revised accordingly on a minimum 5-yr basis, or as necessary.

A. Public Review Process

Prior to the acceptance of the SWMP, the draft document was presented to the Village Board during a public hearing on April 21, 2009. Comments on the SWMP are continually accepted through the website, phone calls or other media. Comments are evaluated for inclusion and incorporated into the next revision of the SWMP as appropriate.

B. Complaints, Suggestions and Requests

Calls are screened, logged and routed to the appropriate individual for action. General program related calls are directed to the Village Administrator, or designee. Construction activity, illicit discharge, storm sewer, and other related storm water

runoff concerns are directed to the Village Engineer. The Village maintains a website which enables and encourages public contact on these issues.

C. Watershed Planning and Stakeholders Meetings

The Village of Kildeer participates (and encourages the participation of local stakeholders) in Lake County Stormwater Management Commission or other sponsored watershed planning events. The Village will adopt Watershed Plans per the direction and in coordination with the LCSMC.

D. Illicit Discharge/Illegal Dumping

The Village of Kildeer publicizes a call in phone number (911) where parties can contact the Village with environmental concerns. Primary advertisement venues include the website and all related municipal publications. Illicit discharges can also be submitted anonymously via the website. Telephone calls received from residents, other internal Departments or other agencies are logged on the Indirect Illicit Discharge Tracking Form (Appendix 5.12). The Village Administrator, or designee, should transfer information from the tracking form to the Indirect Illicit Discharge Summary Form (Appendix 5.12) monthly. This tracking form should be reviewed annually to determine if trends can be seen and if there is additional outreach efforts needed.

E. LCSMC Municipal Advisory Committee (MAC)

The Village of Kildeer participates in MAC meetings and events hosted by the QLP.

3.3 Illicit Discharge Detection and Elimination

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-storm water runoff from contaminated sites and the deliberate discharge or dumping of non-storm water. Illicit discharges can enter the storm sewer system as either an indirect or direction connection.

A. Regulatory Authority

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 the Village's municipal code. 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.

i. Lake County 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 storm water management system generated during the development process.

The WDO allows the Village of Kildeer to require inspection deposits, performance bonds, and to adopt/enforce violation procedures. These tools assist in achieving complaint construction sites. These items are further discussed in Chapters 3.4 and 3.5.

ii. Municipal Code

The Village of Kildeer's Municipal Code contains restrictions on illicit discharges. The Village updated Chapter 7 of the Municipal Code (Surface Water Drainage Control) on June 2, 2009 to include additional restrictions and a mechanism to allow for enforcement of illicit discharges.

iii. Lake County Health Department

The Lake County Health Department's goal is to minimize the potential for human disease, discomfort, injury and annoyance by nuisances as defined in Board of Health Ordinance Article I. The following items are investigated by the Lake County Health Department as nuisances in accordance with Board of Health Ordinance Article I:

- All decayed or unwholesome food offered for sale to the public.
- All diseased animals running at large.
- Carcasses of dead animals not buried or destroyed within 24 hours after death.
- Accumulations of manure, rubbish, refuse and human and industrial or noxious or offensive waste, except normal storage on a farm of manure for agricultural purposes.
- Privy vaults or garbage cans which allow flies to enter.
- The pollution of any well, cistern, spring, underground water stream, lake, canal or body of water by sewage or industrial wastes.
- Dense smoke, noxious fumes, gas and soot in unreasonable quantities or presence of gas, smoke, fumes or other toxic substance emitted from equipment of any premises in quantities sufficient to be toxic, harmful or injurious to health.
- All infestations of vermin which may be involved in the transmission of communicable diseases.
- To rent or lease quarters for human habitation which are declared unfit for human habitation by the Board of Health.
- Other nuisance issues that are investigated are indoor and outdoor air quality, mold, public sewer and drinking water issues, asbestos and radon.

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.

i. Identifying Outfalls and Receiving Waters

An Outfall (is defined at 40 CFR 122.26(B)(9)) means a point source (as defined by 40 CFR 122.2) at the point where a municipal separate storm sewer discharges into a waters of the United States “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 water 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 inventory was completed by Gewalt Hamilton and Associates, Inc. (GHA) in November, 2008. This investigation was completed with a GPS receiver (Trimble Unit). The outfall inventory was supplemented by data provide by Lake County, and previous engineering plans in the possession of GHA. These two data sources were combined to create an Outfall Inventory Map. This map is used in combination with the previously existing Storm Sewer Atlas to help determine the extent of discharged dry weather flows, the possible sources of the dry weather flows, and the particular water bodies these flows may be affecting. The inlets and outfall locations have been numbered to facilitate detection and tracking of identified illicit discharges. The outfall inventory map can be obtained from the Village Administrator.

The outfall map should be revised annually to incorporate permitted outfalls associated with new developments. Outfalls shall be inspected annually for detection of non-storm water discharges and illegal dumping.

ii. Potential Sources of Illicit Discharges

Table 1 shows that direct connections to storm sewer systems most likely originate from commercial/industrial facilities. Thus, the focus on Chapter 3.3 is on the identification of illicit discharges from commercial/industrial facilities.

Table 1: Potential Sources of Illicit Discharges to Storm Sewers

Potential Sources	Storm Sewer Entry		Flow Characteristics	
	Direct	Indirect	Continuous	Intermittent
	√	X	√	X
Residential Sources	-	√	√	X
Sanitary Wastewater	X	√	-	√
Septic Tank Effluent	√	-	-	√
Household Chemicals	-	√	-	√
Laundry Wastewater	-	√	√	-
Excess Landscaping Watering				
Leaking Potable Water Pipes	√	X	-	√
Commercial Sources	√	X	-	√
Gasoline Filling Stations	√	-	√	X
Vehicle Maint./Repair Facilities	-	√	√	X
Laundry Wastewater	√	X	√	-
Construction Site Dewatering				
Sanitary Wastewater	X	√	√	X
Industrial Sources	√	X	√	X
Leaking Tanks and Pipes				
Misc. Process Waters				

√: Most likely condition. X: May Occur -: Not very likely

Source: *Adapted From: USEPA. January 1993. Investigation of Inappropriate Pollutant Entries Into Storm Drainage Systems: A User's Guide. Cincinnati, Ohio.*

iii. USEPA 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.

- 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.

iv. 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 2: Odor or Potential Illicit Discharges (adapted from CWP)


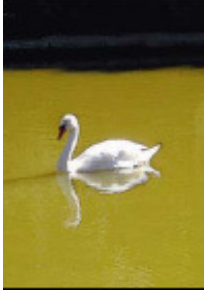
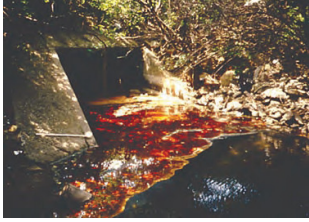



Odor	Possible Cause
Sewage	Wastewater treatment facilities, domestic waste connected into storm drain, failing septic system
Sulfide (rotten eggs)	Decaying organic waste from industries such as meat packers, dairies and canneries
Rancid/sour	Many chemicals, including pesticides and fertilizers, emit 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 3: Color of Potential Illicit Discharges (adapted from CWP)

Water Color	Possible Cause	Images
Brown Water – 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.	

<p>Yellow –</p>	<p>Human causes may include textile facilities, chemical plants or pollen.</p>	
<p>Gray Water – water appears milky and may have a rotten egg smell and/or soap odor. There may also be an appearance of cottony slime.</p>	<p>Human causes may be illicit connections of domestic wastewater; untreated septic system discharge; illegal boat discharge; and parking lot runoff.</p>	
<p>Green Water – ranging from blue green to bright green color and may impart odor. Conditions typically occur from May to October.</p>	<p>Human causes may be over-fertilizing lawns, boat discharges, septic systems, agriculture operations, or discharging poorly treated wastewater.</p>	
<p>Orange/Red -</p>	<p>Human causes may include meat packing facilities or dyes.</p>	
<p>Green Flecks – resembling floating blue-green paint chips or grass clippings. These <i>Blooms</i> are potentially toxic.</p>	<p>Human cause is excessive nutrients. Fertilizers used on lawns can contaminate surface and ground water.</p>	
<p>Green Hair-Like Strands - bright or dark green, resembling cotton candy and often in floating mats.</p>	<p>Human causes are excessive nutrients from fertilizers or failed on-shore septic systems.</p>	
<p>Multi-Color Water – various or uniform color, other than brown, green or gray. For rainbow sheen see floatables.</p>	<p>Human causes include oil or hazardous waste spill, paint and paint equipment rinsed into storm drains or into failing septic systems.</p>	

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.

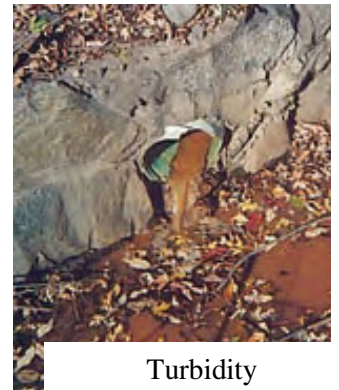
Figure 2: Turbidity Severity Examples (adapted from CWP)



Turbidity
Severity 1



Turbidity
Severity 2



Turbidity
Severity 3

Floatables

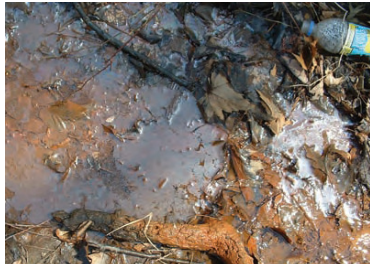
The presence of sewage, floating scum, foam, oil sheen, or other materials can be obvious indicators of an illicit discharge. However, trash originating from areas adjacent to the outfall is this Chapter.

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 sheen doesn't break apart and quickly flows back together.

Figure 3: Natural Sheen versus Synthetic (adapted from CWP)



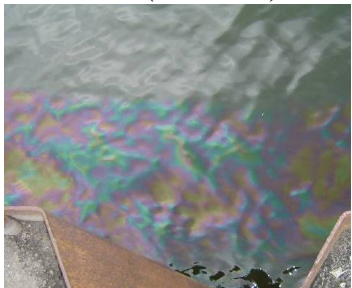


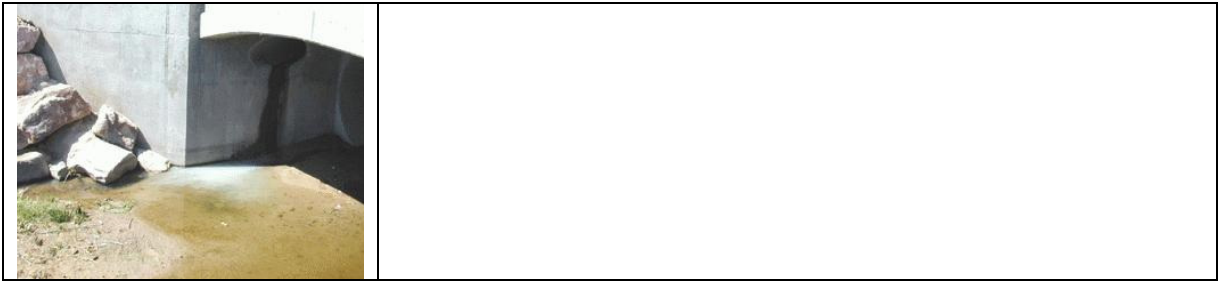
Sheen from natural bacteria forms a swirl-like film that cracks if disturbed



Synthetic oil forms a swirling pattern

Table 4: Floatables in Potential Illicit Discharges (adapted from CWP)

Floatables	
<p data-bbox="297 722 399 751">Sewage</p> 	<p data-bbox="669 722 1425 789">Human causes include connection of domestic wastewater, leaking sanitary sewers or failing septic systems.</p>
<p data-bbox="297 1066 521 1096">Suds and Foam –</p> 	<p data-bbox="669 1066 1438 1171">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 data-bbox="297 1381 574 1411">Petroleum (oil sheen)</p> 	<p data-bbox="669 1381 1459 1449">Human causes may include leaking underground storage tank or illegal dumping.</p>
<p data-bbox="297 1703 386 1732">Grease</p>	<p data-bbox="669 1703 1430 1770">Common human causes include overflow from sanitary systems (due to clogging from grease) and illegal dumping.</p>



Testing 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. The Illinois Pollution Control Board (IPCB) has established a total ammonia limit (measured as nitrogen, N) of 15 mg/L

Chloride

Chlorides in combination with a metal ion, such as sodium (Na) in small doses are essential to life. Too much of chloride has negative impacts on aquatic life. Fish and other aquatic life forms cannot survive in high levels of chloride. Chloride may enter surface water from sources such as: rocks containing chlorides, agricultural runoff, industrial wastewater, oil well wastes, wastewater treatment plant effluents, and road salts. The Illinois general use water standard for chloride is 500 mg/L for chronic (long-term) exposures (not to be exceeded by the arithmetic average of at least four consecutive samples collected over any period of at least four days). Many winter test samples exhibit elevated levels of chlorides, the result of road salt runoff after a snowfall.

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 storm water system.

Biochemical Oxygen Demand (BOD)

Biochemical oxygen demand is a measure of the quantity of oxygen used by microorganism in the oxidation of organic matter. Natural sources of organic matter include plant decay and leaf fall. Urban runoff carries nutrients from lawn fertilizers, pet wastes from streets and sidewalks, leaves, grass clippings, and paper from residential areas, which increase oxygen demand. Oxygen consumed in the decomposition process robs other aquatic organisms of the oxygen they need to live.

Organisms that are less tolerant of lower dissolved oxygen levels will die off and the diversity of natural water systems contain bacteria will decrease. Usually, a low number generally means little pollution or little aerobic activity and vice versa.

Phosphorus

Phosphorus is one of the key elements necessary for animal and plant growth. Phosphates (PO_4^{3-}) are formed chemically through the oxidation of this element. Phosphates exist in three forms, orthophosphate, polyphosphate, and organically bound phosphate, with varying formulations involving phosphorus. Ortho forms are formed naturally. Poly forms are used in detergents and in the treatment of boiler water. Organic phosphates may result from the breakdown of organic pesticides containing phosphorus. Rainfall causes varying amounts of phosphates and phosphorus to wash from farm soils and soils treated with certain pesticides into waterways.

Phosphates stimulate the growth of algae and aquatic plants that provide food for fish. This may cause an increase in the fish population, benefiting aquatic life forms. Excess phosphates, however, may cause an excessive growth in algae and aquatic plants, choking waterways and using up large amounts of oxygen, referred to as eutrophication. Phosphates are not directly toxic to humans or animals unless they are present in very high concentrations. Digestive problems, however, can result from high levels of consumed phosphates. The main concern related to phosphates is the potential for eutrophication. The IPCB has established a Phosphorus limit of 0.05 mg/L for any reservoir or lake with a surface area of 20 acres or more, or in any stream at the point where it enters any such reservoir or lake.

Total Dissolved Solids (TDS)

Total dissolved solids comprise of inorganic salts (principally calcium, magnesium, potassium, sodium, bicarbonates, chlorides and sulfates) and some small amounts of organic matter that are dissolved in water. An elevated total dissolved solids concentration does not mean that the water is a health hazard, but it does mean the water may have aesthetic problems or cause nuisance problems. These problems may be associated with staining, taste, or precipitation. Most aquatic ecosystems involving mixed fish fauna can tolerate TDS levels of 1000 mg/L.

Total Kjeldahl Nitrogen (TKN)

TKN is the sum of organic nitrogen; ammonia (NH_3) and ammonium (NH_4^+) in the chemical analysis of soil, water, or wastewater (e.g. sewage treatment plant effluent). To calculate Total Nitrogen (TN), the concentrations of nitrate-N and nitrite-N are determined and added to TKN. Illinois does not have a general use standard. However, the Standard Methods for the Examination of Water and Wastewater describes typical organic nitrogen concentrations between a few hundred micrograms per liter in some lakes to more than 20 mg per liter in raw sewage.

Total Suspended Solids (TSS)

Total suspended solids are solid materials, organic and inorganic, that are relatively low density and are too small to settle down. The greater the TSS in the water, the higher its turbidity and lower its transparency. Usually suspended solids include silt, plankton, mud and industrial wastes. High concentrations of suspended solids can lower water quality by absorbing light; therefore, warming it which then lessens the ability of it to hold oxygen necessary for aquatic life. The combination of warmer water, less light, and oxygen makes it impossible for some forms of life to exist. There is no established limit for TSS for the General Use Water Quality Standards. However, the effluent limit under Part 304 Effluent Standards is between 15 – 30 mg/L.

Copper

Copper is an abundant trace element found in the earth's crust and is a naturally occurring element that is generally present in surface waters. Copper is a micronutrient for both plants and animals at low concentrations and is recognized as essential to virtually all plants and animals. At higher concentrations it may become toxic to some forms of aquatic life. 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. Usually a copper value of greater than 0.025 mg/L may indicate 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.

Phenolics

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 storm water 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.

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 ammonium 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.

Temperature

The rates of biological and chemical processes depend on temperature. Aquatic organisms are dependent on certain temperature ranges for their optimal health. Optimal temperatures for fish depend on the species: some survive best in colder water, whereas others prefer warmer water. Benthic macroinvertebrates are also sensitive to temperature and will move in the stream to find their optimal temperature. If temperatures are outside this optimal range for a prolonged period of time, organisms are stressed and can die. Temperature affects the oxygen content of the water (oxygen levels become lower as temperature increases); the rate of photosynthesis by aquatic plants; the metabolic rates of aquatic organisms; and the sensitivity of organisms to toxic wastes, parasites, and diseases. Causes of temperature change include weather, removal of shading streambank vegetation, impoundments (a body of water confined by a barrier, such as a dam), discharge of cooling water, urban storm water, and groundwater inflows to the stream. The

maximum General Use Water Quality Standards limits established for Temperature are 60° F from December through March and 90° F from April through November. The water temperature at any location should not exceed the maximum limits by more than 3° F.

Dissolved Oxygen

One of the most important measures of the health of the stream is the level of dissolved oxygen (DO) in the water. Oxygen (O₂) dissolves in water through the mixing of the water surface with the atmosphere. The oxygen is used by fish and other animals in the water to "breathe" through their gills or other respiratory systems and by plants. If the levels fall too low, many species of fish, macroinvertebrates, and plants cannot survive. At very low levels of oxygen, the stream becomes "septic" and smells rotten because low oxygen sulfur bacteria begin to dominate.

Oxygen is measured in its dissolved form as dissolved oxygen. If more oxygen is consumed than is produced, dissolved oxygen levels decline and some sensitive animals may move away, weaken, or die. The level of oxygen dissolved in the water is inversely related to the water temperature. The lower the temperature, the more oxygen can dissolve in the water. Aquatic animals are most vulnerable to lowered DO levels in the early morning on hot summer days when stream flows are low, water temperatures are high, and aquatic plants have not been producing oxygen since sunset. The IPCB has established a minimum Dissolved Oxygen level of 5.0 mg/L between March and July and 3.5 mg/L between August and February.

Conductivity

Conductivity is a measure of the ability of water to pass an electrical current. Conductivity in water is affected by the presence of inorganic dissolved solids such as chloride, nitrate, sulfate, and phosphate anions (ions that carry a negative charge) or sodium, magnesium, calcium, iron, and aluminum cations (ions that carry a positive charge). Organic compounds like oil, phenol, alcohol, and sugar do not conduct electrical current very well and therefore have a low conductivity when in water. Conductivity is also affected by temperature: the warmer the water, the higher the conductivity. Discharges to streams can change the conductivity depending on their make-up. A failing sewage system would raise the conductivity because of the presence of chloride, phosphate, and nitrate; an oil spill would lower the conductivity.

The basic unit of measurement of conductivity is the mho or siemens. Conductivity is measured in micromhos per centimeter (µmhos/cm) or microsiemens per centimeter (µs/cm). Distilled water has conductivity in the range of 0.5 to 3 µmhos/cm. The conductivity of rivers in the United States generally ranges from 50 to 1500 µmhos/cm. Studies of inland fresh waters indicate that streams supporting good mixed fisheries have a range between 150 and 500 µmhos/cm. Conductivity outside this range could indicate that the water is not suitable for certain species of fish or macroinvertebrates. Industrial waters can range as high as 10,000 µmhos/cm.

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). Although pH data is often not conclusive by itself, it can identify problem areas that merit follow-up investigations using more effective indicators. The limit for pH in General Use Water Quality Standards is within the range 6.5 – 9.0.

C. Indirect Connection Program

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.

i. 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.

ii. 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 3.6.

iii. 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 are described in Chapter 3.1. The procedure for handling a dumping incident is described in Chapter 3.6.

iv. 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 whereas observed/documented routine washing activities should be addressed through the Removal of Illicit Discharges Procedure in Chapter 3.3.

v. 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.

D. Direct Connection Illicit Discharge Program

Direct connections enter through direct piping connections to the storm sewer system, and since direct connections exist regardless of whether or not a storm water event (e.g. rain or melting snow) is occurring. Illicit discharges are most easily detected during dry-weather periods. Inspection of 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. If the presence of pollutants is indicated, source identification can begin. Once the source is identified, it can then be corrected. A direct connection illicit discharge program consists of three principal components: 1) program planning, 2) outfall screening, and 3) follow-up investigation and program evaluation.

Program Planning involves the office work, planning, and organization required to conduct the subsequent outfall screening and follow-up investigative activities of the program. Program planning identifies the regulatory authority to remove directly connected illicit discharges and defines the outfalls and receiving waters in the Village (both discussed earlier in this chapter). Program planning for the direct connection portion of the overall program also includes the identification of the staffing and equipment needed to conduct the outfall screening, and scheduling of the outfall screening activities (Chapter 3.3).

Outfall Screening consists of pre-screening to determine whether dry-weather flows are present and outfall inspection which includes field-testing and grab samples to determine whether pollutants are present in any observed dry-weather flows (Chapter 3.3).

Follow-Up Investigation and Program Evaluation are the steps necessary to determine the source of any identified pollutant flows and eliminate them. The major follow-up investigation and program evaluation components (Chapter 3.3) include:

- reviewing and assessing outfall inspection results,
- internal coordination,
- conducting detailed storm sewer investigations to identify pollutant sources (tracing),
- coordinating with the appropriate regulatory authorities to achieve enforcement of the program objective (removal of pollutants at the source), and evaluating the program to determine whether subsequent screening activities are necessary.

i. Program Planning

The program planning component is primarily office work related to assembling the necessary information and equipment for efficiently conducting outfall-screening activities. This component of the program addresses staffing, training, equipment needs, and scheduling.

Staffing

Personnel for an outfall inspection screening program are required for program administration, conducting the outfall screening, and any follow-up investigations. Based on the number of identified outfalls and program goals, it is anticipated that a two-member crew will be required to perform inspections for several weeks throughout the year.

Training

Applicable field personnel shall thoroughly read and understand the objectives of the IDDE subchapters of this manual and have completed a standard training session. It is recommended that applicable field personnel accompany a supervisor on at least two outfall inspections to learn the use of the Storm Water Outfall Inspection Data Form (Appendix 5.2). As a training exercise, new field personnel should independently conduct outfall screening activities until two outfall screening data forms are accurate and consistent with the supervisor investigator's forms.

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. Field crews carry basic safety items, such as cell phones, surgical gloves, and first aid kits. It is recommended that an effort to keep up with applicable and appropriate technology be made. Working with equipment that can store data electronically will reduce the risk of error from poor hand writing, and smearing ink. Also, objectivity can be encouraged through technology by using devices that incorporate a template for inspections. Finally, keeping up with technology will keep field crews from growing accustomed to a single way of performing inspections.

Scheduling

Scheduling for pre-screening or outfall inspections is dependent on staff availability and weather. Pre-screening generally takes place during the late summer or fall months, ideally in August, September, or October. Other summer or fall months may be acceptable depending on weather conditions. This time period is generally warm, improving field efficiency, reliability, and consistency of field testing. This time period is also more likely to have the extended dry periods with little or no precipitation that are required for inspection activities.

In order to ensure that samples collected are representative of dry-weather flows, conduct 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 for 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 can be conducted.

ii. Outfall Inspection Procedure

A Data Form (Appendix 5.2) is completed for each outfall. Follow-up inspections are required for those pipes found to have dry weather flow. Once probable illicit discharges are found, source identification and correction of any illicit discharges should begin per the removal procedure found in Chapter 3.3.D. Outfall inspection results should be logged in the Outfall Inventory Database. Outfalls with dry weather flows shall be scheduled for a follow up inspection.

During daily setup, safety issues associated with the screening process are of particular concern. Traffic control or difficult outfall access are common issues. Before performing an outfall inspection, field crews must ensure that all necessary equipment is available, operable, and calibrated appropriately.

Safety is the primary concern while inspecting upstream sampling locations. In general, the rule “if in doubt, don’t” is followed. A first aid kit is included in each vehicle to treat minor injuries. Obtain medical help for major injuries as soon as possible. Report all injuries, minor and major to appropriate persons.

In some cases, it may be necessary for field personnel to enter or cross private property to investigate discovered illicit discharges. A form letter should be prepared that includes a short description of the project, the purpose of the access to the property, and the name of a project contact person with a telephone number. Personnel should attempt to contact each home or business owner for permission to access the outfall prior to entering the property. Field personnel shall have identification on them at all times. If the owner is not present, a letter should be left at the premises to facilitate return inspection. If permission to access property is denied, a public official should then contact the owner at a later date.

Avoid confrontational situations with citizens and attempt to answer questions concisely and without being alarmist. Field personnel should be coached on appropriate responses to questions from citizens. If a field crew feels uncomfortable or threatened, they should remove themselves from the situation and report the incident to their supervisor.

Confined space entry for this program would include climbing into or inserting one's head into a pipe, manhole, or catch basin. In general, do not cross the vertical plane defining an outfall pipe or the horizontal plane defining a manhole, unless properly prepared for confined space entry. **IN NO CASE SHALL FIELD CREW MEMBERS WHO ARE UNTRAINED AND/OR UNEQUIPPED FOR CONFINED SPACE ENTRY ATTEMPT TO ENTER CONFINED SPACES.** Confined space entry shall be conducted only by trained personnel with appropriate rescue and monitoring equipment.

Inspection Procedures

Upon arriving at an outfall, the field crew should approach the outfall on foot to a proximity that allows visual observations to be made. Outfalls are assessed 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.

Scenario 1: No Observed Flow. Under Scenario 1, the field crew should photograph the outfall and complete applicable sections of the Storm Water Outfall Inspection Data Form (Appendix 5.3). Use the flow chart, Figure 5, to identify applicable sections of the form that must be filled out.

Scenario 2: Observed Flow. Under Scenario 2, the field crew photographs the outfall and completes applicable sections of the Storm Water Outfall Inspection Data Form (Appendix 5.3). Use the flow chart, Figure 5, to identify applicable sections of the form that must be filled out. The intent is to gather additional information to determine if an illicit discharge is present. Determine the need for water quality testing with an independent outside lab. Testing results are then used to identify potential sources.

Scenario 3: Submerged or Inaccessible Outfall. Under Scenario 3, if standing water is present in an outfall or if it is inaccessible, then complete available information from sections 1, 2, 3 and 5 of the Storm Water Outfall Inspection Data Form, with appropriate comments being written in the "Remarks" section of the data form. 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 inspection,

- The outfall is from a facility providing water quality treatment (for example, detention basin outlet), or
- Other special considerations.

Determine the upstream sampling location using the Village’s storm sewer atlas. Manholes, catch basins, or culvert crossings can be used for upstream sampling locations. Make reasonable efforts to locate upstream sampling points that are accessible and exhibit flow. If inaccessible, resolve the problem in the office with appropriate supervisory personnel.

Figure 4: Characterizing Submersion and Flow
Center for Watershed Protection

		
<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>

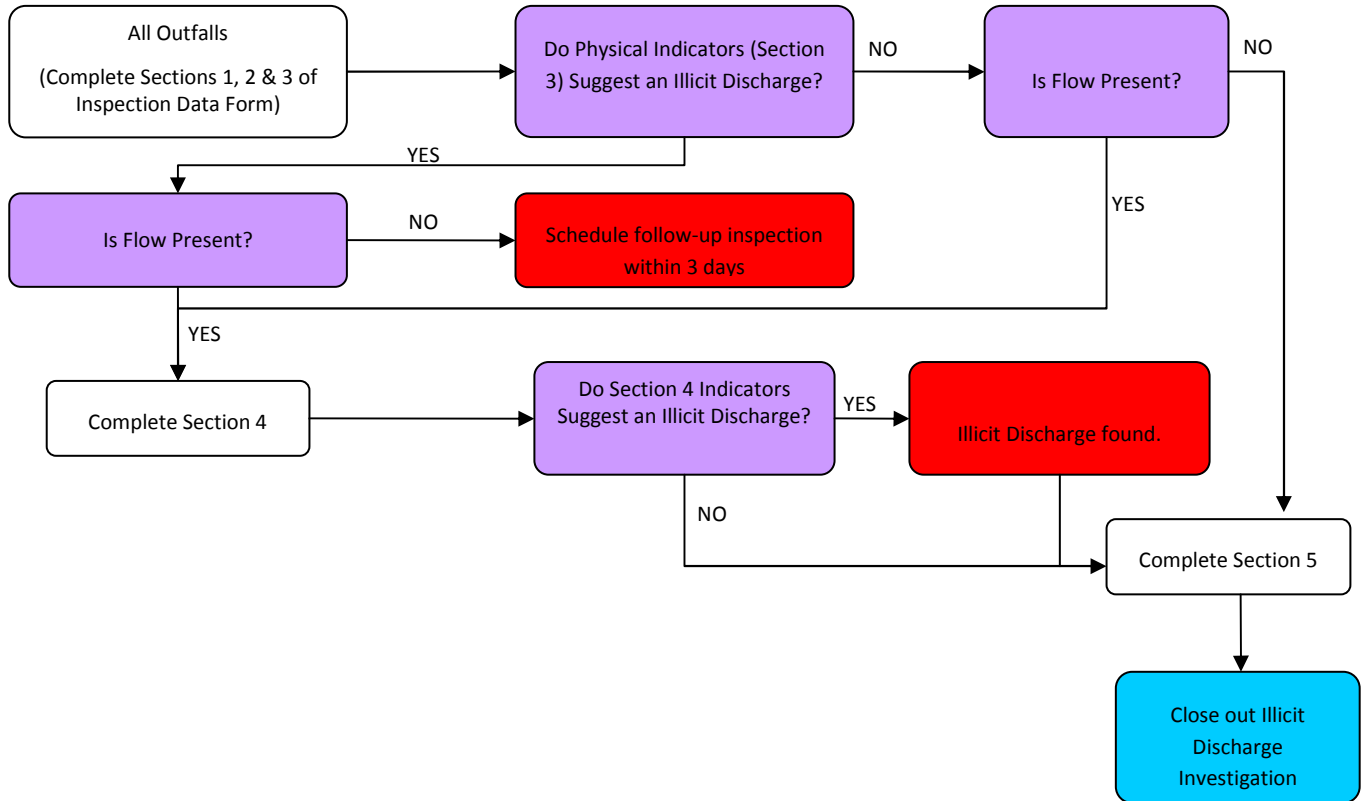
Outfall Assessment and Documentation

Complete the Storm Water Outfall Inspection Data Form for all outfall screening 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 Village 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 (e.g. 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).

Daily Closeout

Scan and file copies of completed data forms in the office. Also, update the outfall screening scheduling and completion form and plan the next screening day's activities. Discuss any problems locating outfalls with appropriate supervisory personnel so that alternate sampling locations can be identified. Once a month, compile data from the Storm Water Outfall Inspection Data Form onto the Outfall Inspection Screening Summary Form (Appendix 5.4).

Figure 5: Outfall Inspection Procedure Flow Chart



iii. Follow Up Investigation and Program Evaluation

Follow up investigation is required for all outfalls with positive indicators for pollutant discharges. The outfall assessment results are reviewed to determine the magnitude of the dry-weather pollution problem and to determine the necessary steps to identify and remove the sources of any detected pollutants.

Outfall Screening Results Review and Assessment

Detailed investigations of the storm sewer system may be required upstream of the outfalls to locate sources of illicit discharges or improper disposal. The need for detailed investigations is based on evaluation of the data from the initial outfall screening. This element of the program serves to detect and remove pollutant sources. This is accomplished by reviewing the Outfall Inspection Screening Summary Form (Appendix 5.4) to determine if there are outfalls that require a follow up investigation. Then by targeting a sewer system area for a further detailed investigation and then conducting intensive field investigations upstream of the polluted outfall to identify potential sources.

Independent Verification

If the initial outfall assessment identifies potential illicit discharges, additional sampling is required. The results of the inspection and testing should be discussed with the Storm

Water Coordinator. Contract an independent laboratory to take and test a sample. Use the established procedure to coordinate the independent laboratory sample and testing.

Source Identification

The procedure for detailed storm sewer investigation and source identification has three major components: 1) mapping and evaluation, 2) storm sewer investigation, and 3) tracing.

Mapping and Evaluation

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 map. 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.

If the contributing area is determined to be non-residential, the available Industrial/Business information should also be reviewed. The pre-treatment inspection typically indicates chemicals located on-site at each business. The business type and on-site chemicals are logged into the Industrial/Business Inventory.

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 procedures used during the initial 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 assessed. 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 are straightforward. Multiple sources or non-definitive sources may require additional evaluation and testing. The method of testing must be approved by the Storm Water Coordinator prior to testing. Potential testing methods include fluorometric dye testing, smoke testing, and/or remote video inspections.

iv. Removal of Illicit Discharges

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 to discuss inspection and testing results and remedial procedures.
- Step 3: The Storm Water Coordinator 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-storm water 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 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 Storm Water Coordinator 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 Village issues a notification of noncompliance. The notification includes a description of the required action(s) and 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 Municipal Code.

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 Storm Water Coordinator 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 is held to determine appropriate steps to obtain compliance. Appropriate actions may include monetary or other penalties.

Table 5: NPDES-Identified Industrial Facilities

SIC Code	Description
	Facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards under 40 CFR Subchapter N (except facilities with toxic pollutant effluent standards that are exempted).
1000-1400	Mineral industry, including active and inactive mining operations, with exceptions, and certain oil and gas exploration, production, processing, or treatment operations or transmission facilities.
2400	Lumber and wood products except furniture (except 2434-wood kitchen cabinets)
2600	Paper and allied products (except 2650-paperboard containers and boxes from purchased paperboard and 2670-converted paper and paperboard products)
2800	Chemicals and allied products (except 2830-drugs)
2900	Petroleum refining and related industries (except discharges subject to 40 CFR 419)
3110	Leather tanning and finishing
3200	Stone, clay, glass, and concrete products (except discharges subject to 40 CFR 419)
3300	Primary metal industries
3441	Fabricated structural metal
3730	Ship and boat building and repair
	Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under Subtitle C of RCRA
	Landfills, land application sites, and open dumps that receive or have received any industrial wastes, including those that are subject to regulation under Subtitle D of RCRA
	Facilities involved in the recycling of materials, including metal scrap yards, battery reclaimers, salvage yards, and automobile junkyards, including, but not limited to, those classified as SIC codes 5015 (used motor vehicle parts) and 5093 (scrap and waste materials).
	Stream electric power generating facilities including coal handling sites
	Transportation facilities with vehicle maintenance shops, equipment cleaning operations, or airport deicing operations (except facilities with SIC codes 4221 through 4225) (only those portions of the station that are either involved in vehicle maintenance including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or that are otherwise identified as an industrial station.
	Construction activity including clearing, grading, and excavation activities except: operations that result in the disturbance of less than 5 acres of total land that are not part of a larger common plan of development or sale
THE FOLLOWING CODES REQUIRE AN NPDES PERMIT IF CERTAIN ACTIVITIES ARE EXPOSED TO SW	
2000	Food and kindred products manufacturing or processing
2100	Tobacco products
2200	Textile mill products
2300	Apparel and other finished products made from fabrics and similar materials
2434	Wood kitchen cabinets
2500	Furniture and fixtures
2650	Paperboard containers and boxes

2670	Converted paper and paperboard products
2700	Printing, publishing, and allied industries
2830	Drugs
2850	Paperboard containers and boxes
3000	Rubber and miscellaneous products
3100	Leather and leather products (except 3110-leather tanning and finishing)
3230	Glass products, made of purchased glass
3400	Fabricated metal products, except machinery and transportation equipment (except 3441-fabricated structural metal)
3500	Industrial and commercial machinery and computer equipment
3600	Electronic and other electrical equipment and components, except computer equipment
3700	Transportation equipment (except 3730-ship and boat building and repairing)
3800	Measuring, analyzing, and controlling instruments; photographic, medical, and optical goods; watches and clocks
3900	Miscellaneous manufacturing industries
4221-25	Farm products warehousing and storage, refrigerated warehousing and storage, general warehousing and storage

v. Program Evaluation

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. Statistics from the USEPA NPDES program indicate a lower chance of observing polluted dry-weather flows in residential and newer development areas, than older and industrial land use areas. See Table 5 for areas that may be more likely to exhibit dry-weather flows. Examine the screening results to determine whether any such obvious conclusions can be made. If so, these conclusions may guide future outfall screening activities.

Outfalls with positive indicators of potential pollution are investigated to identify upstream pollutant sources. Identified illicit direct connections must be eliminated. However, new sources may appear in the future as a result of mistaken cross connections from redevelopment, new-development or remodeling. 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, but ideally 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 pollutants in dry-weather flows will require an ongoing commitment to continue the outfall screening program.

The annual inspection screening 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. It is logical to assume that after several years of annual screening, the majority of the dry-weather pollution sources will be eliminated.

3.4 Construction Site Runoff Control

The Village of Kildeer has adopted the Lake County Watershed Development Ordinance (WDO) and is currently a Certified Community for the review, permitting, inspection and enforcement of the provisions of the WDO. Being a Certified Community allows the Village to enforce WDO

standards within their own jurisdictions. The community designates an Enforcement Officer; this person is responsible for the administration and enforcement of the WDO. The Village has created an Inspection and Violation Notification Procedure to ensure compliance with the WDO.

The goal of the Lake County Watershed Development Ordinance (WDO) is to ensure that new development does not increase existing storm water 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. Further, The Village's Municipal code contains provisions that regulate construction site runoff as well.

A. Regulatory Program

Applicants submit completed forms and supporting documents to the Village for review and comment. Developments that exceed the WDO minimum thresholds are provided with a Lake County Watershed Development Ordinance (WDO) application form. After the Village Engineer concurs that the applicable provisions of the WDO have been addressed, a permit is issued. Each permit lists any additional conditions that are applicable to the development.

Ordinance provisions include but are not limited, to the following:

- Grading, soil erosion and sediment control plan. The plan must:
- Prevent discharge of sediment from the site through the implementation of soil erosion control practices, primarily, and sediment control secondarily, and
- Protect receiving waters, natural areas and adjacent properties from damage which may result from the proposed grading.
- 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.

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).

B. Responsible Parties

i. Applicant

The applicant is ultimately responsible for ensuring compliant soil erosion and sediment control measures on-site during construction. General contractors, sub-

contractors and other hired employees of the applicant can assist the applicant in maintaining a compliant site; however the applicant remains the responsible party. The applicant is also responsible for obtaining all other required state and federal permits, including an NOI with IEPA and upholding all permit conditions (including completing inspection logs).

ii. DECI – Designated Inspectors

The purpose of the DECI program is to facilitate positive communication between the Village of Kildeer and the permit holder by creating a single point of contact for soil erosion/sediment control issues with the idea that it is easier to prevent soil erosion and sediment control problems than it is to correct them after they have occurred. Further, the program is intended to improve site conditions, minimize environmental impacts, and educate contractors/developers/inspectors about proper soil erosion/sediment control Best Management Practices.

The applicant, for sites that exceed the WDO thresholds per Art. IV, Section B.1.j.2., is required to hire or employ a Designated Erosion Control Inspector (DECI).

All development with 10 acres or more of hydrologic disturbance
All development with 1 acre or more of hydrologic disturbance *and* regulatory floodplain *or* wetlands on site or on adjoining properties.

The DECI can work for the permittee's contractor, subcontractor, consultant, etc. He does not have to be a direct employee of the permittee. SMC keeps a list of DECI's that have been approved.

The DECI has the responsibility to conduct inspections as required, document inspections, keep inspections and project plans available on site, report noncompliance issues promptly, recommend soil erosion/sediment control measures. Assuming the DECI is competently completing these steps, the DECI is considered to meet the requirements of the program. Ultimately, liability for a development in noncompliance may fall to the owner, the applicant, the contractor, the developer, the DECI, or anyone else involved as determined on a case by case basis.

Sites that do not require a DECI may still require a designated inspector under the NPDES II permit process. Significant efforts have been made to minimize overlap between the two programs. Currently all sites with greater than 1-ac or more of hydrologic disturbance require a permit from IEPA and a designated inspector (which is more stringent than the DECI requirements). A designated inspector, under the IEPA program, does not need to be a DECI recognized by SMC; however a DECI can fulfill both rolls. However, the site inspection logs can typically meet the permit conditions of both the WDO and the IEPA.

The DECI reports to the Village Administrator. However, SMC administers the DECI program. During the course of a project, the DECI must notify the Village Administrator if the development site is determined to be noncompliant with the

soil erosion and sediment control plan. The Village Administrator should also be contacted within 24-hours. It is highly recommended that the Storm Water Coordinator remind the DECI to also file an Incidence of Noncompliance (ION) with IEPA. If the discharge from the construction site enters a receiving water within the MS4 jurisdictional boundaries, it is highly recommended that the MS4 also file an ION with IEPA.

iii. Enforcement Officer

The Enforcement Officer is responsible for administration and enforcement of the provisions of the WDO. Additionally, the Enforcement Officer is responsible for performing inspections and monitoring the development. Review and inspection efforts can be performed by personnel under his/her direct supervision. A full description of the EO responsibilities is included in Appendix E of the WDO. The EO follows established procedures for notifying applicants of deficiencies and obtaining site compliance (i.e. enforcement).

It is also both the right and the responsibility of the Enforcement Officer to ensure that all incidences of non-compliance received from a DECI are resolved. Furthermore it is the Enforcement Officer's right and the responsibility to notify the SMC if a DECI listed by SMC is not adequately performing the DECI responsibilities. SMC may remove a DECI from the approved DECI list. However, a DECI may be removed from a development by the Enforcement Officer at their sole discretion.

iv. Village Administrator

The position of Village Administrator is established by Section 1-21-1 of the Village of Kildeer Municipal Code. This position is appointed by the president and board of trustees through a collective vote. The Village Administrator has supervision and control of all employees assigned to matters listed as Village Administrator duties. Further, it is the charge of the Village Administrator to enforce all laws and ordinances of the Municipal Code relating to public works infrastructure, but not limited to: streets, rights of way, sidewalks, municipal buildings and grounds, parks, municipal lighting, sanitary sewer systems and wastewater treatment plants, and storm water facilities. It is also the responsibility of the position to make or cause to be made all inspections needed for that purpose.

The Village Administrator shall cause to be issued all proper permits for work pertaining to duties assigned within the Village in compliance with the Lake County Watershed Development Ordinance, codes, and other applicable ordinances. The Village Administrator is empowered to enter into a structure to make and inspection; if this cannot be done voluntarily, the power to obtain a warrant is granted. Further, the power to issue court tickets for violations is extended.

v. Building Commissioner

The position of Building Commissioner is established by Section 1-10-1 of the Village of Kildeer Municipal Code. This position is appointed by the Village President and Board of Trustees through a joint vote. The term for this position is one year. The Building Commissioner duties include administering the building code, and other applicable ordinances and state laws, including enforcement. The Building Commissioner has supervision and control of all employees assigned to matters listed as building commissioner duties. It is also the duty of the Building Commissioner to make or cause to be made all inspections needed for that purpose.

The Building Commissioner shall cause to be issued all proper permits for work pertaining to duties assigned within the Village in compliance with the Lake County Watershed Development Ordinance, codes, and other applicable ordinances. The Building Commissioner is empowered to enter into a structure to make and inspection; if this cannot be done voluntarily, the power to obtain a warrant is granted. Further, the power to issue court tickets for violations is extended.

vi. Village Inspectors

The inspectors are empowered to enforce all Ordinances and Codes relating to the installation, care and standards of their area of responsibility. The inspectors make all physical inspections and tests necessary to perform their duties.

C. Minimum Construction Site Practices

A site plan is required to comply with minimum prescribed practice requirements set forth in the WDO, and Village of Kildeer’s Municipal Code. Some minimum control measures include the following.

- Construction site sequencing and phasing,
- Preservation of existing vegetation and natural resources (through the runoff volume reduction hierarchy provisions),
- Storm water conveyance systems (including concentrated flows, diversions, etc.),
- Stockpile management,
- Soil erosion control measures (including blanket and seeding),
- Stabilized construction entrances/exits and haul routes,
- Sediment Control (including silt fence, inlet/outlet protection, ditch checks, sediment traps, sediment basins etc.),
- Wind and Dust control measures,
- Non-storm water management (including dewatering practices, waste management practices, spill prevention and control practices etc.),
- Construction Buffers, and
- Construction Details.

D. Site Plan Review

The Village of Kildeer is a certified community for the enforcement of the Storm water Provisions of the WDO. The Village provides applicants with a variety of documents necessary to obtain municipal permits. Included in the packet is relevant Watershed Development Permit (WDP) information including the performance guarantee information and WDP application form.

The Village Administrator, or their designee, performs a review of the proposed site plan and provides comments to the applicant on any plan deficiencies and/or recommended plan enhancements. The plan review also assists in identifying other approvals that the applicant may be required to obtain. After the Village Administrator concurs that the applicable provisions of the WDO have been addressed a permit is issued. The permit lists any additional conditions that are applicable for the development, including providing prior notification of the pre-construction meeting to the Village of Kildeer. Village attendance of the pre-construction meeting shall be made a condition of the permit for all major developments. The applicant is required to post the permit at the construction site.

E. Site Inspection Procedures

Representatives of the Village of Kildeer are authorized to enter upon any land or water to inspect development activity and to verify the existing conditions of a development site that is under permit review. The Village may inspect site development at any stage in the construction process. For major developments, the Village shall conduct site inspections, at a minimum, at the end of the construction stages 1 and 7 listed below. Construction plans approved by the Enforcement Officer shall be maintained at the site during progress of the work. Recommended inspection intervals are listed below:

Upon completion of installation of sediment and runoff control measures (including perimeter controls and diversions), prior to proceeding with any other earth disturbance or grading,

- After stripping and clearing,
- After rough grading,
- After final grading,
- After seeding and landscaping deadlines,
- After every seven (7) calendar days or storm event with greater than 0.5-inches of rainfall,
- After final stabilization and landscaping, prior to removal of sediment controls.

F. Site Inspection Process

The Village of Kildeer attends the pre-construction meeting on applicable development sites. During the pre-construction meeting the Pre-Construction Meeting Form (Appendix 5.5) is filled out by the Village attendee. It is also recommended that the inspector request to see the SWPPP and IEPA NOI for applicable construction sites.

The applicant notifies the Village when initial sediment and runoff controls measures have been installed. The Village inspects the initial sediment and runoff control measures and authorizes the start of general construction. The Village performs site inspections at the recommended intervals listed above and completes the Soil Erosion and Soil Control Inspection Form (Appendix 5.6).

For sites that exceed the WDO thresholds per Art. IV, Section B.1.j.2. a DECI is required, refer to Chapter 3.4.B.2 for additional information regarding the program.

The Village requires as-built documentation of the storm water management system prior to final site stabilization. Tags of the seed mixes are kept by the developer for inspection and approval. Upon approval of the as-builts, the applicant shall permanently stabilize the site.

G. Complaints

Both site design and construction related phone calls are directed to the Village Administrator or Village's Enforcement Officer. Site design comments are handled on a case by case basis. Construction related calls are typically addressed by performing a site inspection.

H. Performance Guarantees

Pre-construction meeting – No deposit required

Performance Guarantee (surety) is required for public improvements (i.e. sewer, water, right-of-way work), storm water management system and landscaping. The Engineers Opinion of Probable Construction Cost (EOPCC) is provided to the Village of Kildeer for their review/approval. The required surety amount shall be 110% of the Village's approved EOPCC by way of an irrevocable letter of credit or an irrevocable letter of commitment. In cases where the SMC requires a surety the Village will only hold a surety for the portions of the EOPCC that is not being held by SMC. Alternatively, the Village will provide SMC with a letter indicating that the Village will hold the surety and not reduce the surety amount until SMC approval has been obtained.

The Village of Kildeer will hold 5% of the surety for a minimum of 1-yr after site stabilization is complete to ensure that the vegetation is established and no failures occur. For sites with native vegetation, this portion of the surety will be held for a minimum of 3-yr after site stabilization. The applicant may apply for reductions of surety.

I. Violation Notification Procedures

In general the compliance due date should be within 5-working days. However, if the inspector determines that the violation is or will result in significant environmental, health or safety hazards a 24-hour due date should be set. For time-critical violations, the developer should also be advised to complete a Notice of Incidence report with IEPA for all sites that were required to obtain an NOI with IEPA. If the discharge from the construction site enters a receiving water within the MS4 jurisdictional boundaries, it is highly recommended that the MS4 also file an ION with IEPA.

The Soil Erosion Soil and Control Inspection Form is found in Appendix 5.6. Step 1 can be initiated by observation of a violation during a routine inspection, or in response to a notice of noncompliance received from a DECI.

Step 1: Violation Is Observed

The inspector completes the Soil Erosion and Soil Control Inspection Form. Photographs of the violation(s) should be taken and saved.

The Violation shall be described to the construction site contact.

A copy of the Soil Erosion and Soil Control Inspection Form is provided to the contractor and the developer. The Soil Erosion and Soil Control Inspection Form indicates the remedial measures required and a maximum time frame for action.

At the end of the indicated time frame the Village of Kildeer performs a follow-up site inspection. The inspector attempts to schedule the follow-up inspection with the construction site contact.

Step 2: 1st Follow-Up Site Inspection

The construction site contact shall be notified of the anticipated inspection time. The site is inspected including all items previously documented on the previous Soil Erosion and Soil Control Inspection Form. The inspector will determine if the remedial measures have all been satisfactorily addressed, substantially completed, or if significant non-compliance remains.

If the remedial measures have been satisfactorily addressed then the Soil Erosion and Soil Control Inspection Form is filled out indicating compliance and provided to the contractor and developer.

If the inspector determines that the remedial measures have been substantially completed, but not entirely resolved, the inspector shall follow Step 1 above.

If the inspector determines that the remedial measures have not been substantially completed, the inspector shall follow Step 3 discussed below. Photographs of the violations should be taken and saved.

Step 3: 1st Notice of Violation

A formal Notice of Violation letter will be sent to the contractor and developer (see sample letter in Appendix 5.7). A copy of the Notice of Violation shall also be provided to the Village. The letter will include the following information.

- Description of the violations (including ordinance provisions),
- Mandatory remedial measures, and
- Maximum time frame for resolution (10 days) (Ord. 88-O-484, 9-12-1988; amd. Ord. 95-O-707, 11-6-1995).

Step 4: 2nd Follow-Up Site Inspection

If the remedial measures have been satisfactorily addressed then the Soil Erosion and Soil Control Inspection Form is filled out indicating compliance and provided to the contractor and developer.

If the inspector determines that the remedial measures have been substantially completed, but not entirely resolved, the inspector shall follow Step 1 above.

If the inspector determines that the remedial measures have not been substantially completed, the inspector shall follow Step 3 discussed below. Photographs of the violations should be taken.

Step 5: 2nd Notice of Violation

Depending on the severity of the outstanding violations the inspector may issue a Red Tag and a Conditional Stop Work Order upon completion of the inspection. The Stop Work Order allows for the resolution of the violation but no other on-site improvements. Building and/or Occupancy Permits will not be issued and surety reductions will not be entertained until the violation is resolved. A formal Notice of Violation (Appendix 5.7) letter will be sent, via certified mail, to the contractor and developer. A copy of the Notice of Violation shall also be provided to the Village of Kildeer. The letter will include the following information.

- Description of the violations (including ordinance provisions),
- Mandatory remedial measures, and
- Maximum time frame for resolution (typically 5 working days).

Step 6: 3rd Follow-Up Site Inspection

The inspector will determine if the remedial measures have all been satisfactorily addressed, substantially completed, or if significant non-compliance remains.

If the remedial measures have been satisfactorily addressed then the Soil Erosion and Soil Control Inspection Form is filled out indicating compliance and provided to the contractor and developer.

If the inspector determines that the remedial measures have been substantially completed, but not entirely resolved, the inspector shall follow Step 1 above.

If the inspector determines that the remedial measures have not been substantially completed, the inspector shall follow Step 3 discussed below. Photographs of the violations should be taken and saved.

Step 7: 3rd Notice of Violation

The inspector issues a Red Tag and a Conditional Stop Work Order upon completion of the inspection, if one has not already been issued. The Stop Work Order allows for the resolution of the violation but no other on-site improvements. Building and/or Occupancy Permits will not be issued and surety reductions will not be entertained until the violation is resolved. Representatives from the Village of Kildeer shall conduct an

internal meeting to discuss the violation and subsequent actions. These actions may include:

- issuing fines at a rate of \$500/day per violation since the 1st notice of violation;
- draw from surety to enable the Village to have the remedial measures corrected; and
- seeking Village consul and pursuing injunctive or other legal relief.

A formal Notice of Violation letter will be sent, via certified mail, to the contractor and developer. A copy of the Notice of Violation shall also be provided to the Village of Kildeer. The letter will include the following information.

- Request a meeting with the applicant/development and the Village of Kildeer staff;
- Description of the violations (including ordinance provisions),
- Mandatory remedial measures,
- Maximum time frame for resolution (10 working days), and
- States additional penalties or measures that will be imposed if the violation(s) persist.

Repeat Steps 6 & 7 until resolution.

J. 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
- SMC's soil erosion and sediment checklist, soil erosion and sediment control notes, typical construction sequencing
- Chicago Metropolitan Agency for Planning (previously Northeastern Illinois Planning Commission) Course Manuals
- IDOT manuals
- Center for Watershed Protection documents
- IEPA and USEPA publications.

K. Construction Site Waste Control

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 storm water management system.

L. Development Tracking

The Village of Kildeer maintains a tracking log of current construction projects and associated permits and inspections.

M. Pavement Projects

Pavement resurfacing and maintenance projects are determined through pavement evaluation studies that take place approximately every 5 years. Project work shall follow IDOT Standard Specifications and applicable provisions of the WDO. At a minimum, protect drainage structures with inlet filter bags during construction activities.

3.5 Post Construction Runoff Control

This chapter describes how the compliance with storm water discharge permit requirements for long-term post-construction practices that protect water quality and control runoff flow is achieved. The Village of Kildeer complies with NDPES permit requirements by incorporating Ordinance and BMP standards to minimize the discharge of pollutants of development projects.

This SWMP creates and references extensive policies and procedures for regulating design and construction activities for protecting receiving waters. The design and construction site practices selected and implemented by the responsible party for a given site are expected to meet BMP measures described through the Lake County Technical Reference Manual and IEPA's Program recommendations. All proposed permanent storm water treatment practices must be reviewed and approved by the Village of Kildeer.

A. Regulatory Program

The WDO includes numerous performance standards on Grading, Storm Water and Soil Erosion/Sediment Control that must be met for all parties undertaking construction. The Lake County Technical Reference Manual is a guidance tool that describes BMP and implementation procedures for enforcing the WDO.

B. Long Term Operation and Maintenance

The SWMP includes two Long Term Maintenance Plans. These sample maintenance plans are included in Appendix 5.13.

The first plan is the recommended plan for existing detention and storm water management facilities, whether publicly or privately maintained. The intent of this sample plan is to provide guidance for the maintenance of facilities that do not have an approved plan. If an existing facility already has an adequate plan adequate; this document would supersede the sample plan.

The second plan is provided to applicants during the permit review period. This plan should be reviewed and enhanced by the applicant to reflect the sites specific design. Receipt of the signed and recorded maintenance plan is required prior to issuance of the WDP or listed as a permit condition.

C. Site Inspections

The inspection procedure for site inspections related to construction activities is discussed in detail in Chapter 3.4.E. This Chapter focuses on post-construction

inspections of previously developed sites, streambanks/shorelines, streambeds, and detention/retention ponds.

i. Previously Developed Sites

The Village of Kildeer attempts to inspect approximately 20% of all existing properties with storm water management facilities a year; resulting in a re-occurrence inspection interval of every 5-years.

Previously accepted developments are inspected with respect to the approved maintenance plan. A letter indicating the maintenance activity highlights, deficiencies or additional enhancements to the plan should be provided to the responsible party.

For older developments that do not have a maintenance plan, the Village of Kildeer inspects facilities with respect to the sample existing facilities maintenance plan. A letter indicating the maintenance activity highlights and deficiencies should be provided to the responsible party. The sample maintenance plan is provided with the letter and the responsible party is encouraged to implement an annual maintenance program.

ii. Streambanks and Shorelines

Annually inspect 20% receiving water streambanks/streambeds and detention basin shorelines in the spring and/or fall pending weather conditions. Stream locations are depicted on Figure 1 and pond locations are listed on the Detention/Retention Pond Checklist (Appendix 5.8). Observed erosion, seeding/re-seeding or slope stabilization needs are documented. Documented deficiencies should be reported to the Village Administrator who evaluates and determines appropriate remediation activities. Remedial actions might include notifying the property owner or including maintenance activities in the Village of Kildeer's work program.

New developments are required to provide a maintenance plan for constructed detention/retention facilities. The recorded maintenance plan for developments permitted through the Lake County Watershed Development Ordinance (WDO) is used, if available, for shoreline areas. Typical BMP for maintenance of these areas are similar to those for a construction site. SMC's streambank/shoreline stabilization manual is used as a starting point in choosing the appropriate BMP for remediation activities.

3.6 Pollution Prevention and Good Housekeeping

The Village of Kildeer 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 storm water quality management into day-to-day

Village operations. The Village provides on-going education and training to ensure that all of its employees have the knowledge and skills necessary to perform their functions effectively and efficiently.

A. Inspection and Maintenance Program

The following Chapters describe 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.

i. Street Sweeping

The Village contracts out for street sweeping on an as needed basis.

ii. Drainageways

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 include Indian Creek and Buffalo Creek. Minor drainageways include roadside and sideyard swales, overland flow paths, pond outlets, etc.

Pond Outlets

The Detention/Retention Pond Checklist is used to determine inspection locations. Structures are added to the checklist after new developments are approved and accepted. Locations identified on the checklists are inspected both before a forecasted storm (0.25 inches or more) and during the storm event. Observed obstructions are cleared and debris hauled to the spoil waste area. Ponds are inspected and evaluated for a low, medium and high level of flood height according to the following classifications.

Flood Height Classification

Low – Normal Water Level (NWL)

Medium – NWL to top of grate

High – Top of Grate and above

Condition

Good – outlet is unimpaired, not blocked

Fair –outlet obstructions observed although outlet is discharging\

Poor – outlet is blocked or obstructed

Comments

Note structural defects or other observances

Driveway Culverts

Maintenance and replacement of driveway culverts is the property owner's responsibility. Permits are required for culvert replacement; a soil erosion and sediment control plan may be required as part of the permit.

Catch Basins

Catch basin locations are identified on the Storm Sewer Atlas. Catch basins are cleaned on an as-needed basis. Spoil waste obtained from catch basin cleaning is disposed of off-site.

Catch basins found to have structural deficiencies are reported to the Village Engineer. Necessary remedial actions are completed by a contractor or incorporated into a capital project. Catch basins that have been cleaned are tracked on the GIS data base using a color coded system.

Storm Sewers

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.

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 jettted out is picked up with a clapper bar if possible.

Swales and Overland Flow Paths

Right-of-way Drainage Swales

The Village Engineer documents observed or reported erosion or sediment accumulation. Areas of significant concern are incorporated into a maintenance program.

Privately Owned Drainage Swales (side/rear yard):

Observed or reported erosion or sediment accumulation in privately owned swales are referred to the Village Engineer for follow-up. The Village Engineer notifies the property owner on an as needed basis for appropriate remediation required.

iii. Landscape Maintenance

The Village maintains care and upkeep of its general facilities, municipal roads and other public areas. Municipal staff is responsible for Litter and Debris

control described in Chapter 3.6.A. below. The Village annually selects and contracts with a landscape contractor. The landscape contractor is responsible for the remainder of the landscape maintenance program. The Village is responsible for ensuring that their landscape contractors are provided with training and/or other information to ensure that they adhere to the Village's SWMP.

Private Residence Yard Waste

Yard waste and leaves from private residences are collected through contract. Yard waste is collected weekly throughout the growing season. Leaf collection typically starts in October and runs for approximately six weeks.

Fertilizers

The annual landscape contractor is required to be a licensed applicator for fertilizers. Weed killer and fertilizers are typically scheduled two and four times per season, respectively. Contractor specifications incorporate low impact products. The use of pesticides and fertilizers shall be managed in a way that minimizes the volume of storm water runoff and pollutants.

iv. Snow Removal and Ice Control

During snow removal and ice control activities, salt, de-icing chemicals, abrasives and snow melt may pollute storm water runoff. The Village of Kildeer addresses these potential pollutants utilizing the following procedures for the "winter season" (November 1 through May 1) are implemented.

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.

Snow Plowing

Snow plowing activities direct snow off the pavement and onto the parkways. This reduces the amount of salt, chemical additives, abrasives or other pollutants that go directly into the storm sewer system. Snow blowing, plowing or dumping into drainageways is not allowed.

v. Vehicle and Equipment Operations

All vehicle and equipment fueling is conducted at public gas stations.
All vehicle maintenance occurs at private auto shops.

vi. Animal Nuisance Control

The Village of Kildeer Police Department, upon receiving notification, coordinates with a private contractor to collect “road kill” from right-of-way areas.

vii. Waste Management

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 storm water 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 and sanitary waste.

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) 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. Please refer to chapter 3.6.A.7 for vehicle related 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

Discharge sanitary waste into a sanitary sewer or managed by a licensed waste hauler.

viii. Water Conservation & Irrigation

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

periods of dry weather, a sprinkling/irrigation schedule is enforced. Maintenance activities (performed by the staff or its contractors) preserve water by utilizing vacuum recovery as opposed to water based cleaning when possible. Additionally, the water main replacement program decreases the possibility for water main leaks. In the event that a water main leak occurs, valve off the leaking section as soon as possible and then repair.

B. Spill Response Plan

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 storm water 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 storm water 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 storm water 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.

i. Non-Hazardous Spills/Dumping

Non-hazardous spills typically consist of an illicit discharge of household material(s) into the street or storm water management system. Upon notification or observance of a non-hazardous illicit discharge, Village personnel 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.
- The Stormwater Pollution Flier should be provided to property owners on both sides of the spill and on both sides of the street.
- The Village documents the location, type of spill and action taken on the Indirect Illicit Discharge Tracking Form (Appendix 5.12).

- The on-site Village personnel provide the tracking form to their supervisor. The supervisor, or his designee, takes the information from the form and transfers it to the Indirect Illicit Discharge Summary Form (Appendix 5.12).
- If a person is observed causing an illicit discharge, the Village Administrator or Village Engineer is notified and appropriate citations issued by the Police Department.

ii. Hazardous Spills

Upon notification or observance of a hazardous illicit discharge, Public Works follows the following procedure:

- Call 911, explain the incident. The Fire Department responds;
- Fire and Police Departments provide 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;
- Village personnel documents the location, type of spill and action taken on the Indirect Illicit Discharge Tracking Form; and,
- The on-site personnel provide the tracking form to their supervisor. The supervisor, or his designee, takes the information from the form and transfers it to the Indirect Illicit Discharge Summary Form.

C. Employee Training

The Village of Kildeer’s practice is to provide education and training to all of its employees to ensure that they have the knowledge and skills necessary to perform their functions effectively and efficiently. The purpose of the Employee Storm Water Training Program is to teach appropriate employees about the following:

- Storm water characteristics and water quality issues;
- The roles and responsibilities of the various Departments, and individuals within these Departments, regarding implementation of the SWMP to consistently achieve Permit compliance;
- Activities and practices that are, or could be sources, of storm water pollution and non-storm water discharges; and,
- How to use the SWMP and available guidance materials to select and implement best management practices.

i. 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 SWMP. Educational materials will focus on storm water pollution prevention measures and practices involved in routine activities carried out by the various functional groups. Training materials primarily focus on revisions to the various programs (that were in place prior to the acceptance of the SWMP).

ii. Training Schedule and Frequency

The initial training program will be offered within 6 months of the acceptance of the SWMP. Digital and hard copies of the training materials will be kept and shared with applicable new employees as part of their job introduction. Revisions/enhancements to the SWMP will be approved by the Storm Water Coordinator and then shared with applicable employees. The Storm Water Coordinator will monitor the potential need for overall refresher material distributions and offer additional training as necessary. 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.

4. Program and Performance Monitoring, Evaluation and Reporting

The SWMP represents an organized approach to achieving compliance with the storm water expectations of the NPDES Phase II program for both private and public activities within the Village. Land development, redevelopment and transportation improvement projects were required to comply with the provisions of the WDO prior acceptance of the SWMP. Additionally, the Village had numerous written and unwritten procedures for various tasks. This SWMP 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 Village will monitor and evaluate the proposed storm water pollution prevention plan based on the above stated objective. As part of the Storm Water Management Program, the Village:

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

This chapter describes how program monitoring, evaluation and reporting will be accomplished.

4.1 Performance Milestones

Previously established ordinances and programs implement many of the anticipated tasks. The following schedule describes general performance expectations.

Within 6 months following the acceptance of the SWMP, applicable employees will receive training regarding the implementation of the SWMP.

Within 1 year following the acceptance of the SWMP, program enhancement items within Chapter 3 will be implemented. Refer to Chapter 2.1 for a description of tasks associated with the implementation of the SWMP.

Within 1 year following the acceptance of the SWMP, the Outfall Inspection Procedure will be completed for all pipes identified, during the pre-screening efforts, as having dry weather flow.

Within 3 years following the acceptance of the SWMP, tracing and removal procedures will be completed for all pipes identified, during the Outfall Inspection Procedure, as contributing illicit discharges to receiving waters.

4.2 Program Monitoring and Research

The 2009 IEPA NPDES ILR40 General Permit requires upstream and downstream monitoring for water quality. The Village of Northfield will obtain water quality samples on major rivers/creek at locations upstream downstream of the MS4 discharge. The samples will be sent to a private lab for testing. The following analyses are generally performed: pH, Dissolved Oxygen,

Conductivity, Ammonia, Chloride, Fluoride, Biochemical Oxygen Demand (5 day), Phenolics, Total Phosphorus, Total Dissolved Solids, Total Kjeldahl Nitrogen, Total Suspended Solids and Metals (Copper and Potassium). Results are summarized and reviewed to detect changes between upstream and downstream sampling points.

The Storm Water Coordinator will monitor research conducted by others regarding the effectiveness of various alternative storm water practices, procedures and technologies. The Village will continue to seek innovative storm water practices and technologies. Information and guidance obtained from local agencies will be incorporated into this SWMP as practical. This information will be used to provide insight into how the program may need to evolve.

4.3 Program Evaluation

The primary mechanism for evaluating the program and ensuring that the field staff has adequate knowledge is supervision by responsible managers. Management support tasks include observing and evaluating design, construction and field personnel as they implement the requirements of the SWMP on both municipal and private projects, and maintenance personnel as they conduct their assigned activities. These responsibilities were outlined in detail in Chapter 2: Program Management.

The following types of questions/answers are discussed annually.

- Are proper storm water management practices integrated into planning, designing and constructing both (the Village) and private projects?
- Are efforts to incorporate storm water practices into maintenance activities effective and efficient?
- Is the training program sufficient?
- Is the SWMP sufficient?
- Are the procedures for implementing the SWMP adequate?