



# Illinois Environmental Protection Agency

Bureau of Water • 1021 N. Grand Avenue E. • P.O. Box 19276 • Springfield • Illinois • 62794-9276

## Division of Water Pollution Control ANNUAL FACILITY INSPECTION REPORT

### for NPDES Permit for Storm Water Discharges from Separate Storm Sewer Systems (MS4)

*This fillable form may be completed online, a copy saved locally, printed and signed before it is submitted to the Compliance Assurance Section at the above address. Complete each section of this report.*

Report Period: From March, 2017 To March, 2018

Permit No. ILR40 \_\_\_\_\_

#### MS4 OPERATOR INFORMATION: (As it appears on the current permit)

Name: Village of Bartlett Mailing Address 1: 228 S. Main Street

Mailing Address 2: \_\_\_\_\_ County: DuPage

City: Bartlett State: IL Zip: 60103 Telephone: 630-837-0811

Contact Person: Robert Allen, PE - Village Engineer Email Address: rallen@vbartlett.org  
(Person responsible for Annual Report)

#### Name(s) of governmental entity(ies) in which MS4 is located: (As it appears on the current permit)

Village of Bartlett

#### THE FOLLOWING ITEMS MUST BE ADDRESSED.

A. Changes to best management practices (check appropriate BMP change(s) and attach information regarding change(s) to BMP and measurable goals.)

- |  |                          |   |                          |
|--|--------------------------|---|--------------------------|
| 1. Public Education and Outreach             | <input type="checkbox"/> | 4. Construction Site Runoff Control       | <input type="checkbox"/> |
| 2. Public Participation/Involvement          | <input type="checkbox"/> | 5. Post-Construction Runoff Control       | <input type="checkbox"/> |
| 3. Illicit Discharge Detection & Elimination | <input type="checkbox"/> | 6. Pollution Prevention/Good Housekeeping | <input type="checkbox"/> |

B. Attach the status of compliance with permit conditions, an assessment of the appropriateness of your identified best management practices and progress towards achieving the statutory goal of reducing the discharge of pollutants to the MEP, and your identified measurable goals for each of the minimum control measures.

C. Attach results of information collected and analyzed, including monitoring data, if any during the reporting period.

D. Attach a summary of the storm water activities you plan to undertake during the next reporting cycle ( including an implementation schedule.)

E. Attach notice that you are relying on another government entity to satisfy some of your permit obligations (if applicable).

F. Attach a list of construction projects that your entity has paid for during the reporting period.

**Any person who knowingly makes a false, fictitious, or fraudulent material statement, orally or in writing, to the Illinois EPA commits a Class 4 felony. A second or subsequent offense after conviction is a Class 3 felony. (415 ILCS 5/44(h))**

Owner Signature:

Robert Allen

Printed Name:

Date:

Village Engineer

Title:

EMAIL COMPLETED FORM TO: [epa.ms4annualinsp@illinois.gov](mailto:epa.ms4annualinsp@illinois.gov)

or Mail to: ILLINOIS ENVIRONMENTAL PROTECTION AGENCY  
WATER POLLUTION CONTROL  
COMPLIANCE ASSURANCE SECTION #19  
1021 NORTH GRAND AVENUE EAST  
POST OFFICE BOX 19276  
SPRINGFIELD, ILLINOIS 62794-9276

This Agency is authorized to require this information under Section 4 and Title X of the Environmental Protection Act (415 ILCS 5/4, 5/39). Failure to disclose this information may result in: a civil penalty of not to exceed \$50,000 for the violation and an additional civil penalty of not to exceed \$10,000 for each day during which the violation continues (415 ILCS 5/42) and may also prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

MARCH 2017 – MARCH 2018  
ANNUAL FACILITY INSPECTION REPORT  
VILLAGE OF BARTLETT/NPDES PERMIT ILR40-0286

**SECTION A: Changes to BMP**

No changes were made during this reporting year to the Best Management Practices (BMP's) regarding General NPDES Permit ILR40.



DUPAGE  
COUNTY

Watershed  
Management

Water  
Quality

Floodplain  
Mapping

Regulatory  
Services

Flood Operations  
& Maintenance



## STORMWATER MANAGEMENT

630-407-6700  
stormwatermgmt@dupageco.org

[www.dupageco.org/swm](http://www.dupageco.org/swm)

May 16, 2016

Illinois Environmental Protection Agency  
Division of Water Pollution Control  
Permit Section  
Post Office Box 19276  
Springfield, Illinois 62794-9276

Dear Sir or Madam:

Since the inception of the General NPDES Permit No. ILR40 in 2003, DuPage County (Permit No. ILR400502) has partnered with other MS4s to develop and implement a regional storm water management program. DuPage County continues to implement a number of minimum control measures on behalf of these partnering municipalities for the current permit cycle: Descriptions of these programs are outlined on the individual NOI documents.

Additionally, the reissued permit contains a monitoring requirement, as detailed in Part V.A of ILR40, which will be addressed regionally and spearheaded by DuPage County. An evaluation of BMPs based on estimated effectiveness from published research accompanied by an inventory of the number and location of BMPs implemented using DuPage County's *Water Quality Best Management Practices Technical Guidance*, other published research, and municipal permit records will be completed. Partnering permittees also will continue to work collectively through the DuPage River/Salt Creek Workgroup to implement a regional monitoring program that evaluates storm water quality and impacts through sampling along the area's major waterways, including downstream from the outlets at significant tributaries.

Those entities that have elected to work cooperatively with DuPage County include:

Village of Addison (ILR400227); Addison Township Highway Department (ILR400001); Village of Bartlett (ILR400286); Village of Bensenville (ILR400292); Village of Bloomingdale (ILR400295); Bloomingdale Township Highway Department (ILR400013); Village of Burr Ridge (ILR400304); Village of Carol Stream (ILR400308); Village of Clarendon Hills (ILR400175); City of Darien (ILR400180); Village of Downers Grove (ILR400183); Downers Grove Township Highway Department (ILR400040); City of Elmhurst (ILR400187); Village of Glen Ellyn (ILR400199); Village of Glendale Heights (ILR400342); Village of Hanover Park (ILR400347); Village of Hinsdale (ILR400355); Village of Itasca (ILR400360); Village of Lemont (ILR400497); Village of Lisle (ILR400376); Lisle Township Highway Department (ILR400079); Village of Lombard (ILR400378); Milton Township Highway Department (ILR400086); City of Naperville (ILR400396); Naperville Township Highway Department (ILR400092); Village of Oak Brook (ILR400407); City of Oakbrook Terrace (ILR400232); Village of Roselle (ILR400437); Village of Villa Park (ILR400463); City of Warrenville (ILR400274); Village of Wayne (ILR400500); Wayne Township Highway Department (ILR400149); City of West Chicago (ILR400466); Village of Westmont (ILR400254); City of Wheaton (ILR400470); Village of Willowbrook (ILR400255); Village of Winfield (ILR400474); Winfield Township Highway Department (ILR400155); Village of Wood Dale (ILR400478); Village of Woodridge (ILR400480); and York Township Highway Department (ILR400159).

Sincerely,

MARCH 2017 – MARCH 2018  
ANNUAL FACILITY INSPECTION REPORT  
VILLAGE OF BARTLETT/NPDES PERMIT ILR40-0286

**SECTION B: Status of Compliance**

- A. Public Education and Outreach
  - ✓ A.1 Distributed Paper Material
  - A.2 Speaking Engagement
  - ✓ A.3 Public Service Announcement
  - A.4 Community Event
  - A.5 Classroom Education Material
  - ✓ A.6 Other Public Education
- The Village continues to distribute The Bartletter six times per year, or every other month starting with even months. It contains information regarding material and resource recycling, seasonal safety information, prescription drug drop-off information, storm and flood safety information, swale/pond maintenance information, illegal dumping information, parkway tree program information and Village or Park District event information.
- The Village continues to coordinate with Boy/Girl Scouts or other volunteer groups that request a stenciling activity for Storm Inlets – Do Not Dump, Drains to Stream/Pond.
- The Village website (<http://www.village.bartlett.il.us/>) offers information on Best Management Practices and other Stormwater Resources, as well as links to EPA and DuPage County sites. There are also links to DuPage, Cook and Kane County sites with information regarding Rain Barrels.

## Stormwater Management

### Why is Storm Water a Concern?



Storm water runoff is rain water and snow melt that runs off the land and enters streams, rivers, and lakes, often flowing through a community's storm sewer system. Storm water runoff can contain toxic chemicals, oil and grease, pesticides, metals, and other contaminants that are a major source of water pollution and can potentially pose a threat to public health and the environment.

In order to continue improving the water quality of stormwater runoff and mitigate the harmful effects of pollution, the Environmental Protection Agency (EPA) has set regulations that require municipalities to obtain permits through the National

Pollution Discharge Elimination System (NPDES) and prepare annual Facility Inspection Reports. The Village of Bartlett must follow the EPA's storm water requirements for populations less than 100,000 classified as Storm Water Phase II.

Storm Water Phase II programs and the annual reports must address these topics:

- Public education and outreach
- Public participation/involvement
- Illicit discharge detection and elimination
- Construction Site Runoff Control
- Post-Construction Runoff Control
- Pollution Prevention/Good Housekeeping for Municipal Operations

More information about these program components is available on the [NPDES section](#) of the EPA's website.

See these annual reports:

[2017 Annual Facility Report](#)  
[2016 Annual Facility Report](#)  
[2015 Annual Facility Report](#)  
[2014 Annual Facility Report](#)  
[2013 Annual Facility Report](#)

## Best Practices

The Village of Bartlett has partnered with DuPage County to provide a broad storm water management plan to further prevent storm water pollution. Please use the links below to access DuPage County Stormwater Management webpages and other resources aimed at keeping local waterways safe.

[DuPage County Storm Water Management Best Management Practices Brochure](#)

[Bartlett Storm Water Management Plan](#)

[IL EPA Annual Facility Report](#)

## Stormwater Resources

[After the Storm - A Citizen's Guide to Understanding Stormwater](#)

[Citizen Monitoring - Illicit Discharge Detection](#)

[Car Wash Guidelines - Send Only Rain Down the Drain](#)

[Proper Pet Care - Managing Your Pet's Waste Safely](#)

[Sustainable Lawn Care Practices](#)

## Rain Barrels



For DuPage and Kane County residents who want to help divert storm water from the sewer system and also want to save on their water bills, the Conservation Foundation is currently selling rain barrels. The rain barrels are available in different colors and can be picked-up or delivered. For information, visit [www.theconservationfoundation.org/page.php?PageID=106](http://www.theconservationfoundation.org/page.php?PageID=106).

For Cook County residents, Metropolitan Water Reclamation District (MWRD) is selling and delivering rain barrels. For information, visit <https://www.mwrdd.org/irj/portal/anonymous/rainbarrel>.

# VILLAGE OF BARTLETT STORM WATER MANAGEMENT PLAN

**TO REPORT SUSPECTED POLLUTED STORM WATER:  
CALL 630-837-0811, M-F 8:30 AM TO 4:30 PM; 911 AFTER HOURS**

The Illinois Environmental Protection Agency (IEPA) regulates stormwater discharges to receiving waters from the Village's Municipal Separate Storm Sewer Systems (MS4) as set forth in the General National Pollutant Discharge Elimination System (NPDES) Permit ILR40. Based upon this permit, the Village enforces a Stormwater Management Program to reduce the discharge of pollutants into receiving waters from the storm sewer system.

To comply with the requirements of the ILR40 permit, the Village's Stormwater Management Program includes the Notice of Intent (NOI) and the Annual Facilities Inspection Report. These documents can be found on the Village's website, <http://www.village.bartlett.il.us/government/public-works/wastewater-division/stormwater-management>.

The following Minimum Control Measures are an important part of the stormwater program and are included in both the NOI and the Annual Facility Inspection Report:

## **1. Public Education and Outreach:**

The Village participates in DuPage County efforts to provide water quality education and information. This includes written materials such as brochures, as well as links to materials on the Village and DuPage County website.

The Village also continues to distribute *The Bartletter* six times per year. The publication includes information regarding material recycling, seasonal safety, prescription drug drop-off programs, storm and flood safety information, swale and pond maintenance information, water quality/illegal dumping information and parkway tree information.

## **2. Public Participation/Involvement**

The Village is a member of both the DuPage River Salt Creek Workgroup (DRSCW) and the Chloride Toxicity Assessment Consortium (Chloride Group). Both groups work to study and reduce pollutant loads to local rivers, creeks and streams through municipal/county/state cooperation.

Village staff continues efforts to protect water quality through enforcement of the DuPage County Stormwater Ordinance. The Village maintains an Illicit Discharge and Detection Elimination (IDDE) agreement with DuPage County and enforces Soil/Erosion Control per the Stormwater Ordinance for all developments.

### **3. Illicit Discharge Detection and Elimination (IDDE)**

The Village continues to update the Storm Sewer Atlas and provide copies to DuPage County, DRSCW and the Chloride Group. Copies are also sent to MWRD as part of their Watershed Management Ordinance. The Village continues to be diligent as to investigations into complaints regarding stormwater. Staff regularly monitors discharge points, basins/ponds or BMP's for any sign of irregularity.

As part of an MWRD Infiltration/Inflow (I/I) program, the Village is surveying sanitary and storm sewers in potential priority areas. This will provide important data as staff works to maintain both utility systems.

The Village has maintained an IDDE Intergovernmental Agreement (IGA) with DuPage County since 2010. The ordinance includes discharge regulations, compliance monitoring and violations/enforcement/penalty items.

### **4. Construction Site Runoff Control**

The Village enforces the DuPage County Stormwater Ordinance with respect to soil and erosion control in all public and private developments. All site plan reviews, including developments less than one acre, are currently done by Village staff, supplemented by private wetland/stormwater consultants when necessary.

Construction site soil and erosion control inspections are carried out by Engineering Technicians, the Village Engineer or Building Department Inspectors. All complaints related to stormwater and erosion control are directed to the Village Engineer or the Building Director for investigation and resolution.

### **5. Post-Construction Runoff Control**

The Village enforces the DuPage County Stormwater Ordinance with regard to Best Management Practices (BMP) development and maintenance. Post Construction BMP's are required for all developments that include more than 2,500 square feet of new impervious area.

BMP's are placed within a Stormwater or Drainage easement and maintained as required by the DuPage Stormwater Ordinance. The BMP's are treated as improvements and inspected during and after construction. Devices such as The Snout are regularly required in commercial areas to promote clean storm discharges to basins and creeks.

The Village regularly inspects detention and wetland basins, as well as other storm facilities. Complaints regarding public or private BMP's are addressed by Public Works staff or the Village Engineer.



## **6. Pollution Prevention/Good Housekeeping**

The Village regularly participates in numerous training opportunities with DuPage County Highway, DuPage County Stormwater, American Public Works Association (APWA) and Intergovernmental Risk Management Agency (IRMA). The Village also runs periodic and seasonal training sessions for new employees, as well as updates for others.

The PW Director, Village Engineer and Water/Wastewater/Streets Supervisory Staff regularly monitor village facilities for any potential housekeeping issues. The Village maintains both a Crosswind and Pelican Street Sweeper in order to accomplish regular and special event street sweeping.

The Village participates in DuPage County efforts to provide water quality education and information. This includes written materials such as brochures, as well as links to materials on the Village and DuPage County website.

### INFORMATION/LINKS

1. NPDES Permit, Annual Reports available at:  
[www.village.bartlett.il.us/government/public-works/wastewater-division/stormwater-management](http://www.village.bartlett.il.us/government/public-works/wastewater-division/stormwater-management)
2. DuPage River Salt Creek Workgroup (DRSCW) available at:  
[www.drscw.org](http://www.drscw.org)
3. Chloride Group at: [James.Huff@gza.com](mailto:James.Huff@gza.com) (email message)
4. The Conservation Foundation at: [www.theconservationfoundation.org](http://www.theconservationfoundation.org)
5. DuPage County Stormwater at: [www.dupageco.org/swm](http://www.dupageco.org/swm)
6. Useful Links at:  
[www.dupageco.org/EDP/Stormwater\\_Management/1447](http://www.dupageco.org/EDP/Stormwater_Management/1447)

## ADOPT-A-STREAM

Another way you can help preserve our streams is through DuPage County's Adopt-A-Stream program. Volunteer groups can work to keep our streams clean and attractive by removing debris and trash in and along our waterways, removing invasive vegetation and by monitoring the quality of the water.

DuPage County Stormwater Management will provide guidance to help coordinate your group's efforts and publically acknowledge groups for their continued service.

For more information, contact Jan Roehl by email at [jroehl@theconservationfoundation.org](mailto:jroehl@theconservationfoundation.org) or by phone at (630) 428-4500 ext. 121. The Conservation Foundation is a Stormwater Management partner in preserving and improving DuPage County's streams and rivers.

DUPAGECOUNTY



# DUPAGE COUNTY

STORMWATER MANAGEMENT

DUPAGE COUNTY  
STORMWATER MANAGEMENT

421 North County Farm Road  
Wheaton, IL 60187

(630) 407-6673

Email: [stormwatermgmt@dupageco.org](mailto:stormwatermgmt@dupageco.org)

 [www.facebook.com/lovebluedupage](http://www.facebook.com/lovebluedupage)

 [www.twitter.com/lovebluedupage](http://www.twitter.com/lovebluedupage)

Tag your BMPs! #LoveBlueDuPage



[www.dupageco.org/swm](http://www.dupageco.org/swm)



BES

# BEST MANAGEMENT PRACTICES

TO  
Visit

## WHAT ARE BEST MANAGEMENT PRACTICES?

Stormwater best management practices (BMPs) are techniques, measures or structural controls used to manage the quantity and improve the quality of stormwater runoff. The goal of BMPs is to mimic the natural way water moved through an area before development by using design techniques to infiltrate, evaporate, and reuse runoff close to its source. BMPs help reduce the amount of and improve the quality of stormwater runoff. Please preserve our streams by utilizing these BMPs.

## QUICK FIXES

Rain barrels are an easy and inexpensive way to capture and store runoff falling from gutters. The stored water can later be used to water gardens and lawns. You can make your own barrels or purchase them locally with simple installation. Another easy fix is adding a rain garden to your property. This attractive BMP is effective in reducing the amount of runoff leaving your property. Rain gardens utilize native plants with deep roots to absorb runoff, filter pollutants and promote groundwater recharge. Even simple changes in habit can be a BMP. For example, using phosphate-free products when washing your car or fertilizing your lawn go a long way in reducing pollutants in stormwater runoff. Something as small as cleaning up after your pet and ensuring litter is properly disposed of can also help.

## CONSTRUCTION SOLUTIONS

Some BMPs require more involvement, but should be considered when building or renovating homes. For example, green roofs are an excellent way to decrease the amount of runoff leaving your property. Green roofs not only utilize water where it falls, but help prevent urban heat islands. Green roofs are a more expensive upgrade to your property, but they save money on heating and cooling costs. They can also be constructed on flat and sloped surfaces. A permeable paver is another BMP used as an alternative to traditional concrete or asphalt paving. The pavers decrease runoff by allowing water to seep into cracks that are filled with an aggregate. Remember, anything you can do to reduce pollutants in DuPage County streams helps everyone!

## REME

- Use p  
concr
- Plant
- Mix c  
fertiliz
- Install  
and le
- Don't
- Build
- Keep  
of lea
- Use p
- Put lit
- Use a  
drivev
- Clean
- Prope
- Wash
- Repoi

DUPAGECOUNTY



*After t*

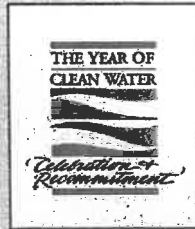
For more information contact:

or visit  
[www.epa.gov/npdes/stormwater](http://www.epa.gov/npdes/stormwater)  
[www.epa.gov/nps](http://www.epa.gov/nps)



EPA 833-B-03-002


January 2003



*A Citizen's Guide  
Understanding S*

Internet Address (URL) - HTTP://www.epa.gov  
Recycled/Recyclable - Printed With Vegetable  
Oil Based Inks on 100% Postconsumer  
Process Chlorine Free Recycled Paper

## What is stormwater runoff?



Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.

## Why is stormwater runoff a problem?



Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

## The effects of pollution

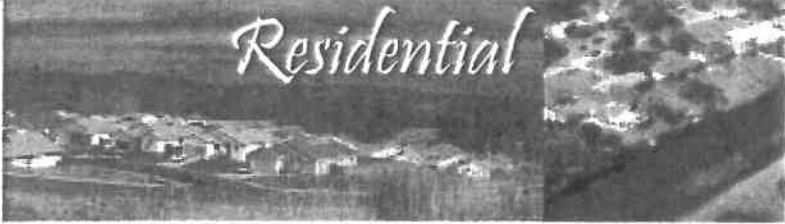
Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

- ◆ Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- ◆ Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and die in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- ◆ Bacteria and other pathogens can enter swimming areas and create health hazards, often making beach closures necessary.
- ◆ Debris—plastic bags, six-pack rings, cigarette butts—washed into water can harm or disable aquatic life like ducks, fish, and turtles.
- ◆ Household hazardous wastes like paint, solvents, used motor oil, and antifreeze can pollute water. Land animals and people can be harmed by drinking polluted water, eating fish and shellfish or ingesting pollutants.



# Stormwater Pollution Solutions

## Residential



Reduce properly disposed household products that contain chemicals, solvents, oils, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour them into the ground or into storm drains.

### Lawn care

Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.



- ◆ Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- ◆ Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- ◆ Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.
- ◆ Cover piles of dirt or mulch being used in landscaping projects.

### Septic systems

Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.



- ◆ Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).
- ◆ Don't dispose of household hazardous waste in sinks or toilets.

### Auto care

Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.



- ◆ Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- ◆ Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.

### Pet waste

Pet waste can be a major source of bacteria and excess nutrients in local waters.



- ◆ When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.

Edge  
Sgs  
that p  
ureal

Re

Per  
asp  
Inst  
div  
sys  
dec

Rai  
coll  
roo  
pro  
wat  
law

Rai  
Gra  
des  
with



Ve  
nat  
stre  
picl



Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

- ◆ Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- ◆ Cover grease storage and dumpsters and keep them clean to avoid leaks.
- ◆ Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.

Erosion controls that aren't maintained can carry excessive amounts of sediment and debris into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful substances that can be picked up by stormwater and deposited into local waterbodies.

- ◆ Divert stormwater away from disturbed or exposed areas of the construction site.
- ◆ Install silt fences, vehicle mud removal mats, vegetative cover, and other sediment and erosion controls and properly maintain them, especially after rainstorms.
- ◆ Prevent soil erosion by minimizing disturbed areas during construction projects, and mulch bare areas as soon as possible.



Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.



- ◆ Keep livestock away from streambanks and provide them a water source away from waterbodies.
- ◆ Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- ◆ Vegetate riparian areas along waterways.
- ◆ Rotate animal grazing to prevent soil erosion in fields.
- ◆ Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.



Improperly managed logging operations can result in erosion and sedimentation.

- ◆ Conduct preharvest planning to prevent erosion and lower costs.
- ◆ Use logging methods and equipment that minimize soil disturbance.
- ◆ Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- ◆ Construct stream crossings so that they minimize erosion and physical changes to streams.
- ◆ Expedite revegetation of cleared areas.

## STORM DRAIN STENCILING

Volunteers can also work to keep our streams clean and attractive by engaging in Storm Drain Stenciling. Stenciling the outside of storm drains helps to raise the community's awareness of nonpoint source pollution and reduce the incidence of illicit discharge into the drains.

Nonpoint source pollution results from everyday activities and those pollutants oftentimes are swept directly into storm drains and waterways with stormwater runoff. Some examples include fertilizers, motor oil, litter and animal waste.

For more information, contact Jan Roehll by email at [jroehll@theconservationfoundation.org](mailto:jroehll@theconservationfoundation.org) or by phone at (630) 428-4500 ext. 121. The Conservation Foundation is a Stormwater Management partner in preserving and improving DuPage County's streams and rivers.

DUPAGE COUNTY



# DUPAGE COUNTY


Stormwater Management

### DUPAGE COUNTY STORMWATER MANAGEMENT

421 North County Farm Road  
Wheaton, IL 60187

(630) 407-6673

Email: [stormwatermgmt@dupageco.org](mailto:stormwatermgmt@dupageco.org)

 [www.facebook.com/lovebluedupage](http://www.facebook.com/lovebluedupage)

 [www.twitter.com/lovebluedupage](http://www.twitter.com/lovebluedupage)

Tag Us! #LoveBlueDuPage



[www.dupageco.org/swm](http://www.dupageco.org/swm)



# ILLICIT DISCHARGE DETECTION & ELIMINATION

TO  
Visit

## WHY SHOULD I CARE ABOUT ILLICIT DISCHARGE?

The Clean Water Act requires municipalities with separate storm sewer systems to adopt an Illicit Discharge Detection and Elimination (IDDE) Ordinance. Storm sewer systems collect stormwater runoff and distribute it directly to DuPage County streams and rivers. In order to ensure the health, safety and general welfare of its residents, the DuPage County IDDE Ordinance prohibits the discharge of pollutants into the storm drain system.

## WHAT IS ILLICIT DISCHARGE?

An Illicit Discharge is any substance other than stormwater being released into a storm sewer system. Oil, paint, organic materials and animal waste are examples of illicit discharges. These contaminants have a negative effect on the health of our local waterways and the surrounding communities.

## HOW DO I SPOT ILLICIT DISCHARGE?

In addition to witnessing an act of illicit discharge—such as someone throwing animal waste into a storm drain—certain signs may also signify an illicit discharge reaching a stream or river. Pipes in disrepair or hoses that lead to a storm drain or body of water are all signs of an illicit discharge. Stains, suds, unusual odors, abnormal vegetative growth and structural damage to streets or inlets usually signifies a problem as well.

A more obvious way to spot an illicit discharge is when there are materials flowing into streams and rivers from storm sewer pipes during dry weather. In the absence of stormwater runoff, these systems are relatively quiet unless there is unnatural discharge draining through them.

## HOW DO I REPORT ILLICIT DISCHARGE?

Report suspicious discharge by calling (630) 407-6796, by emailing [stormwatermgmt@dupageco.org](mailto:stormwatermgmt@dupageco.org) or online at:

<http://gis.dupageco.org/CitizenReporter/>

## WHAT DISCHARGE

### Sanitary

- Sanitary
- Stains
- Hoses
- Gray
- Odors
- Detergent

### Illegal

- Oily
- Trash
- Petroleum
- Stains

### Industrial

- Discharge
- Chemical

### Agricultural

- Algae
- Hoses

DUPAGE COUNTY

## “Send Only Rain Down the Drain!”

In order to protect the water quality of local streams, DuPage County Stormwater Management has made car wash kits available to organizations holding car wash activities for various purposes, including fundraisers. The kits can be obtained from the COUNTY, from SCARCE, a local environmental education non-profit, and at a number of high school districts throughout the County.

For more information on the kits, please visit our website:

[www.dupageco.org/swm](http://www.dupageco.org/swm)



DUPAGE COUNTY



# DUPAGE COUNTY


STORMWATER MANAGEMENT

DUPAGE COUNTY  
STORMWATER MANAGEMENT

421 North County Farm Road  
Wheaton, IL 60187

(630) 407-6673

[stormwatermgmt@dupageco.org](mailto:stormwatermgmt@dupageco.org)

 @lovebluedupage

 @lovebluedupage

 @lovebluedupage

Tag your car wash! #LoveBlueDuPage



[www.dupageco.org/swm](http://www.dupageco.org/swm)

# CAR WASH GUIDELINES

## OVERVIEW

Washing your car at home or at a local fundraiser can wreak havoc on nearby bodies of water, simply by sending pollutants like dirt, soap, oil, grease and metals, along with the wash water, into streams and river. Ideally, waste water from car washes should be emptied into a sanitary sewer (the system that transports wastewater to a treatment facility) if allowed by local jurisdiction.

The following suggestions are some other ways to make your car washes friendly to our local waterways.

**REMEMBER: Only rain goes down the storm drain!**

## AT HOME:

- Pull your car onto the lawn before washing. You can water your lawn at the same time you wash your car.
- Use phosphate-free, biodegradable cleaning products.
- Avoid using degreasers, solvents and tire cleaning products.
- Wring out sponges and rags in a bucket, then empty the bucket into the sanitary sewer system, via sinks or toilets. You can also empty the bucket onto pervious landscaped areas where wastewater can be absorbed.
- Use a low-flow nozzle for your hose and turn it off when you're not using the water.
- Sweep up any debris (rather than hosing it to the street) and dispose of it in the garbage.
- If possible, take your car to a commercial car wash. These facilities use technology to achieve minimal water usage and discharge their water in a regulated and safe manner. Some car washes reuse water and even employ environmentally friendly soaps!
- **Bonus Tip:** Ensure you're regularly changing your oil to prevent excessive oil leakage.

## AT A FUNDRAISER:

- Follow local guidelines.
- Use a water-efficient car wash.
- Hold the fundraiser in a pervious area.
- Sell tickets for the fundraiser.
- Use environmentally friendly products.
- Make the job as easy as possible for the fundraiser.
- Follow local guidelines for the fundraiser.



## Storm Drain Stenciling

Volunteers can also work to keep our streams clean and attractive by engaging in Storm Drain Stenciling. Stenciling the outside of storm drains helps to raise the community's awareness of nonpoint source pollution and reduce the incidence of illicit discharge into the drains.

Nonpoint source pollution results from everyday activities and those pollutants oftentimes are swept directly into storm drains and waterways with stormwater runoff. Some examples include fertilizers, motor oil, litter and animal waste.

*For more information, materials or to schedule a storm drain stenciling outing, contact The Conservation Foundation (TCF) at 630.428.4500 ext. 121. TCF is a Stormwater Management partner in preserving and improving DuPage County's streams and rivers.*



DUPAGE COUNTY



# DUPAGE COUNTY

STORMWATER MANAGEMENT

DUPAGE COUNTY  
STORMWATER MANAGEMENT


421 North County Farm Road  
Wheaton, IL 60187

(630) 407-6673

[stormwatermgmt@dupageco.org](mailto:stormwatermgmt@dupageco.org)

 @lovebluedupage

 @lovebluedupage

 @lovebluedupage

Tag pet care tips! #LoveBlueDuPage

Love Live

DuPage County

[www.dupageco.org/swm](http://www.dupageco.org/swm)

# PROPER PET CARE

## Pet Waste As Stormwater Pollution

Proper pet care is an *essential*—especially when considering the effects that improper pet care can have on our environment. For example, if you fail to pick up your dog waste, it is then a contributor to stormwater pollution. Dog waste is full of bacteria and parasites that may be a threat to human health and the environment as a whole.

Beyond feces, there are other ways in which improper pet care can have negative effects on our environment. *Dumping fish* from the pet store into waterways or stormwater drains is not only harmful—but it can also result in a fine under certain ordinances. It is also harmful to try to dump *plants* that were meant for your aquarium into waterways, as they can displace native plants.

## Small Efforts Make Big Changes

Merely picking up after your dog can prevent up to 23 million fecal coliform bacteria. It can also decrease the amount of disease spread through contaminated water sources. This seems trivial, but it is a serious risk, considering dog waste is said to be the *3rd or 4th* largest contributor of pollution in urban watersheds. A small effort, such as carrying around a bag to pick up after your dog, can make a big change in eliminating the number of pollutants in our waterways.

## More Information

*Here is some information on the harmful effects of improperly caring for pet waste:*

- The water in your aquarium could contain fish eggs, larvae or diseases. These contaminants pose a threat to other lifeforms currently in our waterways.
- When walking your dog in urban areas, it does not matter whether you are on a lawn, beach or a sidewalk, all of those surfaces can drain into a water body and pollute the water.

## Remediation

- You can help prevent pollution if you pick up after your dog.
- Another way to help is to not release any pollutants into the water.
- Dog waste is a major pollutant in our waterways.
- On your property, you can help prevent pollution by properly disposing of pet waste.
- In your community, you can help prevent pollution by reporting any illegal dumping.



## How a Rain Barrel Can Help Your Lawn

Rain barrels are built to capture rainwater that goes through the downspout. Not only do rain barrels prevent contaminants from running down the drain into our local waterways, but they also capture healthy water that can be used to give water to your garden or other plants on your lawn!



DUPAGE COUNTY



# DUPAGE COUNTY


STORMWATER MANAGEMENT

DUPAGE COUNTY  
STORMWATER MANAGEMENT

421 North County Farm Road  
Wheaton, IL 60187

(630) 407-6673

[stormwatermgmt@dupageco.org](mailto:stormwatermgmt@dupageco.org)

 @lovebluedupage

 @lovebluedupage

 @lovebluedupage

Tag your lawn! #LoveBlueDuPage

Love Live

DuPage County

[www.dupageco.org/swm](http://www.dupageco.org/swm)

# SUSTAINABLE LAWN CARE PRACTICES

To  
Visit

## What You Should Know About Pesticides

- Weed killers that promise to “magically” wipe out weeds will sometimes try to market their products as natural—but be wary, *they are far from it*.
- A lot of fertilizers will try to push the importance of their product onto consumers. This contradicts what has been researched about fertilizers with a synthetic makeup, which highlights how unnecessary chemicals are to lawns.
- Pesticides can be harmful to integral parts of soil, such as *earth worms*.
- Pesticides are found in a number of fertilizers and they are not only dangerous directly to you but to the world at large.

## Simple Steps in Achieving the Ideal Lawn

- A *soil test* should be conducted every five years at the very least. Evaluating how your soil might have changed throughout the years and different seasons will give you a sense of how to continue to keep your soil healthy and thriving.
- When it comes to fertilizing, it is best to go organic. *Organic fertilizers* are made from plant or animal materials so they prove to be safe and just as effective as fertilizers with potentially dangerous additives.
- Consider planting *native plants* that do not require fertilizer and do not harm or degrade ecosystems.
- Be sure to *avoid overwatering*. About an inch of water should be distributed across your lawn every week.
- When *mowing your lawn*, try to set your mower to have it cut your grass down to 3 inches.

## Remem

- Con
- Avo
- Whe  
dee  
to d  
(onc
- Do i  
a fo  
but  
stre
- Han  
to u  
issu
- Kee  
your  
vari  
cour



DUPAGE COUNTY

MARCH 2017 – MARCH 2018  
ANNUAL FACILITY INSPECTION REPORT  
VILLAGE OF BARTLETT/NPDES PERMIT ILR40-0286

B. Public Participation/Involvement

- ✓ B.1 Public Panel
- B.2 Educational Volunteer
- ✓ B.3 Stakeholder Meeting
- B.4 Public Hearing
- B.5 Volunteer Monitoring
- ✓ B.6 Program Coordination
- B.7 Other Public Involvement

- The Village is a member of the DuPage River Salt Creek Workgroup (DRSCW) and regularly attends and supports the group with membership dues and meeting participation.
- The Village is also a member of the recently formed Chloride Group, or the Chloride Toxicity Assessment Consortium, which will operate in much the same manner as the DRSCW.
- The Village served on a volunteer committee with DuPage County and other municipal representatives to develop a regional/countywide NPDES framework for stormwater compliance in 2016, and again for a proposed NOI framework and eventual IGA in 2018.
- Village staff continues efforts to protect water quality through the DuPage County Stormwater Ordinance, with regard to all development. The Village maintains an Illicit Discharge and Detection Elimination (IDDE) IGA with DuPage County and enforces Floodplain and Soil/Erosion Control per the Stormwater Ordinance as a Partial Waiver community.
- County-wide items and activities can be found in the DuPage County Report.



MARCH 2017 – MARCH 2018  
ANNUAL FACILITY INSPECTION REPORT  
VILLAGE OF BARTLETT/NPDES PERMIT ILR40-0286

C. Illicit Discharge Detection and Elimination

- ✓ C.1 Storm Sewer Map Preparation
- ✓ C.2 Regulatory Control Program
- ✓ C.3 Detection/Elimination Prioritization Plan
- ✓ C.4 Illicit Discharge Tracing Procedure
- ✓ C.5 Illicit Source Removal Procedures
- ✓ C.6 Program Evaluation and Assessment
- ✓ C.7 Visual Dry Weather Screening
- C.8 Pollutant Field Testing
- C.9 Public Notification
- C.10 Other Illicit Discharge Controls

- The Village continues to update the Storm Sewer Atlas and provides updates as required for IDDE, as well as to the DRSCW and the Chloride Group.
- The Village continues to work with MWRD, in the Cook County portion of Bartlett, as MWRD develops and refines their Watershed Ordinance.
- As part of an MWRD I/I program, the Village is surveying storm and sanitary structures in a high priority area in Bartlett. The Village continues data compilation began in 2018.
- The Village has maintained an IDDE IGA with DuPage County since 2010 as a full participant. The ordinance includes discharge regulations, compliance monitoring and violations/enforcement/penalty articles.
- The Village continues to be diligent as to investigations into complaints regarding stormwater, most notably in commercial areas. Devices such as the SNOUT are regularly required to promote clean site discharge to basins or creeks. Village staff monitors all detention basins, outfalls and BMP's regularly for any indication of discharge irregularity. No illicit discharges were found during the reporting period.
- County-wide items and activities can be found in the DuPage County Report.

MARCH 2017 – MARCH 2018  
ANNUAL FACILITY INSPECTION REPORT  
VILLAGE OF BARTLETT/NPDES PERMIT ILR40-0286

D. Construction Site Runoff Control

- ✓ D.1 Regulatory Control Program
  - ✓ D.2 Erosion and Sediment Control BMP's
  - D.3 Other Waste Control Program
  - ✓ D.4 Site Plan Review Procedures
  - ✓ D.5 Public Information Handling Procedures
  - ✓ D.6 Site Inspection/Enforcement Procedures
  - D.7 Other Construction Site Runoff Controls
- 
- The Village enforces the DuPage County Stormwater Ordinance with regard to soil and erosion control in all developments, public and private.
  - The Village performed more than 445 S/E Control Site Inspections (see attached) during the 2017 reporting period. These inspections are routinely carried out by the Village Engineer, engineering technicians and Building Department inspectors.
  - The Village is currently in the planning stages for a PW BMP project that will be required after the completion of a large potable water pump station project and several site improvements. The BMP project will likely be completed in 2019.
  - As a partial waiver community, all site plan review is currently done by Village staff and supplemented by private wetland/stormwater consultants. All development projects are reviewed by the Village, including those sites under 1 (one) acre in size.
  - All complaints/issues regarding development and construction activities go to the Building Department, the PW Director or the Village Engineer. The complaints are investigated and resolved in a timely fashion.
  - County-wide items and activities can be found in the DuPage County Report.

**SOIL AND EROSION CONTROL INSPECTION 2017**

<b>Project name</b>	<b>Project address</b>	<b>Duration of the project</b>	<b>Site inspections</b>
Bartlett Ridge	Naperville Rd	from 1/17 to 12/17	43 inspections
Comcraft 1377 Schiferl Rd.	Brewster Creek Business Park	from 1/17 to 12/17	36 inspections
1580 Hect Ct	Brewster Creek Business Park	from 1/17 to 12/17	27 inspections
1543 Hect Rd	Brewster Creek Business Park	from 1/17 to 12/17	29 inspections
Artis Senior Living	1035 S Rt 59	from 1/17 to 12/17	44 inspections
Forest Veiw	Lot 7	from 1/17 to 12/17	43 inspections
Sanzer's Sub	W. Railroad	from 1/17 to 7/17	21 inspections
Country Creek Unit 1	S. Bartlett rd	from 1/17 to 12/17	27 inspections
Greco Warehouse Lot 9 B1	Brewster Creek Business Park	from 1/17 to 9/17	21 inspections
Exter Lot 9C	Brewster Creek Business Park	from 1/17 to 7/16	21 inspections
550 Rana USA	Brewster Creek Business Park	from 1/17 to 12/17	41 inspections
784 Duxbury	784 Duxbury	from 1/17 to 5/17	14 inspections
Lot 9 B1	Brewster Creek Business Park	from 4/17 to 11/17	24 inspections
Lot 12 A-F Grading	Brewster Creek Business Park	from 3/17 to 7/17	14 inspections
802 E. Devon Ave	Existing Building	from 1/17 to 12/17	34 inspections
Get Fresh Temporary Parking	Brewster Creek Business Park	from 4/17 to 7/17	4 inspections
Elgin Bevereges	Blue Heron Business Park	from 1/17 to 5/17	4 inspections

MARCH 2017 – MARCH 2018  
ANNUAL FACILITY INSPECTION REPORT  
VILLAGE OF BARTLETT/NPDES PERMIT ILR40-0286

E. Post-Construction Runoff Control

- E.1 Community Control Strategy
  - ✓ E.2 Regulatory Control Program
  - ✓ E.3 Long Term O&M Procedures
  - ✓ E.4 Pre-Construction Review of BMP Designs
  - ✓ E.5 Site Inspections During Construction
  - ✓ E.6 Post-Construction Inspections
  - E.7 Other Post-Construction Runoff Controls
- The Village enforces the DuPage County Stormwater Ordinance with regard to BMP development and maintenance. The recent ordinance requires Post-Construction BMP's for all developments that include more than 2,500 square feet of new or net impervious area. This is enforced on all private and public projects.
  - The Village regularly inspects detention and wetland basins and other storm water facilities. All public or private complaints regarding stormwater detention are handled by Public Works staff or the Village Engineer.
  - Site inspections of private or public BMP's are handled by the Village Engineer or a designated consultant. The DuPage County Water Quality Best Management Practices-Technical Guidance manual is referenced and utilized for BMP design.
  - BMP's are placed within a Stormwater or Drainage easement and maintained as required by DuPage County. Both public and private developments are regulated in this manner. In private development, stormwater BMP's are treated as public improvements and inspected during and after construction
  - County-wide items and activities can be found in the DuPage County Report.

MARCH 2017 – MARCH 2018  
 ANNUAL FACILITY INSPECTION REPORT  
 VILLAGE OF BARTLETT/NPDES PERMIT ILR40-0286

F. Pollution Prevention/Good Housekeeping

- ✓ F.1 Employee Training Program
- ✓ F.2 Inspection and Maintenance Program
- ✓ F.3 Municipal Operations Storm Water Control
- ✓ F.4 Municipal Operations Waste Disposal
- F.5 Flood Management/Assess Guidelines
- F.6 Other Municipal Operations Control

- The Village participates in numerous training opportunities with DuPage County Highway, DuPage County Stormwater, APWA and IRMA. The Village also runs in-house sessions for new employees and periodic or seasonal sessions (salt-use and chemical use) for regular employees.
- Added outdoor equipment wash area with inlet filter to catch debris and sediment in 2016 and maintained throughout 2017.
- The Village did send 3 representative to the DuPage County training – Pollution Prevention for MS4 Communities – on May 10, 2018 at Benedictine University in Lisle. This is a regular practice for Bartlett as we continue to keep all staff current with BMP's and regulations.
- Village facilities, including Public Works/Water/Wastewater are monitored on a regular basis by the PW Director, Village Engineer and PW staff. BMP's and PCBMP's are required for all public projects. Upon completion of an upcoming potable water project, a water BMP will be constructed at the PW facility to deal with an increase in impervious area.
- County-wide items and activities can be found in the DuPage County Report.
- 140 street miles

<b>2017</b>	Snow Events	21	Salt Used	1998 tons
	Ice Events	1	Average/Event	91 tons/Event
<b>2017</b>	Sweeping	4,288 miles – total, two sweepers		
	Storm Sewer	188	Inlets repaired/Cleaned plus 20 misc. cleanings	
	Roots Cut/Clear	3,000 LF		

MARCH 2017 – MARCH 2018  
ANNUAL FACILITY INSPECTION REPORT  
VILLAGE OF BARTLETT/NPDES PERMIT ILR40-0286

**SECTION C: Information Collected/Analyzed/Monitoring**

- For all data collection and monitoring during this reporting period, please see the DuPage County Annual Report.

**SECTION D: Planned Storm Water Activities**

- As part of a new Bartlett Police Facility, we have included several parking areas with a permeable pavement (pavers) system. This will serve as the PCBMP for the new facility, despite actually lowering the impervious area numbers. This project should be finished in early 2019.
- For all other activity planning information, please see the DuPage County Annual Report.

**SECTION E: Government Entity**

- The Village of Bartlett does rely on DuPage County, and the stormwater program, in order to fulfill permit obligations as set forth in Items A-F in Section B above.

**SECTION F: Village Construction Projects**

- The Village had no projects in this category during the reporting period.

# ATTACHMENT INDEX

1. Storm Drain Markers – we have budgeted for this item and will begin installation during the summer of 2018, after evaluating the storm system for the best locations.
2. TDML information – Road Salting BMP's, West Branch DuPage River Watershed Report
3. DuPage River Salt Creek Workgroup (DRSCW) Reports (sample section only)
4. Environmental Justice Areas, EJSCREEN Report
5. Monitoring and Assessment, DRSCW Report

# **ATTACHMENT 1**

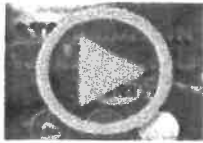




YOU IDENTIFY WITH US



### Storm Drain Markers



<https://www.youtube.com/watch?v=VQDmh0bbrZ8>

**CLICK HERE FOR THE SHOPPING CART** [\(https://stormdrainmarkerstore.com/\)](https://stormdrainmarkerstore.com/)



[\(https://stormdrainmarkerstore.com/\)](https://stormdrainmarkerstore.com/)

<https://stormdrainmarkerstore.com/drain/sdm-360>

(/our-



products  
/our-products  
/storm-

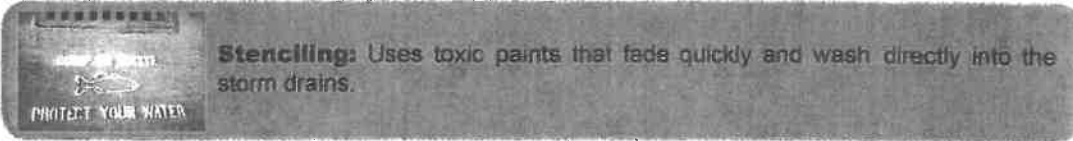


**HELP PREVENT WATER POLLUTION IN YOUR COMMUNITY!**

Storm Drains are commonly misused by the public for the disposal of waste such as paint, motor oil, antifreeze, pesticides and other pollutants. This improper disposal can seriously damage water quality and the environment. Help put an end to water pollution in your community - mark all storm drains with Almetek's Permanent Markers.

### Why choose Almetek Storm Drain Markers?

There are several marking options, but none offer the durability and longevity of an Almetek Storm Drain Marker:



**Stenciling:** Uses toxic paints that fade quickly and wash directly into the storm drains.



**Plastic Markers:** Made of plastic which is terrible for the environment. Deteriorate rapidly, often flaking off into storm drains.

*Photo shows failed plastic markers sent to Almetek by a customer who removed them from their community storm drains.*



**Glass Markers:** Expensive. Can be shattered, spray painted by vandals, and accumulate dirt on their flat surfaces, making them illegible.

**Almetek's embossed METAL Storm Drain Markers are Eco-Friendly and warranted for up to 30 years! They are legible even when spray painted, vandal resistant, and priced to fit within your budget. In fact, the money you save on repeatedly replacing other types of markers makes Almetek's Storm Drain Markers the most cost effective solution by far!**

*Don't be fooled by cheap copycat markers - invest your money wisely on markers that last! Show us your quotes for comparable markers and we'll beat the price.*

**WE WON'T BE UNDERSOLD!**

#### Features & Options:

- 4" Round Disc
- Wide Choice of Symbols & Legends
- Virtually Indestructable
- Install On Any Surface
- Theft Resistant
- Up To 30-Year Warranty on marker
- Easy to Install
- Custom Designs Available
- High Visibility
- All Metal, Deep 3-D Embossed
- Sand-Blasted Matte Finish
- U.V. Baked Enamel Paint
- 1-2 Color Option or Natural
- Optional Deep Stamped Sequential
- Numbering or Name of Town/City
- UV Clear Multicolor Graphics
- Dome or Laser Engraved Aluminum Center Disc are available
- Stamped Sequential Numbers
- Custom Stamped Town/City
- Square Punched Center Hole
- Welded Male Stud External Thread



CUSTOM DEEP STAMPED



BACK VIEW - SAND-BLASTED

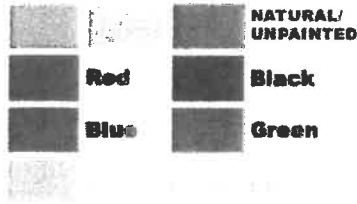


MALE WELDED STUD

(<http://www.almetek.com/>)

Note: Center hole allows for bolt-on grate installations as well as drive rivet theft Proof installations.

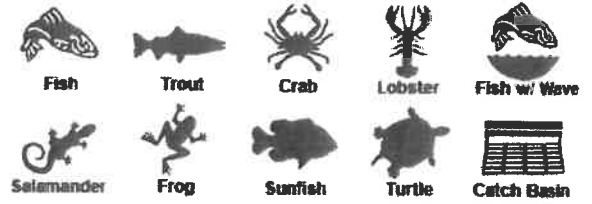
**Color**



**Materials:**

- Stainless Steel
- Aluminum
- Anodized Aluminum
- Brass

**Symbols:**



**Legends:**

- Drains to Bay
- Drains to River
- Drains to Lake
- Drains to Ocean
- Drains to Stream
- Drains to Creek
- Drains to Waterway
- Drains to Wetlands
- Drains to Pond
- Drains to Gulf
- Only Rain in the Drain (Avail. in Spanish)

**AND MORE!**

Custom Legends and Symbols are available by our in-house Art & Die Departments.



**Additional Metal Markers:**



Partly delineate boundaries  
1 Custom Survey Markers!



Mark the trails in your  
community parks!



Brand Manhole  
Covers



Mark above and  
underground utilities

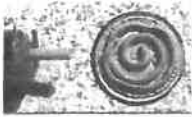


Keep parks, trails and  
playgrounds debris free!



*Have an idea for a  
marker? Call our  
Customer Service  
Team!*

**Adhesives:**



Use tube adhesive for either surface or sub-surface installation



**Item No. AAD4 Awesome Adhesive™:**  
Pressure sensitive circles for surface mount only. Easy to apply, just press into exact position. Highest initial bond (never hardens). Apply in all weather and temp. 0°-120°F Packed 20 per carton.



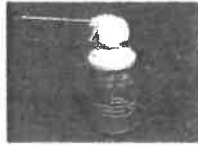
Sub-Surface Installation with 4" Diameter Drill  
Snow Plow Proof Installation



**Item No. SD-WB-1:**  
Wire Brush with Handle



**Item No. DCG:**  
Dripless caulking tube gun



**Item No. SD-AC Air in a Can:**  
Non-Flammable  
Zero Ozone Depletion



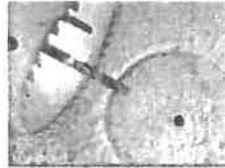
**Item No. SIKS-ADH:**  
Sikaflex adhesive - 10.1 oz. tube.  
Must be used in caulking tube gun

**Rivet Fastener:**

Theft-Proof/Surface Mount - 30-Year Warranty on Installation



Use rivet for either surface or sub-surface installation.



**Item No. CDB**  
Carbide Drill Bit:  
With this bit, drill a hole approximately 1/8" into the surface, brush area insert Storm Drain Marker and rivet. Drive flush with a hammer. Tube adhesive may also be used.

**SURFACE MOUNT**



**Item No. DR250:**  
1/4" x 3/4" Drive Rivet-STDM



**Wet Concrete Installation:**  
Stainless Steel, Male Welded Stud & Nut  
2" x 1/4" x 20  
(Back View)



**Item No. DB250:**  
Drill 1/4" x 1" deep hole, insert rivet and drive with a hammer. A small amount of tube adhesive may be used.

**Bolt-On:**

Theft-Proof - 30-Year Warranty on Installation

Stainless Steel  
Grate Fastener Option  
For use with GM-4" Set



GM-4" set  
Carriage bolt, washer,  
nut & forged steel backing plate.



Note: For road bed or grate installations where heavy traffic is expected, choose one of our low cost Stainless Steel markers in unpainted finish.

**CLICK HERE FOR THE SHOPPING CART (<https://stormdrainmarkerstore.com/>)**



**Testimonials** (/images/testimonial4page.pdf)

# **ATTACHMENT 2**

### 7.3.1.2 Specific Road Salting BMPs—West Branch DuPage River Watershed

Local communities, IDOT, and the Illinois Tollway Authority are the primary parties responsible for the removal of snow and the application of road salt within the West Branch DuPage River watershed. While specific practices may vary from community to community, the following typical general description is applicable. This information is based on responses given during telephone interviews of officials from several of the communities located in the watershed, IDOT, and the Illinois Tollway Authority.

IDOT is responsible for the maintenance of state highways and roads, including snow removal and road salt application operations. These roadways typically have a U. S. or Illinois state highway route number assigned to them. While IDOT has agreements with some municipalities in the state under which the local municipality conducts the maintenance operations in place of IDOT, these agreements are rare in DuPage County.

The Illinois Tollway Authority is responsible for the maintenance of tollways, including snow removal and road salt application operations. The I-88 Tollway is located within the West Branch DuPage River watershed. The Tollway Authority typically dispatches snow removal and road salt application crews during or immediately after a snow event. Snow that is cleared is deposited in the Tollway right-of-way off the road shoulder or within the Tollway median. The Tollway Authority uses digitally-calibrated spreader trucks at an application rate of either 200, 300, or 500 lb/road-mile for its salting operations. The application rate used depends on several factors, including the severity of the storm and present road conditions. The spreader trucks are automated to spread salt at the selected rate regardless of vehicle speed. Operators are required to participate in a yearly training program.

DuPage County and local communities and townships located within the watershed are responsible for maintaining all county roadways and local streets, including local collector and arterial streets. Municipal Public Works Departments typically dispatch snow removal and road salt application crews during or immediately after a snow event. In most cases, snow that is cleared is deposited on the side of the road. In certain locations, such as downtown areas, the snow that is cleared may be hauled away and stored at a central location. With the possible exception of snow storage sites located upstream of a local stormwater detention basin, such sites typically do not have erosion and sediment control practices or structural or non-structural water quality BMPs in place. Some communities are in the process of phasing in new salt spreader trucks which tend to have automated salt spreader controls that are connected to the vehicle's speedometer and which automatically apply salt at a standard rate regardless of vehicle speed. Newer salt spreader trucks are digitally calibrated and do not need to be calibrated yearly, as is generally required for older salt spreader trucks. Those communities which use older salt spreader trucks typically instruct drivers to stop spreading salt when the truck is stationary at a stoplight or in traffic. Training procedures vary by municipality, but all drivers are trained upon hiring, and most communities have some type of annual meeting or annual training requirements.

The following agencies or communities within the West Branch DuPage River watershed were contacted to provide information about their snow removal and salt application activities: DuPage County, Illinois Tollway Authority, Illinois Department of Transportation, Wheaton, Carol Stream, Bartlett, West Chicago, and Milton Township.

Information on whether the agency/community has a written snow plan, conducts yearly training, and/or owns digitally-calibrated salt spreading equipment is presented below.

**TABLE 7-3**

Summary of Snow Removal and Salt Application Information Collected from Selected Agencies and Municipalities

Agency/Community	Written Plan	Yearly Training	Digital Spreaders
IDOT	Yes	No	"Vast Majority"
Tollway	Yes	Yes	Yes
DuPage County	No	No	8 of 40
Bartlett	No	Yes	Yes
Carol Stream	Yes	No	No
West Chicago	Yes	No	No
Wheaton	Yes	Yes	No
Milton Township	No	No	No

The following is a list of municipal, government, and other entities which are likely to conduct snow removal and salt application operations within the West Branch DuPage River watershed (see Appendix F for the list of MS4 permittees):

Aurora	Warrenville
Bartlett	Wayne
Batavia	West Chicago
Bloomington	Wheaton
Bolingbrook	Winfield
Carol Stream	Bloomington Township
Geneva	Lisle Township
Glen Ellyn	Milton Township
Glendale Heights	Schaumburg Township
Hanover Park	Wayne Township
Hoffman Estates	Winfield Township
Lisle	Cook County
Naperville	DuPage County
Roselle	Fermilab
Schaumburg	Illinois Department of Transportation
St. Charles	Illinois Tollway Authority
Streamwood	

### 7.3.1.3 Recommended Management Actions and Institutional Arrangements

It is recognized that road deicing is necessary for public safety. Thus, the implementation of the chloride TMDL by MS4s should be based on prudent and practicable road salting BMPs to the extent that public safety is not compromised.

Section III C. of IEPA General Permit No. ILR40, *General NPDES Permit for Discharges from Small Municipal Separate Storm Sewer Systems*, identifies the specific actions and schedule that each permittee will be required to follow to comply with TMDLs. If it is determined that a

permittee will need to implement additional BMPs beyond those already in place, then the general road salting BMPs identified should be evaluated for their applicability and effectiveness as a part of that permittee's plan to comply with TMDLs.

The General Permit requires each permittee to notify IEPA if it does not currently meet the WLA for a TMDL. For the chloride TMDL, separate WLAs were not identified according to each individual jurisdiction that conducts road deicing activities. Instead, a single allocation was made for a category of discharges, namely deicing-related discharges. Thus, permittees should have the option of either: 1) demonstrating to IEPA that their activities do not cause or contribute to chloride exceedances, 2) using prudent and practicable BMPs already in place, or 3) proceeding to implement the remaining TMDL provisions of the General Permit.

#### **7.3.1.4 Cost Considerations**

It is anticipated that many of the general BMPs identified above for road salting, if not already in place, can be implemented over time by the appropriate jurisdictions. For example, the controlled application of salt is a reasonable and prudent step that is commonly used to avoid over-salting. However, the use of alternative deicing agents will have to be carefully considered by each permittee in relation to cost, applicability, practicability, and public safety. As shown above, costs for alternatives to sodium chloride-based rock salt are substantially higher, and these alternatives cannot be used in all conditions or locations. In addition, each of the alternatives poses its own adverse water quality impacts which must be taken into consideration.

## **7.4 Adaptive Management**

### **7.4.1 Chloride TMDL**

The chloride criteria exceedances for the West Branch DuPage River, both monitored and modeled, are infrequent (less than 0.5 percent of the time). For example, USEPA guidance recommends that water bodies should only be considered impaired if exceedances occur more than a given percent of time, depending on such factors as pollutant type and data distribution (see USEPA July 2002 Consolidated Assessment and Listing Methodology guidance). For acute and chronic chemical criteria for conventional pollutants, USEPA guidance identifies a greater than 10 percent exceedance threshold for non-attainment of standards and 305(b) and 303(d) listings. In addition, it may be possible to identify which specific hydrologic and salt application conditions lead to elevated instream chloride concentrations through further discussion with permittees, or through additional monitoring and/or modeling activities. It may be possible to target control actions specific to these conditions. If successful, it would not be necessary to achieve an overall annual salt application reduction of the magnitude indicated in the TMDL.

### **7.4.2 Recommended Elements of Adaptive TMDL Implementation**

The following discussion summarizes adaptive management language included in the Tualatin River TMDL, as approved by USEPA (source: Oregon DEQ. August 2001).

As a goal of the CWA and associated administrative rules for Illinois, water quality standards shall be met or all feasible steps should be taken toward achieving the highest quality water



attainable. This is a long-term goal in many watersheds. The TMDLs developed for the West Branch DuPage River watershed are based on mathematical models and other analytical methods that are designed to simulate complicated physical, chemical, and biological processes. They are, to a certain extent, simplifications of the actual processes, and thus do not produce an exact prediction of a particular system response to pollutants. These uncertainties have been recognized and conservative assumptions have been used to address them, as acknowledged in the margin of safety considerations. Subject to available resources, IEPA should review, and, if necessary, modify the TMDLs if IEPA determines that new scientific information is available that indicates significant changes are warranted.

This watershed plan is designed to reduce pollutant loads to meet TMDL targets. However, it should be recognized that it may take some period of time from full implementation before management practices identified become fully effective in reducing and controlling certain pollutants. In addition, technology for controlling some pollutant sources such as NPS and stormwater, are still in the development stages and will take one or more iterations to develop effective techniques. Finally, it is possible that after application of all reasonable BMPs, some of these TMDLs cannot be achieved as originally established.

When developing WQBELs for NPDES permits, IEPA should ensure that the limits are consistent with the assumptions of the WLA (40 CFR 122.44(d)(1)(vii)(B)) and work with stormwater permittees in developing management plans that are consistent with the TMDLs.

IEPA should regularly review progress towards achievement of the TMDLs. If and when IEPA determines that the plan has been fully implemented, that all feasible practices have reached maximum effectiveness, and that a TMDL or its target have not been achieved, the TMDL should be reopened to adjust the targets and associated water quality standards as necessary. The determination that all feasible steps have been taken should be based on site-specific balancing of (1) protection of designated uses, (2) appropriateness to local conditions, (3) use of best treatment technologies or BMPs, and (4) cost of compliance.

# **ATTACHMENT 3**



DuPage River Salt Creek Workgroup

105404 Knoch Knolls Road

Naperville IL 60565

# DuPage/Salt Creek Special Conditions Report

## March 31, 2018



*Salt Creek, the Preserve at Oak Meadows 2016, image courtesy of Chuck Cherney*

## Contents

<b>INTRODUCTION AND PARTICIPATION DUPAGE/SALT CREEK SPECIAL CONDITIONS REPORT MARCH 31, 2018.</b> .....	<b>1</b>
<b>PROGRESS ON PROJECTS LISTED IN SPECIAL CONDITIONS PARAGRAPH 2</b> .....	<b>6</b>
<b>1.1 Oak Meadows Dam Removal and Stream Restoration</b> .....	<b>6</b>
1.1.1. Site Description and Project Design .....	6
1.1.2. Project Implementation .....	6
1.1.3. Project Impact Evaluation .....	6
<b>1.2 Fawell Dam Modification</b> .....	<b>15</b>
1.2.1. Site Description .....	15
1.2.2. Design Characteristics .....	16
1.2.3. Permitting Requirements .....	17
1.2.4. Design Progress Report .....	17
1.2.5. Impact Evaluation .....	23
<b>1.3 Spring Brook Restoration and Dam Removal (Spring Brook Phase 2)</b> .....	<b>23</b>
1.3.1. Site Description .....	24
1.3.2. Existing Conditions .....	24
1.3.3. Proposed Conditions .....	24
1.3.4. Impact Evaluation .....	24
<b>1.4 Fullersburg Woods Dam Modification Concept Plan Development</b> .....	<b>25</b>
<b>1.5 Fullersburg Woods Dam Modification and Stream Restoration</b> .....	<b>25</b>
<b>1.6 Southern West Branch Physical Improvement</b> .....	<b>28</b>
<b>1.7 Southern East Branch Stream Enhancement</b> .....	<b>28</b>
<b>1.8 QUAL 2K Updates for East Branch and Salt Creek</b> .....	<b>28</b>
<b>1.9 NPS Phosphorus Feasibility Analysis</b> .....	<b>29</b>
<b>1.10. Hammel Woods Dam Modification</b> .....	<b>29</b>
1.10.1 Site Description .....	29
1.10.2 Design Characteristics .....	30
1.10.3 Permitting Requirements .....	30
1.10.4 Design Progress Report .....	30
1.10.5 Impact Evaluation .....	30
<b>1.11 Hammel Woods Dam to 119<sup>th</sup> Street in Plainfield Stream Enhancement</b> .....	<b>30</b>

<b>1.12 IPS Tool /Project Identification Study.....</b>	<b>31</b>
<b>2.0 CHLORIDE ABATEMENT PROGRAM .....</b>	<b>32</b>
<b>2.1 Technical Workshops .....</b>	<b>32</b>
<b>2.2 Tracking BMP Adoption .....</b>	<b>40</b>
<b>2.3 Monitoring.....</b>	<b>41</b>
<b>3.0 NUTRIENT IMPLEMENTATION PLAN .....</b>	<b>47</b>
<b>3.1 Development of a Basin Wide Nutrient Trading Program.....</b>	<b>47</b>

**ATTACHMENTS**

<b>Attachment 1.</b>	DRSCW Special Condition
<b>Attachment 2.</b>	LDRWC Special Condition
<b>Attachment 3.</b>	Chloride Education and Reduction Program 2016 Deicing Program Survey
<b>Attachment 4.</b>	Minutes from the Basinwide Nutrient Trading Program Kickoff Meeting

**LIST of TABLES**

Table 1. Participation in the DRSCW Special Condition permit 2017-2018. ....	2
Table 2. Participation in the LDRWC Special Condition Permit 2017-2018. ....	3
Table 3. Physical Habitat and Biological Monitoring location at Oak Meadows. ....	9
Table 4. QHEI Results for 2017 at Oak Meadows. ....	11
Table 5. Color code to QHEI scores depicted in Table 4. ....	11
Table 6. MIBI results from 2010-2017 for the project footprint at Oak Meadows. ....	12
Table 7. High value species pre- and post-project at Oak Meadows.....	13
Table 8. Dissolved Oxygen collected upstream of the dam at Oak Meadows.....	14
Table 9. Meetings with Fullersburg Woods Project Tier 1 Stakeholders held in 2017-2018. ....	27
Table 10. NPDES Permit Effective Dates and Dates of Completion for the PDOP & Feasibility Studies.....	50

**LIST OF FIGURES**

Figure 1. Salt Creek main stem basin QHEI assessment results for 2007, 2010 and 2013. ....	10
Figure 2. QHEI scores pre-(2010, 2013, and 2014) and post-project (2017) at Oak Meadows. ....	10
Figure 3. mIBI results for 2010-2017. 2017 is post-project at Oak Meadows. ....	12
Figure 4. Preliminary Structural Modification Detail cross section for Fawell Dam. ....	19
Figure 5. Preliminary Structural Modification Detail for Fawell Dam, plan view.....	20
Figure 6. Flow velocities at various flow stages with the middle and eastern culvert of Fawell Dam lowered. ....	21
Figure 7. Longitudinal profile of the West Branch DuPage River reach surrounding the Fawell Dam. ....	23
Figure 8. Estimated Chloride Concentrations at WBMG, 12/2/15-3/23/16 .....	41
Figure 9. Estimated Chloride Concentrations at WBAD, 12/7/15-3/24/16 .....	42
Figure 10. Estimate Chloride Concentrations at EBAD, 12/3/15-3/24/16 .....	42
Figure 11. Estimate Chloride Concentrations at EBHR, 12/1/15-3/4/16 .....	43

Figure 12. Estimated Chloride Concentrations at EBHR, 12/7/16-12/22/16.....	43
Figure 13. Estimate Chloride Concentrations at EBHR, 1/9/17-1/30/17.....	44
Figure 14. Estimated Chloride Concentrations at JFK Blvd, 12/1/15-3/31/16.....	44
Figure 15. Estimated Chloride Concentration at JFK Blvd, 12/1/16-1/11/17.....	45
Figure 16. Estimated Chloride Concentrations at Wolf Road, 12/1/15-3/30/16.....	45
Figure 17. Estimated Chloride Concentrations at Wolf Road, 12//1/16-1/11/17.....	46

**LIST OF MAPs**

Map 1. Map of DRSCW physical projects set out in the Special Condition. ....	4
Map 2. Map of the LDRWC physical projects set out in the Special Condition. ....	5
Map 3. Oak Meadows Project footprint showing monitoring in footprint (green) and outside (orange). ....	8

**LIST OF PLATES**

Plate 1. Contractor sampling macroinvertebrates at SC35A in 2017. ....	6
Plate 2. Contractor and staff sampling fish and QHEI at SC34 in 2017.....	7
Plate 3. Fawell Dam viewed downstream of the dam looking north towards the dam. ....	16
Plate 4. Demonstrations of equipment calibration at DRSCW Chloride Management Workshops. ....	32
Plate 5. DRSCW Public Road Deicing Workshop brochure, 2017. ....	33
Plate 6. Photographs of the DRSCW Public Roads Deicing Workshop, 2017.....	33
Plate 7. DRSCW Parking Lots and Sidewalks Deicing Workshop brochure, 2017. ....	34
Plate 8. Photographs from the DRSCW Parking Lots and Sidewalks Workshop, 2017. ....	34
Plate 9. LDRWC Public Roads Deicing Workshop Brochure, 2017.....	35
Plate 10. Photographs from the LDRWC Public Roads Deicing Workshop, 2017. ....	35
Plate 11. Photographs from the LDRWC Parking Lots and Sidewalks Workshop, 2017. ....	36
Plate 12. LDRWC Salt Smart logo. ....	36
Plate 13. LDRWC Salt Smart Cups and Vehicle Magnets. ....	37
Plate 14. Salt Smart Community Brochure. ....	38
Plate 15. Salt Smart at Home Brochure. ....	39

## Introduction and Participation DuPage/Salt Creek Special Conditions Report March 31, 2018.

This report is intended to fulfill certain reporting requirements contained in DuPage River Salt Creek Workgroup's (DRSCW) and Lower DuPage River Watershed Coalition's (LDRWC) NPDES permits. These requirements are as provided in the DRSCW Special Conditions (Attachment 1) and the LDRWC Special Conditions (Attachment 2 – Note: As the LDRWC Special Conditions differ between permit holders, the Special Conditions for Bolingbrook STP#3 is included the Attachment as a representation of the Special Conditions Language).

The Special Conditions are contained in the NPDES permits identified in Table 1 and Table 2. Listed permittees are required to ensure the completion of projects and activities set out in the Special Conditions, while a few other permittees are required to only participate in identified watershed level studies and the chloride reduction program. Table 1 identifies the status of funding for these activities by each permittee in the DRSCW and Table 2 identified the status of funding for these activities by each permittee in the LDRWC.

All listed permittees participate in the DRSCW and/or LDRWC and are working with other watershed members of the DRSCW and LDRWC to determine the most cost effective means to remove dissolved oxygen (DO) and offensive condition impairments in the DRSCW watersheds.

The specific reporting requirements addressed herein include annual reporting on the progress of the projects listed in the Special Conditions, and certain baseline condition reporting for the Chloride Reduction Program. Map 1 and 2 show the locations of the physical projects to be realized under the special conditions.

### Special Condition Permit Holder Forum

On February 1, 2018, a Special Conditions Permit Holder Forum for DRSCW and LDRWC Permit Holders was held at the Village of Lombard. Fifteen member agencies, eight affiliate members and representatives from the IEPA and USEPA Region V attended. The objective of the meeting was to review and discuss what was learned from the Phosphorus Discharge Optimization Plans and Feasibility Studies completed by member agencies during 2017. The meeting agenda is included below.

- 9:00 Welcome and Introductions (Dave Gorman, President DRSCW, Village of Lombard)
- 9:15 IEPA Update (Scott Twait and Jaime Rabans, IEPA)
- 9:30 Lessons Learned from PDOPs and Feasibility Studies (Christopher Buckley, Baxter and Woodman; Mark Halm, Duechler Environmental Inc; and Chris J. Marschinke and Scott Trotter, Trotter and Associates, Inc.)

- 10:30 Update on the Trading Framework Development – What do the PDOPs/Feasibility Studies tell us about trading feasibility? (Vic D’Amato, TetraTech)
- 11:00 Mixing Zones – How can them be utilized? (Adrienne Nemura and Rashab Mahajan, Geosyntec Consultants)
- 11:30 Questions/Wrap-Up (Nick Menninga, Downs Grove Sanitary District)

*Table 1. Participation in the DRSCW Special Condition permit 2017-2018.*

POTW Owner/ Facility Name	NPDES No.	Membership Dues Paid 2017-2018	Assessment Paid For Paragraph 2 Table Project Funding*	Assessment Paid for Chloride Reduction/NIP/QUAL 2k/Trading Program
Addison North STP	IL0033812	YES	YES	YES
Addison South - AJ LaRocca	IL0027367	YES	YES	YES
Bartlett WWTP	IL0027618	YES	YES	YES
Bloomington-Reeves WRF	IL0021130	YES	YES	YES
Bolingbrook STP#1	IL0032689	YES	YES	YES
Bolingbrook STP#2	IL0032735	YES	YES	YES
Carol Stream WRC	IL0026352	YES	YES	YES
Downers Grove SD	IL0028380	YES	YES	YES
DuPage County Woodridge	IL0031844	YES	YES	YES
Elmhurst WWTP	IL0028746	YES	YES	YES
Glenbard WW Authority STP	IL0021547	YES	YES	YES
Glendale Heights STP	IL0028967	YES	YES	YES
Hanover Park STP#1	IL0034479	YES	YES	YES
Roselle-Devlin STP	IL0030813	YES	YES	YES
Roselle-J Botterman WWTF	IL0048721	YES	YES	YES
Salt Creek SD	IL0030953	YES	YES	YES



West Chicago STP	IL0023469	YES	YES	YES
Wheaton SD	IL0031739	YES	YES	YES
Wood Dale North STP	IL0020061	YES	YES	YES
Wood Dale South STP	IL0034274	YES	YES	YES
Bensenville South STP	IL0021849	YES	N/A	YES
Itasca STP	IL0079073	YES	N/A	YES

\*N/A means that the agency does not have that condition in their permit.

*Table 2. Participation in the LDRWC Special Condition Permit 2017-2018.*

<b>POTW Owner/ Facility Name</b>	<b>NPDES No.</b>	<b>Membership Dues Paid 2017-2018</b>	<b>Assessment Paid For Paragraph 2 Table Project Funding*</b>	<b>Assessment Paid for Chloride Reduction/NIP/QUAL 2k/Trading Program</b>
Naperville Springbrook WRC	IL0034061	YES	Not required until permit is signed	Not required until permit is signed
Bolingbrook STP#3	IL0069744	YES	NO	NO
Plainfield STP	IL0074373	YES	N/A	YES
Joliet Aux Sable Plant	IL0076414	YES	N/A	YES
Crest Hill West STP	IL0021121	YES	N/A	YES
Minooka STP	IL0055913	YES	N/A	YES

\*N/A means that the agency does not have that condition in their permit.

---

# Biological and Water Quality Study of the West Branch DuPage River Watershed 2015

Cook and DuPage Counties, Illinois

Midwest Biodiversity Institute  
Center for Applied Bioassessment &  
Biocriteria

P.O. Box 21561

Columbus, OH 43221-0561

[mbi@mwbinst.com](mailto:mbi@mwbinst.com)



*Cover photo: West Branch DuPage River (Station WB12) at  
Mack Road, near Warrenville (RM 13.6).*

Peter A. Precario, Executive Director  
Jim Lane, Board President

Report citation:

Midwest Biodiversity Institute (MBI). 2017. Biological and Water Quality Study of the West Branch DuPage River Watershed 2015. DuPage County, Illinois. Technical Report MBI/2017-8-8. Columbus, OH 43221-0561. 83 pp. + appendices.

**2015 Biological and Water Quality Study of the West Branch DuPage River**

**DuPage, Cook and Will Counties, Illinois**

Technical Report MBI/2017-8-8

August 31, 2017

Prepared for:

DuPage River Salt Creek Workgroup  
10 S. 404 Knoch Knolls Road  
Naperville, IL 60565

Submitted by:

Center for Applied Bioassessment and Biocriteria  
Midwest Biodiversity Institute  
P.O. Box 21561  
Columbus, Ohio 43221-0561

**TABLE OF CONTENTS**

ACKNOWLEDGEMENTS..... viii

FOREWORD ..... ix

    What is a Biological and Water Quality Survey? ..... ix

    Scope of the West Branch DuPage River Watershed Biological and Water Quality Assessment ..... ix

INTRODUCTION ..... 1

SUMMARY ..... 1

METHODS ..... 8

    Macroinvertebrate Assemblage ..... 8

    Fish Assemblage ..... 9

    Habitat ..... 13

    Data Management and Analysis ..... 13

    Determination of Causal Associations ..... 13

    Hierarchy of Water Indicators ..... 14

    Determining Causal Associations ..... 16

    Illinois Water Quality Standards: Designated Aquatic Life Uses ..... 16

STUDY AREA DESCRIPTION ..... 17

    West Branch DuPage River Dams ..... 17

    Point Source Discharges ..... 22

    West Branch DuPage River flow Conditions ..... **Error! Bookmark not defined.**

RESULTS ..... 25

    West Branch DuPage River Watershed - Chemical Water Quality ..... 25

        Nutrient Conditions in the West Branch DuPage River Watershed ..... 42

        Dissolved Materials in Urban Runoff ..... 46

    West Branch DuPage River Watershed Sediment Chemistry ..... 52

    West Branch DuPage River Watershed Physical Habitat for Aquatic Life – QHEI ..... 58

    West Branch DuPage River Watershed Biological Assemblages – Macroinvertebrates ..... 66

    West Branch DuPage River Watershed Biological Assemblages – Fish ..... 70

        Influence of Dams on West Branch DuPage River Fish Assemblages ..... 70

        Longitudinal Patterns in the Mlwb ..... 74

REFERENCES ..... 77

**LIST OF TABLES**

*Table 1. Status of aquatic life use support for stream segments sampled in the West Branch DuPage River watershed study area in 2015. All sites with one or more fair or poor index scores are in Non-attainment and categorized as follows: 1) sites with any index in the poor range [i.e., Non (Poor)] are shaded in red and poor scores are underlined; 2) fair quality sites [i.e., Non (Fair)] are shaded in yellow; 3) fair to good quality sites [i.e., Non (Fair/Good)] are shaded in green/dot with “good” scores in bold. ....* 5

*Table 2. Biological sampling sites in the West Branch DuPage River watershed study area, 2015. Chemical sampling was also conducted at each site but may have been from slightly different river miles. ....* 10

*Table 3. Land uses types by area and percent for the West Branch DuPage River watershed. Percentages are based on total watershed area. Land use data is based on Chicago Metropolitan Agency for Planning (CMAP) 2005 land use data (Note: Table 4 is reproduced from the 2012 report). ....* 19

*Table 4. Third quarter daily loadings (lbs./day) of TSS, CBOD5, and NH<sub>3</sub>N from major WWTPs in the West Branch DuPage River watershed and mean average effluent flow in MGD (bottom) in 2013, 2014, and 2015. ....* 23

*Table 5. Municipal wastewater treatment plants located in the West Branch DuPage River watershed. ADF = average design flow in million gallons per day (MGD); MDF = maximum design flow (MGD). ....* **Error! Bookmark not defined.**

*Table 6. Chloride concentrations in effluent and stream samples collected upstream and downstream from the major wastewater treatment plants in the West Branch DuPage River watershed (2013). ....* 27

*Table 7. Chemical parameter concentrations (mg/L) exceeding Illinois water quality standards in chemical grab samples from the West Branch DuPage River watershed in 2015 and 2012. ....* 30

*Table 8. Dissolved oxygen concentrations (mg/L) exceeding Illinois water quality standards from the West Branch DuPage River at Arlington Drive (WBAD), Butternut Road (WBRR), downstream from the former Warrenville Grove Dam (WBWD), and upstream from the former McDowell Grove Dam (WBMG), in 2008-2015. ....* 32

*Table 9. Median concentrations of key nutrient parameters including total NH<sub>3</sub>-N, nitrate, TKN, and phosphorus in the West Branch DuPage River watershed in 2015. Shading represents exceedances of various reference or effect or thresholds for nutrient parameters (see footnotes). Where more than one target was used, the most stringent criteria is red and least stringent is yellow. ....* 44

*Table 10. Urban parameter sampling results in the West Branch DuPage River watershed, summer 2015. Values above applicable reference targets are highlighted in yellow.*..... 49

*Table 11. Heavy metals detections in sediments from the West Br. DuPage River watershed and reference sites in 2015. Concentrations that exceeded threshold effects levels (TEL) in 2015 or probable effect levels (PEL) in 2015 and 2012 from McDonald et al. (2000) or Ontario Ministry of Environment (1993).* ..... 54

*Table 12. Polychlorinated biphenyls (PCBs), pesticides and polycyclic aromatic hydrocarbons (PAHs) concentrations in sediments from the West Br. DuPage River watershed and reference sites in that exceed threshold effects levels (TEL) in 2015 or probable effect levels (PEL) in 2015 and 2012 from McDonald et al. (2000) or Ontario Ministry of Environment (1993).* ..... 55

*Table 13. Qualitative Habitat Evaluation Index (QHEI) scores showing Good and Modified Habitat attributes at sites in the West Branch DuPage River watershed and at reference sites sampled in 2015. (☑ - good habitat attribute; ☒ - high influence modified attribute; ☐ - moderate influence modified attribute).* ..... 63

*Table 14. West Branch DuPage River fish species collected upstream and downstream from the Fawell Dam between 1976 and 2015. Species unique to a reach are highlighted in blue. New species records for 2015 are noted in red font. Collection years for each species in a reach are given by superscript.* ..... 73

**LIST OF FIGURES AND PLATES**

*Figure 1. Aquatic life use attainment status at West Branch DuPage River watershed biological sampling sites in 2015. Non-attainment based on biological performance is noted with orange circles (fair and good range), yellow circles (fair range) and red circles (poor). No sites were in Full attainment.*..... 4

*Figure 2. Sampling locations (white dots with associated “LD” station numbers), WWTP discharges (outfall symbols), and significant mainstem dam impoundments (dam symbols) in the West Branch DuPage River watershed study area, June-Oct., 2015.* ..... 12

*Figure 3. Hierarchy of administrative and environmental indicators that can be used for water quality management activities such as monitoring and assessment, reporting, and the evaluation of overall program effectiveness. This is patterned after a model developed by U.S. EPA (1995) and further enhanced by Karr and Yoder (2004).* ..... 15

*Figure 4. Land use types in the West Branch DuPage River watershed based on 2006 National Land Cover Dataset (NLCD). <https://www.mrlc.gov/nlcd2011.php>* ..... 18

Figure 5. Pie charts of 2015 third quarter daily loadings (lbs./day) of TSS, CBOD5, and NH<sub>3</sub>N (top) from significant WWTPs in the West Branch DuPage River watershed and mean average effluent flow in MGD (bottom) during this period. .... 22

Figure 6. Flow hydrograph (top) and box and whisker plot (bottom) for the West Branch DuPage River near West Chicago (USGS station #05539900) from May through September, in 2009, 2012, and 2015. Average monthly flow, Q7-10 (upper plot) and the range of daily average flows during the May-Sept. period (upper and lower plots) are depicted. .... **Error! Bookmark not defined.**

Figure 7. Mean concentrations of total phosphorus (top) and nitrate (bottom) in the West Br. DuPage River in 2015, 2012 and 2009. For phosphorus, dashed lines represent target total phosphorus concentrations for USEPA Ecoregion 54 (0.072 mg/L), the middle to high range of US EPA nutrient Ecoregion VI (0.61 mg/L), and the suggested effluent limit (1.0 mg/L). For nitrate, dashed lines represent target concentrations for USEPA Ecoregion 54 (1.798 mg/L), the Illinois EPA non-standard based criteria (7.8 mg/L) and the water quality criterion (10 mg/L). Note: The Wheaton WWTP discharges to Spring Brook at RM 3.2. .... 34

Figure 8. Concentrations of phosphorus, nitrate, and chloride correlated with flow in grab samples collected from the West Branch DuPage River in 2009, 2012, and 2015. .... 35

Figure 9. Box and whisker plots of mean chloride, nitrate and phosphorus concentrations from similar West Br. DuPage watershed sites in 2015 and 2012. The sites are categorized as WWTP and urban influenced (no WWTP discharges upstream). Most "urban" sites were on Tributaries while most "Dst. WWTP" sites were from the mainstem. .... **Error! Bookmark not defined.**

Figure 10. A comparison of mean concentrations of NH<sub>3</sub>-N nitrogen in the West Br. DuPage River (top) with median concentrations (bottom) in 2015, 2012 and 2009. The upper dashed line in each graph represents a threshold concentration beyond which toxicity is likely while the lower dashed line (0.15 mg/L) is correlated with impaired biota in the IPS study. Note: The Wheaton WWTP discharges to Spring Brook at RM 3.2. .... 37

Figure 11. Median concentrations of total Kjeldahl nitrogen (TKN) in the West Br. DuPage River in 2015, 2012 and 2009. The dashed line represents the IPS TKN aquatic life target level. Note: The Wheaton WWTP discharges to Spring Brook at RM 3.2. .... 38

Figure 12. Median concentration of 5-day biological oxygen demand (BOD-top) and total suspended solids (TSS-bottom) in the West Br. DuPage River in 2015, 2012 and 2009. In the BOD plot, the dashed line (4 mg/L) represents the upper limit of concentrations typical of unpolluted waters in the Midwest (McNeeley et al. 1979). In the TSS plot, the upper dashed line represents the upper limit of concentrations typical of unpolluted waters in the Midwest (60 mg/l); the lower target line (16-25 mg/l) is based on Ohio headwater and wading reference sites. Note: The Wheaton WWTP discharges to Spring Brook at RM 3.2. .... 39



Figure 13. Mean concentrations of total chloride (top) and total dissolved solids (TDS-bottom) in the West Br. DuPage River in 2015, 2012 and 2009. For chloride, the upper, dashed line is the Illinois water quality criterion (500 mg/L); the lower dashed lines show IPS regression thresholds for the fIBI (141 mg/L) and mIBI (112 mg/L). For TDS, the upper dashed line is the existing Illinois water quality criterion (1000 mg/L) and the lower dashed line represents the 75th percentile TDS level for small rivers in Ohio. Note: The Wheaton WWTP discharges to Spring Brook at RM 3.2. .... 40

Figure 14. Box and whisker plot of chloride concentrations at Winfield Creek stations in 2015. Site WB13 is located 0.6 miles downstream from a DuPage County salt storage facility and has experienced exceedances for chloride in previous surveys. .... **Error! Bookmark not defined.**

Figure 15. Chloride concentrations from the East Branch DuPage River during the summer of 2011. Red line shows IPS concentration associated with fIBI impairment. .... 48

Figure 16. West Branch DuPage River watershed QHEI scores in 2015 mapped by narrative range. Chevron symbols denote dams while discharge pipes denote WWTP locations..... 59

Figure 17. Longitudinal trends in Qualitative Habitat Evaluation Index (QHEI) scores from the West Branch DuPage River mainstem in 2009, 2012 and 2015. For display and data analysis purposes, the mainstem was subdivided into three sections: 1) headwaters 2) upstream Fawell Dam and 3) downstream Fawell Dam. The tan shaded region depicts fair range scores where habitat quality is limiting to aquatic life. QHEI scores less than 45 are typical of highly modified channels or dam pools. .... 60

Figure 18. Distributions of QHEI scores in West Branch Tributaries in 2006, 2009, 2012 and 2015. .... 62

Figure 19. West Branch DuPage River watershed mIBI scores in 2015 mapped by Illinois EPA narrative ranges. Wedge-shaped symbols denote existing and former dams while discharge pipes denote WWTP locations. .... 68

Figure 20. Longitudinal trends in mIBI scores from the West Br. DuPage River in 2009, 2012 and 2015 in relation to publicly owned sewage treatment plants (top) and the existing Fawell Dam. Note: The Wheaton WWTP discharges to Spring Brook at RM 3.2. .... 69

Figure 21. Box and whisker plot of mIBI scores from West Branch DuPage River basin tributaries in 2006, 2009 and 2012. .... 69

Figure 22. W. Br. DuPage River watershed fIBI scores in 2015 mapped by Illinois EPA narrative range (no sites met good or exceptional criteria). Wedge-shaped symbols denote existing and former dams while discharge pipes denote WWTP locations. .... 71

Figure 23. Longitudinal trends in fish Index of Biotic Integrity scores from the West Br. DuPage River mainstem in 2009, 2012 and 2015 in relation to publicly owned sewage treatment plants (top) and the existing Fawell Dam. For display and data analysis purposes, the mainstem

was subdivided into three sections: 1) headwaters (<20 sq. mi drainage) 2) Upstream Fawell Dam and 3) Downstream Fawell Dam. The heavy dashed line corresponds to the benchmark score for unimpaired streams. Note: The Wheaton WWTP discharges to Spring Brook at RM 3.2.

..... 72

Figure 24. Mean Modified Index of well-being (MIwb) in the West Br. of the DuPage River, in 2009, 2012, and 2015. Bars along the x-axis note locations of existing dams. Note: The Wheaton WWTP discharges to Spring Brook at RM 3.2..... 75

Figure 25. Box and whisker plot of fish Index of Biotic Integrity scores from West Br. DuPage River basin tributaries in 2006-2015..... 76

Figure 26. Fish IBI trend in Winfield Creek, 2006-15..... 76

**LIST OF PLATES**

Plate No. 1. The former Warrenville Grove Dam, looking upstream. The dam was removed in 2011..... 20

Plate No. 2. Remnants of the McDowell Grove dam used to form a riffle after its removal in 2008. The riffle and former structures remain in place. .... 21

Plate No. 3. Temporary cofferdam constructed upstream from the former McDowell Grove Dam in 2008. The cofferdam was removed in the fall of 2012, immediately after the 2012 survey.....21

Plate No. 4. Aerial view of the Fawell Dam. ....21

Plate No. 5. Upstream view of the Fawell Dam. ....22

Plate No. 6. Arrow Road Dam on Spring Brook looking upstream. .... 22

Plate No. 7. Older (right panel) and most recent (left panel) Google Earth images of the DuPage County salt storage facility on Winfield Creek suspected of contributing to chloride exceedances 0.6 miles downstream in 2009 and 2012. A chloride exceedance was still recorded at the site in 2015. ....31

Plate No. 8. Extensive riparian removal and bank erosion (upper photo) and subsequent sediment deposition along the opposite bank (lower photo) at West Branch site WB35. ....60

### ACKNOWLEDGEMENTS

Chris O. Yoder, MBI, served as the overall project manager and final report editor. Jack T. Freda coordinated the production of the report with assistance from Lon E. Hersha, Vickie L. Gordon, Blair Prusha, and Martin J. Knapp. Edward T. Rankin provided database management and analytical support. Stephen McCracken and Tara Neff, The Conservation Foundation, provided assistance with the study area description, coordination of the study plan, the chemical water quality results, report review and many important details regarding field logistics. Jennifer Boyer (DuPage County Department of Stormwater Management), Robert Swanson (DuPage County Department of Stormwater Management), Jessi DeMartini (Forest Preserve District of DuPage County), Dennis Streicher (Sierra Club), and Thomas Minarik (Metropolitan Water Reclamation District of Greater Chicago) are acknowledged for their review of the report and its findings. We would also like to thank all of the private and public landowners who granted access to sampling sites and the Forest Preserve District of DuPage County for providing space for secure equipment storage.

**Commented [R11]:** Stephen – you will revise for final.

## FOREWORD

### *What is a Biological and Water Quality Survey?*

A biological and water quality survey, or “biosurvey”, is an interdisciplinary monitoring effort coordinated on a waterbody specific or watershed scale. This may involve a relatively simple setting focusing on one or two small streams, one or two principal stressors, and a handful of sampling sites or a much more complex effort including entire drainage basins, multiple and overlapping stressors, and tens of sites. The latter is the case with the West Branch DuPage River biological and water quality study in that the West Branch represents a defined watershed of approximately 150 square miles in drainage area that has a complex mix of overlapping stressors and sources in a highly developed suburban landscape. This assessment is a follow-up to similarly intensive surveys of the West Branch done in 2012, 2009 and 2006, the first effort of comprehensive reach and scope accomplished for this watershed. Previous surveys and assessments by Illinois EPA and DNR were done at a less intense spatial scale. While the principal focus of a biosurvey is on the status of aquatic life uses, the status of other uses such as recreation and water supply, as well as human health concerns, can also be addressed.

### *Scope of the West Branch DuPage River Watershed Biological and Water Quality Assessment*

Standardized biological, chemical, and physical monitoring and assessment techniques were employed to meet three major objectives:

- 1) determine the extent to which biological assemblages are impaired (using Illinois EPA guidelines);
- 2) determine the categorical stressors and sources that are associated with those impairments;
- 3) compare 2015 results to previous assessments of the West Branch DuPage River watershed to evaluate trends.

Data presented herein were processed, evaluated, and synthesized as a biological and water quality assessment of aquatic life use support status. The assessments are directly comparable to those accomplished in previous surveys of the watershed in 2006, 2009, and 2012 such that trends in status can be examined, and causes and sources of impairment can be confirmed, appended, or removed. For this report, 2015 results were primarily compared to the most recent surveys in 2012 and 2009. This study contains a summary of major findings and recommendations for future monitoring, follow-up investigations, and any immediate actions that may be needed to resolve readily diagnosed impairments. It was not the role of this study to identify specific remedial actions on a site specific or watershed basis. However, the baseline data established by this study contributes to a process termed the Integrated Priority System (IPS; MBI 2010a) that was developed for the upper DuPage watersheds to help determine and prioritize restoration projects.

# **ATTACHMENT 4**



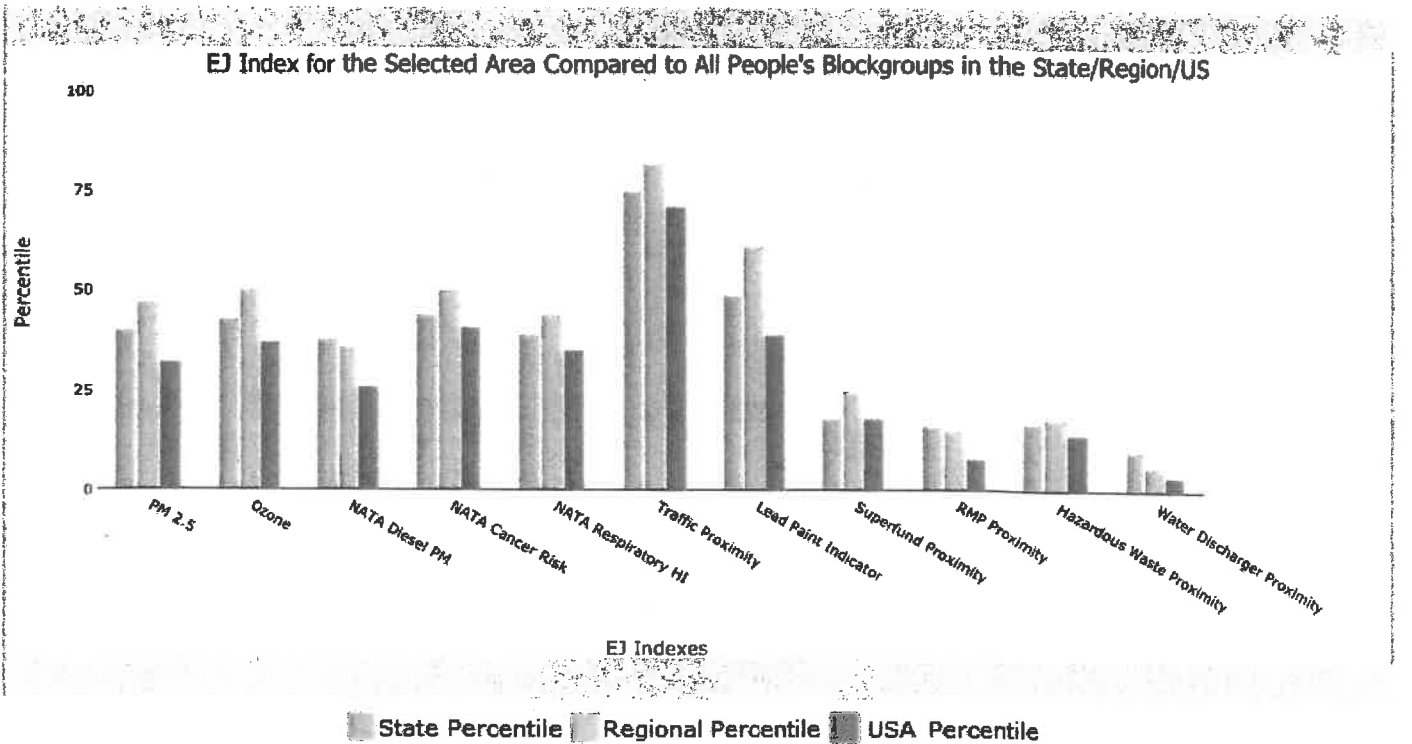
1 mile Ring Centered at 41.992075,-88.184590, ILLINOIS, EPA Region 5

Approximate Population: 9,379

Input Area (sq. miles): 3.14

Bartlett

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
<b>EJ Indexes</b>			
EJ Index for PM2.5	40	47	32
EJ Index for Ozone	43	50	37
EJ Index for NATA* Diesel PM	38	36	26
EJ Index for NATA* Air Toxics Cancer Risk	44	50	41
EJ Index for NATA* Respiratory Hazard Index	39	44	35
EJ Index for Traffic Proximity and Volume	75	82	71
EJ Index for Lead Paint Indicator	49	61	39
EJ Index for Superfund Proximity	18	25	18
EJ Index for RMP Proximity	16	15	8
EJ Index for Hazardous Waste Proximity*	17	18	14
EJ Index for Water Discharger Proximity	10	6	4



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.



## EJSCREEN Report (Version 2016)



1 mile Ring Centered at 41.992075,-88.184590, ILLINOIS, EPA Region 5

Approximate Population: 9,379

Input Area (sq. miles): 3.14

Bartlett

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
<b>Environmental Indicators</b>							
Particulate Matter (PM 2.5 in $\mu\text{g}/\text{m}^3$ )	11.4	11.2	51	10.6	73	9.32	89
Ozone (ppb)	49.7	50.8	30	50.3	32	47.4	58
NATA* Diesel PM ( $\mu\text{g}/\text{m}^3$ )	1.11	1.28	44	0.931	60-70th	0.937	70-80th
NATA* Cancer Risk (lifetime risk per million)	32	36	31	34	<50th	40	<50th
NATA* Respiratory Hazard Index	1.6	1.8	46	1.7	50-60th	1.8	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	260	500	66	370	71	590	67
Lead Paint Indicator (% Pre-1960 Housing)	0.13	0.42	25	0.39	24	0.3	40
Superfund Proximity (site count/km distance)	0.14	0.095	87	0.12	79	0.13	76
RMP Proximity (facility count/km distance)	1.1	0.69	82	0.51	87	0.43	90
Hazardous Waste Proximity* (facility count/km distance)	0.19	0.12	87	0.11	88	0.11	87
Water Discharger Proximity (facility count/km distance)	0.98	0.38	90	0.31	93	0.31	93
<b>Demographic Indicators</b>							
Demographic Index	22%	35%	41	29%	50	36%	35
Minority Population	27%	37%	50	24%	70	37%	49
Low Income Population	17%	32%	29	33%	25	35%	24
Linguistically Isolated Population	4%	5%	67	2%	82	5%	69
Population With Less Than High School Education	9%	12%	51	11%	54	14%	46
Population Under 5 years of age	5%	6%	33	6%	35	6%	34
Population over 64 years of age	11%	13%	44	14%	37	14%	41

\* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: <https://www.epa.gov/national-air-toxics-assessment>.

+ The hazardous waste environmental indicator and the corresponding EJ index will appear as N/A if there are no hazardous waste facilities within 50 km of a selected location.

For additional information, see: [www.epa.gov/environmentaljustice](http://www.epa.gov/environmentaljustice)

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.



# **ATTACHMENT 5**

## PART V. MONITORING, RECORDKEEPING, AND REPORTING

### A. Monitoring

The ILR40 permit states that permit holders “must develop and implement a monitoring and assessment program to evaluate the effectiveness of the BMPs being implemented to reduce pollutant loadings and water quality impacts”. The DRSCW monitoring program meets the following monitoring objectives and requirements outlined in the permit:

- Measuring pollutants over time (Part V. A. 2. b. ii)
- Sediment monitoring (Part V. A. 2. b. iii)
- Assessing physical and habitat characteristics such as stream bank erosion caused by storm water discharges ((Part V. A. 2. b. vi)
- Collaborative watershed-scape monitoring (Part V. A. 2. b. x)
- Ambient monitoring of total suspended solids, total nitrogen, total phosphorus, fecal coliform, chlorides, and oil and grease (Part V. A. 2. c.)

The DRSCW water quality monitoring program is made up of two components: 1) Bioassessment and 2) DO monitoring.

#### **BIOASSESSMENT**

##### **Overview and Sampling Plan**

A biological and water quality survey, or “biosurvey”, is an interdisciplinary monitoring effort coordinated on a waterbody specific or watershed scale. This may involve a relatively simple setting focusing on one or two small streams, one or two principal stressors, and a handful of sampling sites or a much more complex effort including entire drainage basins, multiple and overlapping stressors, and tens of sites. The DRSCW bioassessment is the latter. The DRSCW bioassessment program began in 2007 with sampling in the West Branch DuPage River, East Branch DuPage River and Salt Creek watersheds. From 2009-2016, each watershed was sampled on a 3-year rotation beginning with the West Branch DuPage River watershed in 2006. Beginning in 2017, watershed will be sampled in a 5-year rotation ensuring that each watershed will be sampled during the effective period of the ILR40 permit. The bioassessment program functions under a quality assurance plan agreed on with the Illinois Environmental Protection Agency (<http://drscw.org/wp/bioassessment/>). Table 1 details the bioassessment sampling dates for each DRSCW watershed.

**Table 1.** Bioassessment sampling dates for the DRSWC watershed

<b>Watershed</b>	<b>Sampling Completed (year)</b>	<b>Sampling Scheduled (year)</b>
West Branch DuPage River	2007, 2009, 2012, 2015	2020
East Branch DuPage River	2007, 2011, 2014	2019
Salt Creek	2007, 2010, 2013, 2016	2021

The DRSCW bioassessment program utilizes standardized biological, chemical, and physical monitoring and assessment techniques employed to meet three major objectives:

- 1) determine the extent to which biological assemblages are impaired (using IEPA guidelines);
- 2) determine the categorical stressors and sources that are associated with those impairments; and,
- 3) add to the broader databases for the DuPage River and Salt Creek watersheds to track and understand changes through time in response to abatement actions or other influences.

The data collected as part of the bioassessment is processed, evaluated, and synthesized as a biological and water quality assessment of aquatic life use status. The assessments are directly comparable to previously conducted bioassessments such that trends in status can be examined and causes and sources of impairment can be confirmed, amended, or removed. A final report containing a summary of major findings and recommendations for future monitoring, follow-up investigations, and any immediate actions that are needed to resolve readily diagnosed impairments is prepared following each bioassessment. The bioassessment reports are posted on the DRSCW at <http://drscw.org/wp/bioassessment/>. It is not the role of the bioassessments to identify specific remedial actions on a site specific or watershed basis. However, the baseline data provided by the bioassessments contributes to the Integrated Priority System that was developed to help determine and prioritize remedial projects (<http://drscw.org/wp/project-identification-and-prioritization-system/>).

Sampling sites for the bioassessment were determined systematically using a geometric design supplemented by the bracketing of features likely to exert an influence over stream resource quality, such as CSOs, dams and wastewater outfalls. The geometric site selection process starts at the downstream terminus or “pour point” of the watershed (Level 1 site), then continues by deriving each subsequent “panel” at descending intervals of one-half the drainage area (D.A.) of the preceding level. Thus, the drainage area of each successive level decreases geometrically. This results in seven drainage area levels in each of the three watersheds, starting at the largest (150 sq. mi) and continuing through successive panels of 75, 38, 19, 9, 5 and 2 sq. mi. Targeted sites are then added to fill gaps left by the geometric design and assure complete spatial coverage in order to capture all significant pollution gradients including reaches that are impacted by wastewater treatment plants (WWTPs), major stormwater sources, combined sewer overflows (CSOs) and dams. The number of sampling sites by method/protocol and watershed are listed in Table 2 and illustrated in Figure 1.

#### Representativeness – Reference Sites

Data is collected from selected regional reference sites in northeastern Illinois preferably to include existing Illinois EPA and Illinois DNR reference sites, potentially being supplemented with other sites that meet the Illinois EPA criteria for reference conditions. One purpose of this data will be to index the biological methods used in this study that are different from Illinois EPA and/or DNR to the reference condition and biological index calibration as defined by Illinois EPA.

In addition, the current Illinois EPA reference network does not yet include smaller headwater streams, hence reference data is needed to accomplish an assessment of that data. Presently thirteen (13) reference sites have been established.

**Table 2.** Number of sampling sites in the DRSCW project area.

Method/Protocol	West Branch DuPage River (2013)	East Branch DuPage River (2014)	Salt Creek (2016)	Reference Sites (2006-2016)	Total Sites
Biological sampling					
Fish	44	36	51	13	144
Macroinvertebrates	44	36	51	13	144
QHEI	44	36	51	13	144
Water Column Chemical/Physical Sampling					
Nutrients*	44	36	51	6	137
Water Quality Metals	44	36	51	6	137
Water Quality Organics	18	11	16	6	51
Sediment Sampling	18	11	16	6	51

\*Also included indicators or organic enrichment and ionic strength, total suspended solids (TSS), DO, pH and temperature

The bioassessment sampling includes four (4) sampling methods/protocols: biological sampling, Qualitative Habitat Evaluation Index (QHEI), water column chemical/physical parameter sampling and sediment chemistry. The biological sampling includes two assemblages: fish and macroinvertebrates.

## **FISH**

### Methodology

Methods for the collection of fish at wadeable sites was performed using a tow-barge or longline pulsed D.C. electrofishing apparatus (MBI 2006b). A Wisconsin DNR battery powered backpack electrofishing unit was used as an alternative to the long line in the smallest streams (Ohio EPA 1989). A three-person crew carried out the sampling protocol for each type of wading equipment sampling in an upstream direction. Sampling effort was indexed to lineal distance and ranged from 150-200 meters in length. Non-wadeable sites were sampled with a raft-mounted pulsed D.C. electrofishing device in a downstream direction (MBI 2007). Sampling effort was indexed to lineal distance over 0.5 km. Sampling was conducted during a June 15-October 15 seasonal index period.

Samples from each site were processed by enumerating and recording weights by species and by life stage (y-o-y, juvenile, and adult). All captured fish were immediately placed in a live well, bucket, or live net for processing. Water was replaced and/or aerated regularly to maintain adequate D.O. levels in the water and to minimize mortality. Fish not retained for voucher or other purposes were released back into the water after they had been identified to species, examined for external anomalies, and weighed either individually or in batches. While the

majority of captured fish were identified to species in the field, any uncertainty about the field identification required their preservation for later laboratory identification. Identification was made to the species level at a minimum and to the sub-specific level if necessary. Vouchers were deposited and verified at The Ohio State University Museum of Biodiversity (OSUMB) in Columbus, OH.

### Results

The fish sampling results presented in this report summarize the findings for the mainstem reaches of the East Branch DuPage River, the West Branch DuPage River and Salt Creek. Information on the tributaries and detailed analysis of all results can be found at <http://drscw.org/wp/bioassessment/>.

The fish and macroinvertebrate results are presented as Index of Biotic Integrity (IBI) scores. IBI is an evaluation of a waterbodies biological community in a manner that allows the identification, classification and ranking of water pollution and other stressors. IBIs allow the statistical association of various anthropogenic influences on a water body with the observed biological activity in said water body and in turn the evaluation of management interventions in a process of adaptive management. Chemical testing of water samples produce only a snapshot of chemical concentrations while an IBI allows an evaluation of the net impact of chemical, physical and flow variables on a biological community structure. Dr. James Karr formulated the IBI concept in 1981.

#### *East Branch DuPage River*

Fish assemblage conditions throughout the East Branch DuPage River watershed a in the poor and fair ranges (Figure 1). However, the mainstem assemblages show similar quality or modest improvement at nearly all sites when 2014 data is compare to 2011 and approach 2007 levels.

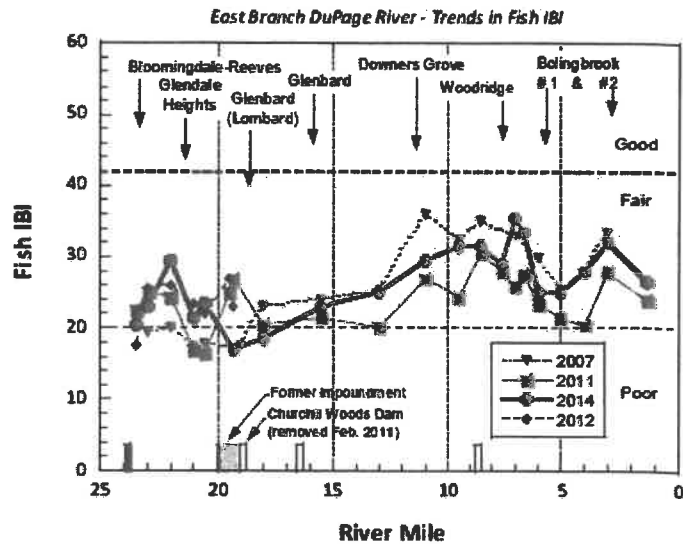
Prior to the modification of the Churchill Woods dam in 2001, fish assembles upstream of the dam, were essentially that of a pond and dominated by sunfish, bullheads, golden shiner, and mosquito fish. Downstream of the dam, the fish assemblage reflected more lotic, stream like conditions with populations of sand shiner, johnny darter, horneyhead chub and rock bass. Since the modification of the Churchill Woods dam, eight new species have been recorded and other populations have expanded their ranges above the former dam site. Additionally, in 2014; two new species (banded darter and round goby) were recorded in the lower reaches of the East Branch. The appearance of the banded darter, a sensitive species, is a sign of improved quality in the lower nine miles of the main stem.

#### *West Branch DuPage River*

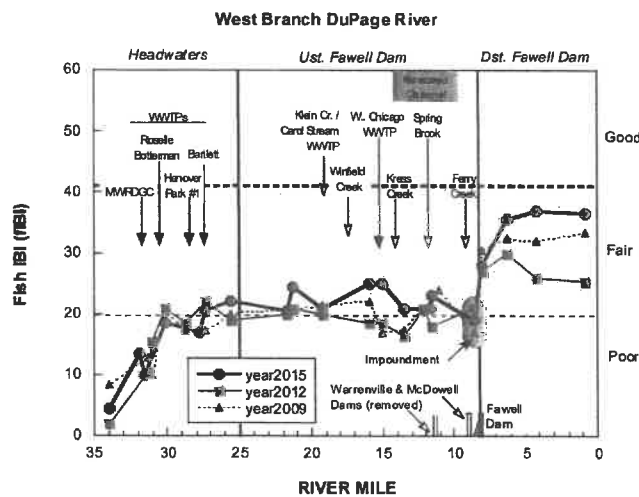
All survey sites fell consistently in the poor or lower fair ranges with slightly higher scores downstream from RM 8.1 and the Fawell Dam (Figure 2). No West Branch sites met the 41-point criterion synonymous with a good quality assemblage.

It should be noted that the Fawell dam is a barrier to several fish species. The DRSCW in cooperation with DuPage County and Forest Preserve District of DuPage County plans to modify the Fawell Dam to allow for fish passage. This project is expected to be completed by 2018.

**Figure 1.** Fish IBI scores in the East Branch DuPage River, 2014, 2011-12 and 2007 in relation to municipal POTW dischargers. Bars along the x-axis depict mainstem dams or weirs (only black bars impede fish passage). The shaded area demarcates the "fair" narrative range.



**Figure 2.** Fish IBI scores in the West Branch DuPage River, 2015, 2011-12 and 2007 in relation to municipal POTW dischargers. Bars along the x-axis depict mainstem dams or weirs (only black bars impede fish passage). The shaded area demarcates the "fair" narrative range.



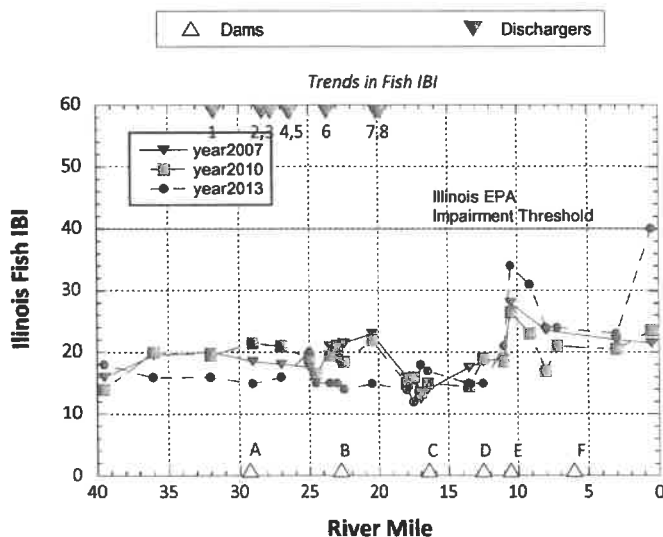
### Salt Creek

With the exception of the site located at River Mile 0.5, fish assemblages sampled in Salt Creek were in poor to fair condition throughout the mainstem (Figure 3). In 2013, the site near the mouth of Salt Creek (river mile 0.5) was rated “good”. The increase in fish iBi is attributed to the removal of the Hoffman Dam on the main stem of the Des Plaines River in June 2012.

It should be noted that the Fullersburg Woods Dam (dam E on Figure 4) is a barrier to several fish species, notably johnny darters and hornyhead chubs, two species that should be found throughout most of the mainstem. The DRSCW in cooperation with DuPage County and Forest Preserve District of DuPage County plans to modify the Fullersburg Woods Dam to allow for fish passage. This project is expected to be completed by 2023.

Fish assemblage data from the 2016 Salt Creek bioassessment was not available at the time of the 2016-2017 MS4 Annual Report and will be included in the 2017-2018 MS4 Annual Report due on June 1, 2018.

**Figure 3.** Fish IBI scores in Salt Creek, 2013, 2010, and 2007 in relation to municipal POTW dischargers. Triangles along the x-axis depict mainstem dams or weirs. The back line demarcates the IEPA impairment threshold.



## MACROINVERTEBRATES

### Methodology

The macroinvertebrate assemblage is sampled using the Illinois EPA (IEPA) multi-habitat method (IEPA 2005). Laboratory procedures followed the IEPA (2005) methodology for processing multi-habitat samples by producing a 300-organism subsample with a scan and pre-pick of large and/or rare taxa from a gridded tray. Taxonomic resolution is performed to the lowest practicable resolution for the common macroinvertebrate assemblage groups such as mayflies, stoneflies, caddisflies, midges, and crustaceans, which goes beyond the genus level requirement of IEPA

(2005). However, calculation of the macroinvertebrate IBI followed IEPA methods in using genera as the lowest level of taxonomy for mIBI calculation and scoring.

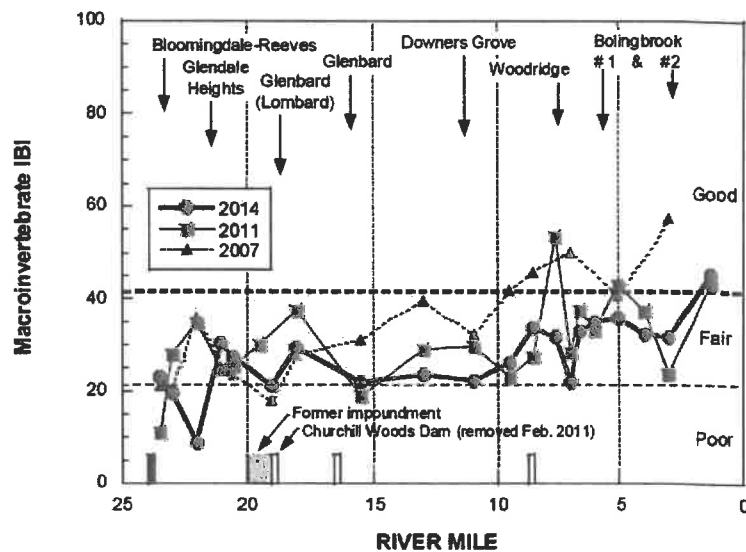
### Results

The macroinvertebrate sampling results presented in this report summarize the findings for the mainstem reaches of the East Branch DuPage River, the West Branch DuPage River and Salt Creek. Information on the tributaries and detailed analysis of all results can be found at <http://drscw.org/wp/bioassessment/>.

#### East Branch DuPage River

Macroinvertebrate collections from the 2014 East Branch watershed survey fell entirely within the fair or poor quality ranges with the exception of a single “good” site on the lower mainstem (Figure 4). Assemblages throughout the study area are predominated by facultative and tolerant organisms most often associated with elevated nutrients, dissolved solids and low DO.

**Figure 4.** Macroinvertebrate IBI scores in the East Branch DuPage River, 2014, 2011-12 and 2007 in relation to municipal POTW dischargers. Bars along the x-axis depict mainstem dams or weirs (only black bars impede fish passage). The shaded area demarcates the “fair” narrative range.



#### West Branch DuPage River

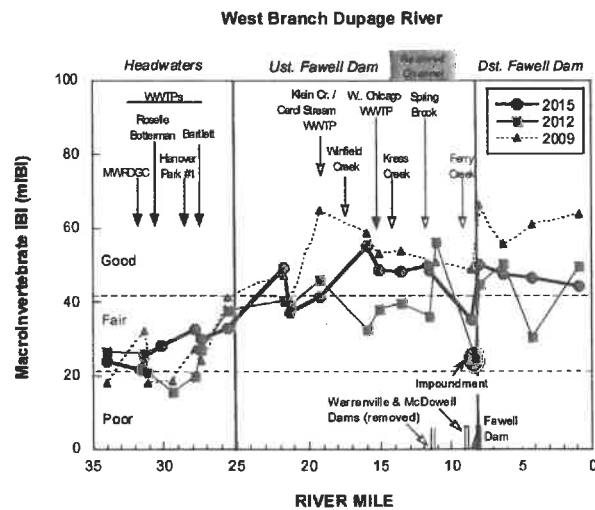
With few exceptions, West Branch macroinvertebrate assemblages from the upper, headwater reach reflected degraded but similar quality between 2007, 2009, 2012 and 2015 (Figure 5). The combination urban drainage, marginal habitat quality and a series of four major WWTP discharges in the small drainage were considered major contributors.

In both 2009 and 2015, major improvement in mIBI scores and clearly good mIBI ratings were detected upstream from Klein Creek and the Carol Stream WWTP (Figure 5). In 2009 and 2015, consistently good quality was maintained along the remaining length of the West Branch downstream to the mouth. In 2006, this downstream improving trend was more erratic; still 5 of the 8 sites between Klein Creek and the



mouth exceeded Illinois criteria. In contrast, the 2012 trend was much less distinct as narrative ratings vacillated between a fair or lower good range status through most of the lower 20 mainstem river miles.

**Figure 5.** Macroinvertebrate IBI scores in the West Branch DuPage River, 2015, 2011-12 and 2007 in relation to municipal POTW dischargers. Bars along the x-axis depict mainstem dams or weirs (only black bars impede fish passage). The shaded area demarcates the “fair” narrative range.



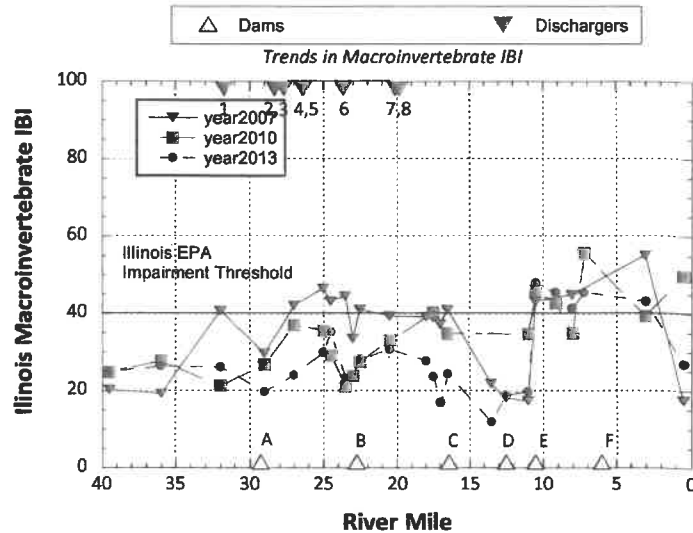
### Salt Creek

In 2013, macroinvertebrate communities sampled from the mainstem of Salt Creek were rated as Fair upstream from the Fullersburg Woods Dam, and rated good at five of six sites sampled downstream from the dam, and Fair at the other site (Figure 6). Longitudinally, scores decreased downstream from Spring Brook relative to those upstream. The confluence with Spring Brook marks the reach where several POTWs discharge in short succession. Otherwise, no clear longitudinal pattern was evident

In the 2016, the Oak Meadows Dam (dam B on Figure 4) was removed in a project sponsored by the Forest Preserve District of DuPage County, DuPage County Stormwater Management, and the DRSCW. Macroinvertebrate sampling to document the effects of this dam removal is scheduled for 2017.

Macroinvertebrate data from the 2016 Salt Creek bioassessment was not available at the time of the 2016-2017 MS4 Annual Report and will be included in the 2017-2018 MS4 Annual Report due on June 1, 2018.

**Figure 6.** Macroinvertebrate IBI scores in Salt Creek, 2013, 2010, and 2007 in relation to municipal POTW dischargers. Triangles along the x-axis depict mainstem dams or weirs. The back line demarcates the IEPA impairment threshold.



**HABITAT**

**Methodology**

Physical habitat was evaluated using the Qualitative Habitat Evaluation Index (QHEI) developed by the Ohio EPA for streams and rivers in Ohio (Rankin 1989, 1995; Ohio EPA 2006b) and as modified by MBI for specific attributes. Attributes of habitat are scored based on the overall importance of each to the maintenance of viable, diverse, and functional aquatic faunas. The type(s) and quality of substrates, amount and quality of instream cover, channel morphology, extent and quality of riparian vegetation, pool, run, and riffle development and quality, and gradient used to determine the QHEI score which generally ranges from 20 to less than 100. QHEI scores and physical habitat attribute were recorded in conjunction with fish collections.

**Results**

The QHEI data presented in this report summarize the findings for the mainstem reaches of the East Branch DuPage River, the West Branch DuPage River and Salt Creek. Information on the tributaries and detailed analysis of all results can be found at <http://drscw.org/wp/bioassessment/>.

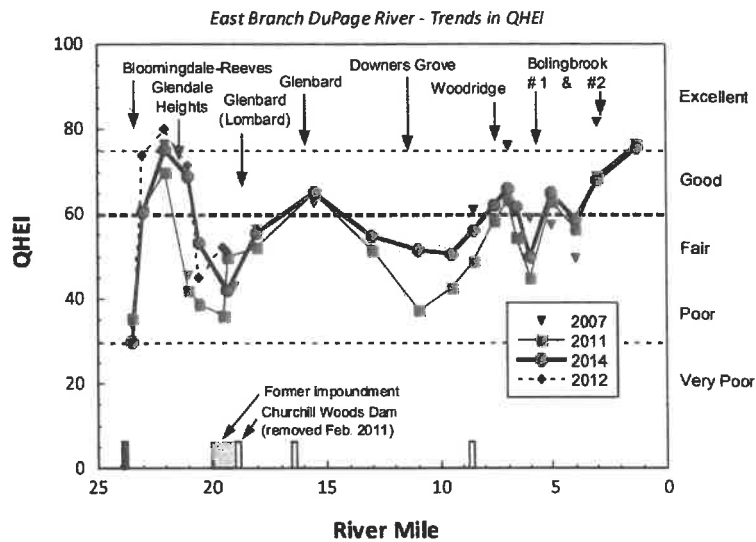
The physical habitat of a stream is a primary determinant of biological quality. Streams in the glaciated Midwest, left in their natural state, typically possess riffle-pool-run sequences, high sinuosity, and well-developed channels with deep pools, heterogeneous substrates and cover in the form of woody debris, glacial tills, and aquatic macrophytes. The QHEI categorically scores the basic components of stream habitat into ranks according to the degree to which those components are found in a natural state, or conversely, in an altered or modified state.

**East Branch DuPage River**

Based on QHEI scores, mainstem habitat quality fell mostly in the fair to good ranges, but varied by location (Figure 7). Substrate embeddedness was a common characteristic of the mainstem as riffle or pool embeddedness was recorded at all but one location (EB23/RM 22.0).

Since the modification of the Churchill Woods dam in 2011, QHEI scores within and upstream of the former dam have increased by reflecting the appearance of riffles and increased habitat heterogeneity.

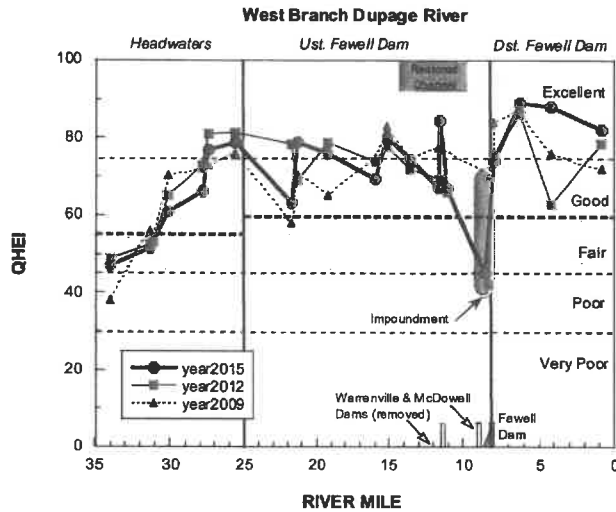
**Figure 7.** Qualitative Habitat Evaluation Index (QHEI) scores for the E. Branch DuPage River in 2007, 2011-12, and 2014 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). The shaded region depicts the range of QHEI scores where habitat quality is marginal and limiting to aquatic life. QHEI scores less than 45 are typical of highly modified habitat.



**West Branch DuPage River**

Mainstem habitat quality in 2012 was good to excellent throughout most of its length and, with the exception of the extreme headwaters (upstream RM 30.1) and Fawell Dam pool (RM 8.3) (Figure 8).

**Figure 8.** Qualitative Habitat Evaluation Index (QHEI) scores for the W. Branch DuPage River in 2009, 2012, and 2015. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). The shaded region depicts the range of QHEI scores where habitat quality is marginal and limiting to aquatic life. QHEI scores less than 45 are typical of highly modified habitat

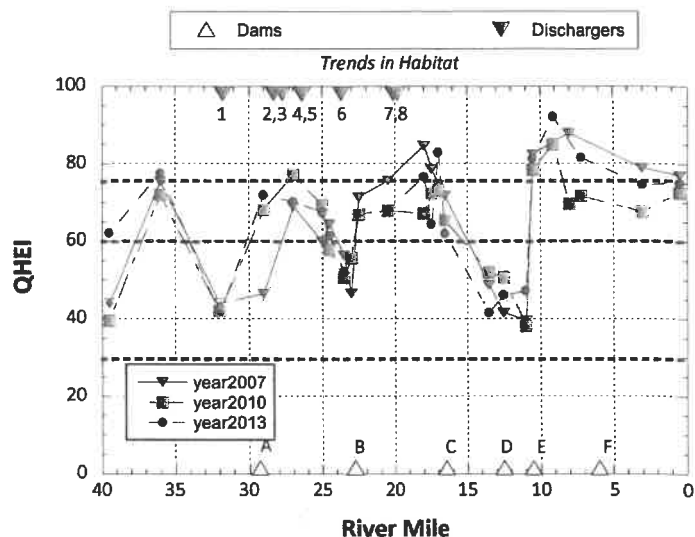


**Salt Creek**

In Salt Creek, the majority of the sites possessed the types and amounts of habitat features necessary to support aquatic life consistent with beneficial uses (Figure 49 a), with QHEI scores in the good and excellent range (Figure 9). Perhaps more telling, 19 of the sites possessed none of the attributes that characterized stream channels highly modified either directly or indirectly by anthropogenic modifications, and only one site, the most upstream site, possessed more than one highly modified attribute.

QHEI data from the 2016 Salt Creek bioassessment was not available at the time of the 2016-2017 MS4 Annual Report and will be included in the 2017-2018 MS4 Annual Report due on June 1, 2018.

**Figure 9.** Qualitative Habitat Evaluation Index (QHEI) scores for Salt Creek in 2007, 2010 and 2013 in relation to municipal WWTP discharges. Triangles along the x-axis depict mainstem dams or weirs. The shaded region depicts the range of QHEI scores where habitat quality is marginal and limiting to aquatic life. QHEI scores less than 45 are typical of highly modified habitat.



**WATER QUALITY CHEMISTRY**

Methodology

Water column and sediment samples are collected as part of the DRSCW bioassessment programs. The total number of sites sampled is detailed in Table 2. Total number of collected samples by watershed typical for a full assessment by watershed are given in Table 3. The number of samples collected at each site is largely a function of the sites drainage area with the frequency of sampling increasing as drainage size increases (Table 4). Organics sampling is a single sample done at a subset of sites. Sediment sampling is done at a subset of 66 sites using the same procedures as IEPA.

The parameters sampled for are included in Table 6 and can be grouped into demand parameters, nutrients, demand, metals and organics. Locations of organic and sediment sites are shown on Figure 2. All sampling occurs between June and October of the sample year. The Standard Operating Procedure for water quality sampling can be found at <http://drscw.org/wp/bioassessment/>.

**Table 3.** Total number of samples by watershed typical for a full assessment by watershed

Watershed	Approximate # Sites	Demand Samples	Nutrients Samples	Metals Samples	Organics Samples
Salt Creek	51	280	280	149	16
West Branch DR	44	218	218	110	18
East Branch DR	36	196	196	100	11

**Table 4.** Approximate distribution of sample numbers by drainage area across the monitoring area.

Drainage Area and site numbers	>100 sq mi (n=12)	>75 sq mi (n=25)	>38 sq mi (n=11)	>19 sq mi (n=11)	>8 sq mi (n=15)	>5 sq mi (n=24)	>2 sq mi (n= 46)
Mean # Samples demand /nutrients	12	9	6	6	4	4	2
Mean # Samples metals	6	6	4	4	2	2	0

**Table 6.** Water Quality and sediment Parameters sampled as part of the DRSCW Bioassessment Program.

Water Quality Parameters	Sediment Parameters
<b>Demand Parameters</b> 5 Day BOD Chloride Conductivity Dissolved Oxygen pH Temperature Total Dissolved Solids Total Suspended Solids  <b>Nutrients</b> Ammonia Nitrogen/Nitrate Nitrogen – Total Kjeldahl Phosphorus, Total  <b>Metals</b> Cadmium Calcium Copper Iron Lead Magnesium Zinc  <b>Organics – Water</b> PCBS Pesticides Semivolatile Organics Volatile Organics	<b>Sediment Metals</b> Arsenic Barium Cadmium Chromium Copper Iron Lead Manganese Nickel Potassium Silver Zinc  <b>Sediment Organics</b> Organochlorine Pesticides PCBS Percent Moisture Semivolatile Organics Volatile Organic Compounds

## Results

The discussion presented below focuses on the constituents listed in the MS4 permit: total suspended solids, total nitrogen, total phosphorus, fecal coliform, chlorides, and oil and grease. Total nitrogen is presented as ammonia, nitrate, and total kjeldahl nitrogen (TKN). Prior to the 2016 sampling period, fecal coliform and oil and grease sampling was not conducted. Oil and grease sampling was added to the bioassessment sampling for Salt Creek in 2016. Fecal coliform and oil and grease sampling will be added to all future bioassessment sampling for the East Branch DuPage River (2019), West Branch DuPage River (2020), and Salt Creek (2021) ensuring that each watershed will be sampled for that parameter during the effective period of the ILR40 permit.

Detailed analysis and results for the other water quality constituents is located at <http://drscw.org/wp/bioassessment/>.

### *East Branch DuPage River*

East Branch mainstem flows are effluent dominated during the late summer-early fall months. As such, chemical water quality is highly influenced by the concentration and composition of chemical constituents in WWTP effluents (Figures 10-13). The results in 2014 were consistent with 2011 during low flow periods with respect to observing no exceedances of Illinois water quality criteria for regulated parameters (i.e. TSS, NH<sub>3</sub>-N).

### *West Branch DuPage River*

Stream flow in the West Branch DuPage River is effluent dominated during summer months. As such, its water quality is highly influenced by the concentrations and composition of chemical constituents in the effluent as well as runoff from the urban and developed land cover in the watershed. Water quality sampling in 2012 during the summer low-flow periods suggest that the quality of treated effluent, with respect to regulated parameters (i.e., cBOD<sub>5</sub>, TSS, NH<sub>3</sub>), was generally good. Effluents did not result directly in exceedances of water quality standards for these parameters. However, increasingly elevated nutrient levels and their attendant influence on mainstem D.O. regimes remain problematic.

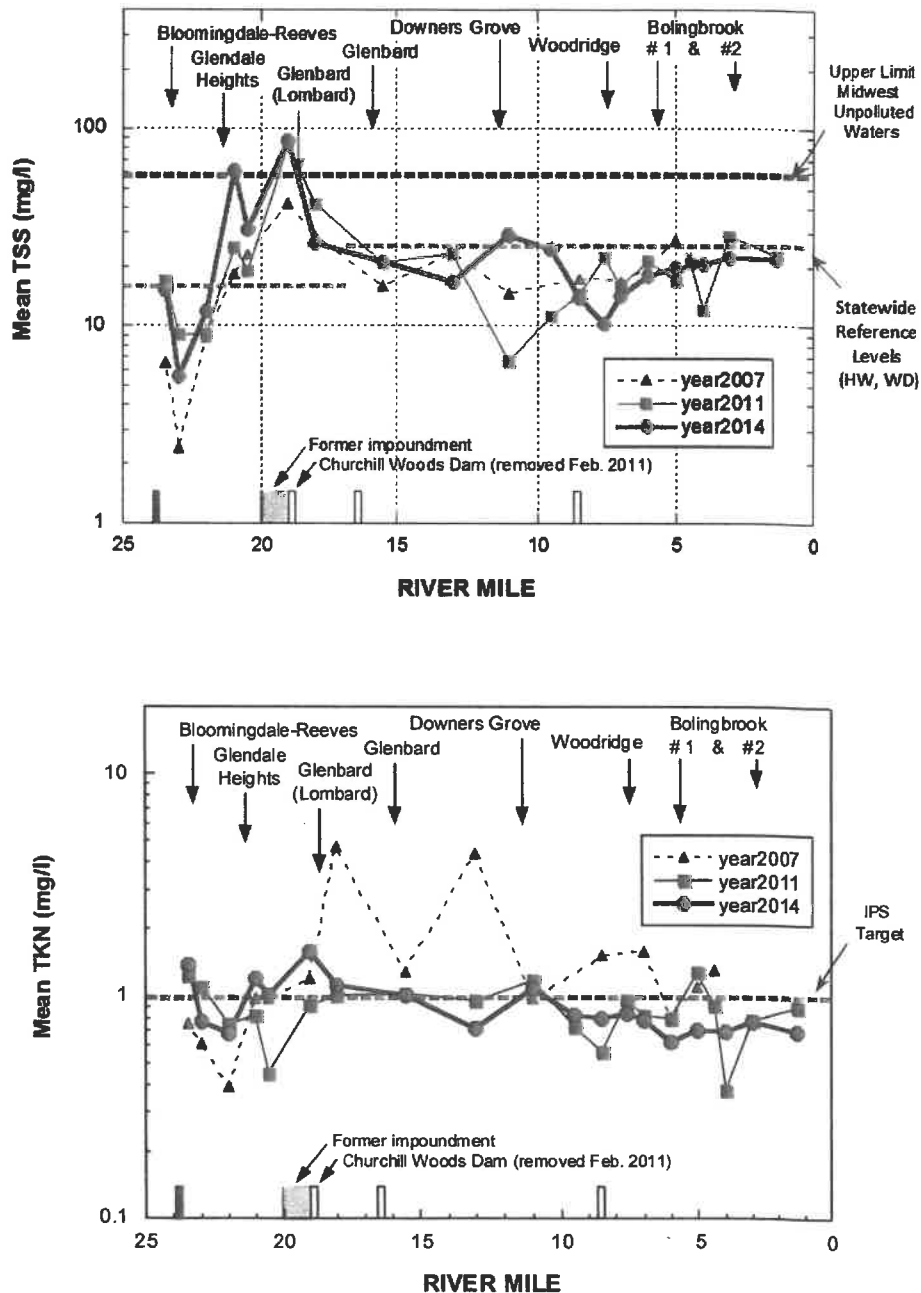
### *Salt Creek*

Salt Creek drains a highly urbanized landscape with a high population density. The increase in Pollutants associated with urbanized landscapes have been documented. Given the high population density in the watershed, treated municipal effluent comprises a significant fraction of the total flow in Salt Creek and strongly influences water quality, especially with respect to nitrogen and phosphorus. The results in 2013 were consistent with 2010.

Water chemistry data from the 2016 Salt Creek bioassessment was not available at the time of the 2016-2017 MS4 Annual Report and will be included in the 2017-2018 MS4 Annual Report due on June 1, 2018.

**Figure 10.**

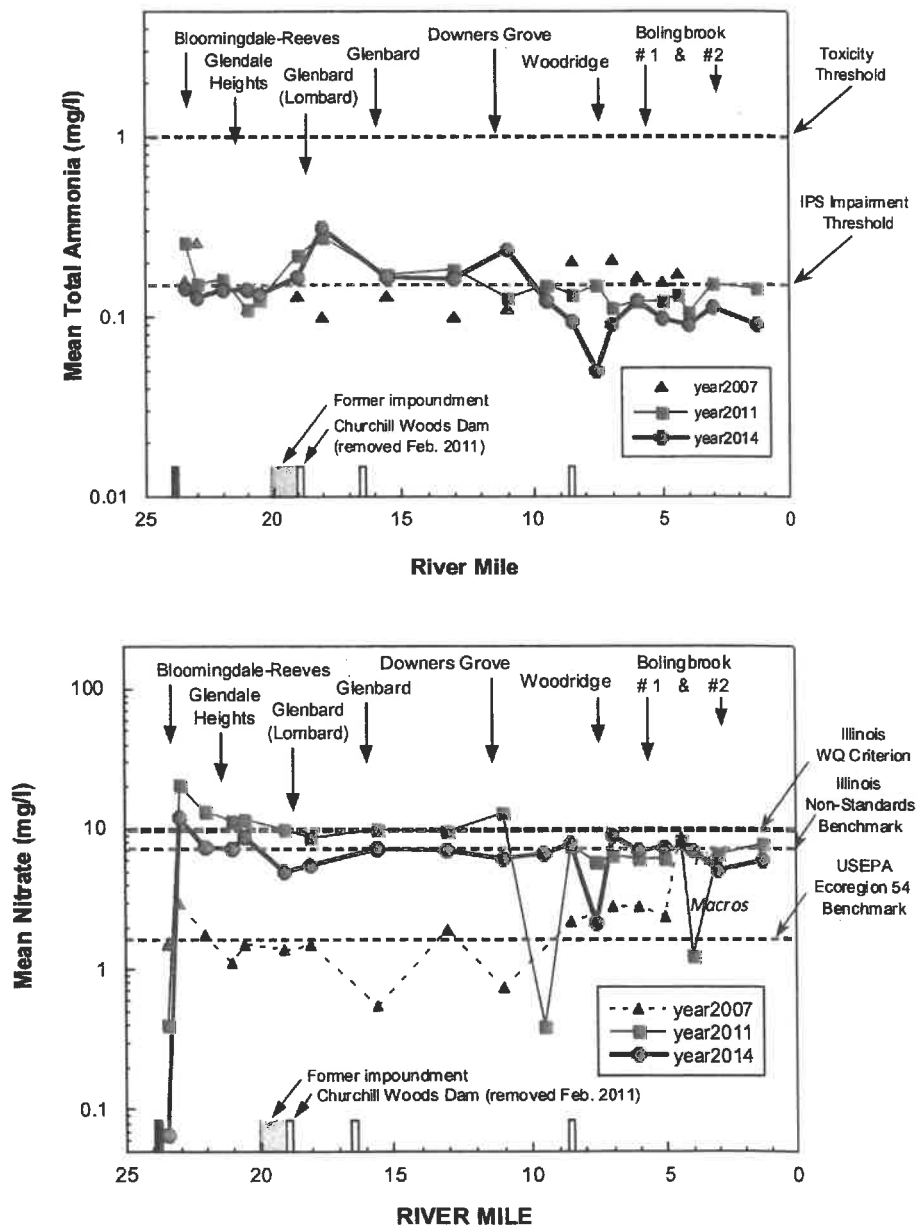
Concentrations of total suspended solids (top panel) and TKN (lower panel) from E. Branch DuPage River samples in 2007, 2011 and 2014 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). Red dashed lines shows the upper limits of concentrations typical for relatively unpolluted waters for TSS (McNeeley et al. 1979). Orange dashed line in TSS plot is the Ohio reference threshold for headwater (HW) and wadeable (WD) streams. For TKN, the orange dashed line represents the IPS threshold (1.0 mg/l). IPS is a tool developed by the DRSCW and MBI.



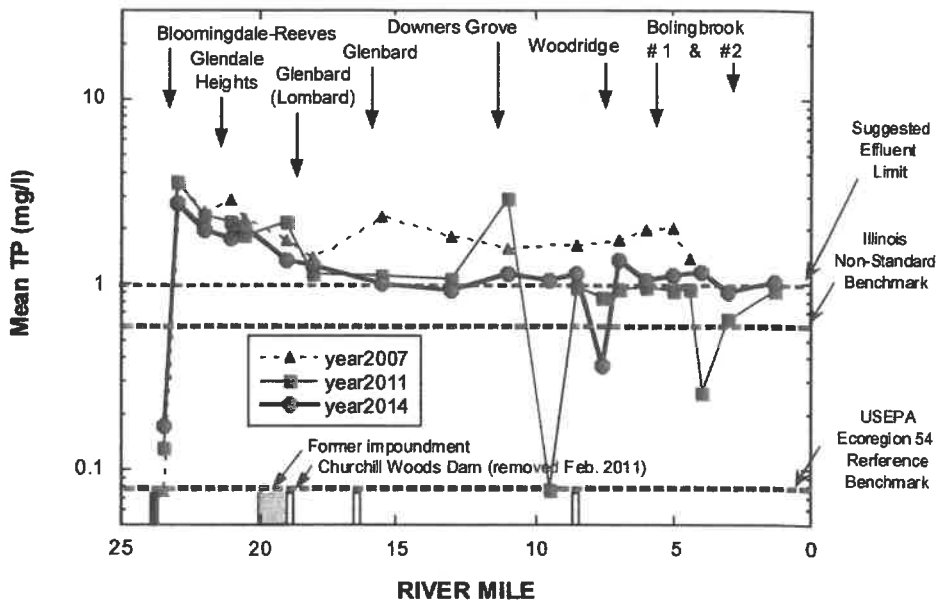


**Figure 11.**

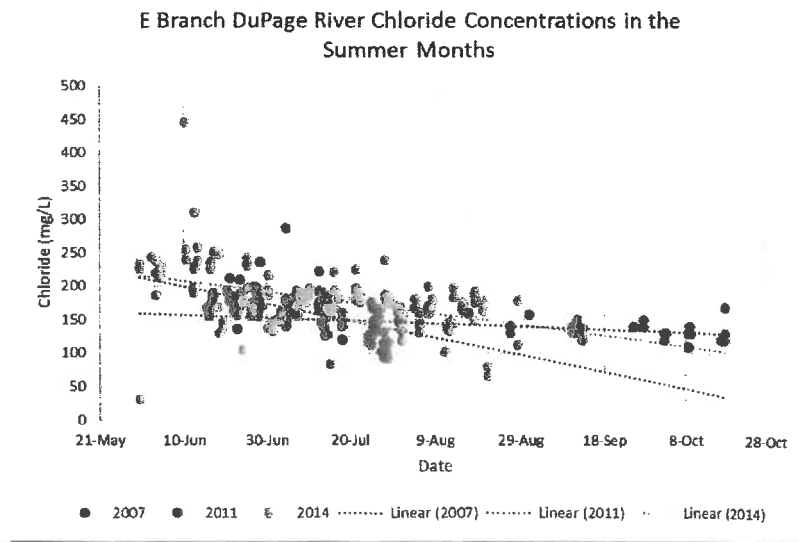
Concentrations of ammonia-N (top panel) and nitrate+nitrite-N (lower panel) from E. Branch DuPage River samples in 2007, 2011 and 2014 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (only black bars for dams that impede fish passage). For ammonia-N, the red dashed line (1.0 mg/l) represents a threshold concentration beyond which acute toxicity is likely; the orange dashed line (0.15 mg/l) is correlated with impaired biota in the IPS study. For nitrate+nitrite-N, orange dashed lines represent target concentrations for ecoregion 54 (1.8 mg/l) and the Illinois EPA non-standard based criteria (7.8 mg/l). The red dashed line is the Illinois water quality criterion for public water supplies (10 mg/l). The red dashed line is the Illinois water quality criterion for public water supplies (10 mg/l).



**Figure 12.** Concentrations total phosphorus from E. Branch DuPage River samples in 2007, 2011 and 2014 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). For phosphorus, orange dashed lines represent target concentrations for ecoregion 54 (0.07 mg/l) and the Illinois EPA non-standard based criterion (0.61 mg/l). The 1.0 mg/l dashed red line is the suggested effluent limit.

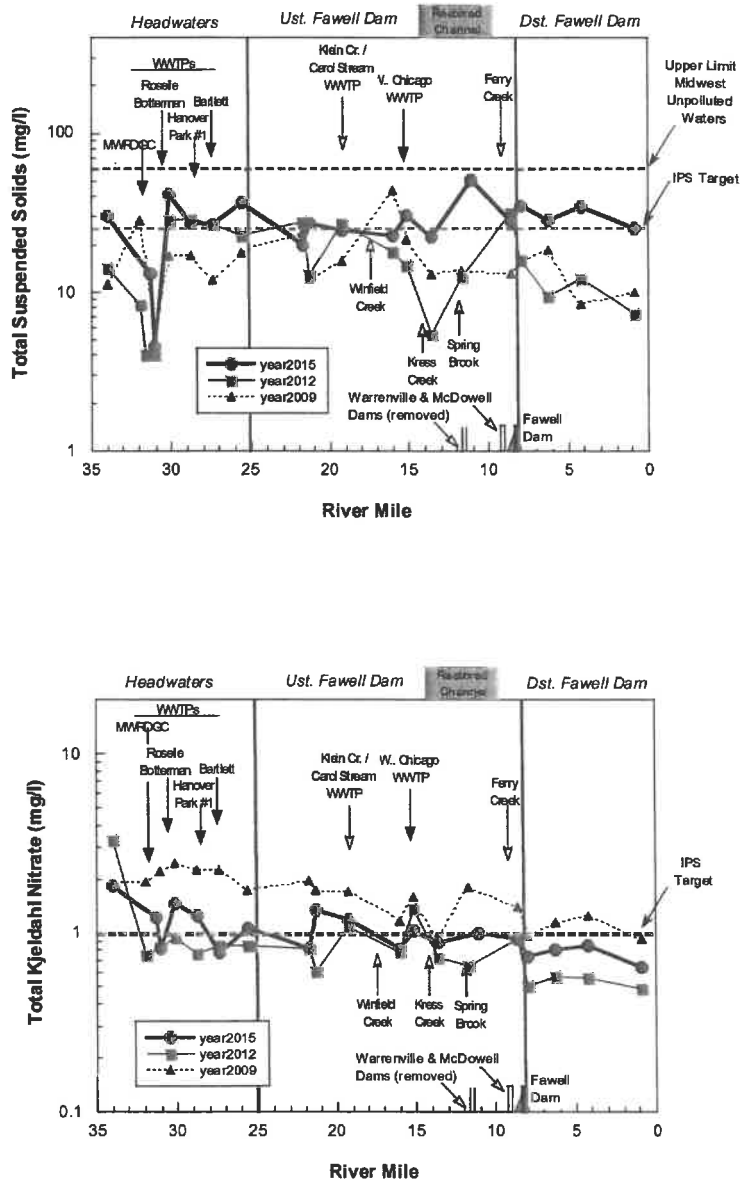


**Figure 13.** Chloride concentrations from the East Branch DuPage River in the summer of 2007, 2011 and 2014.



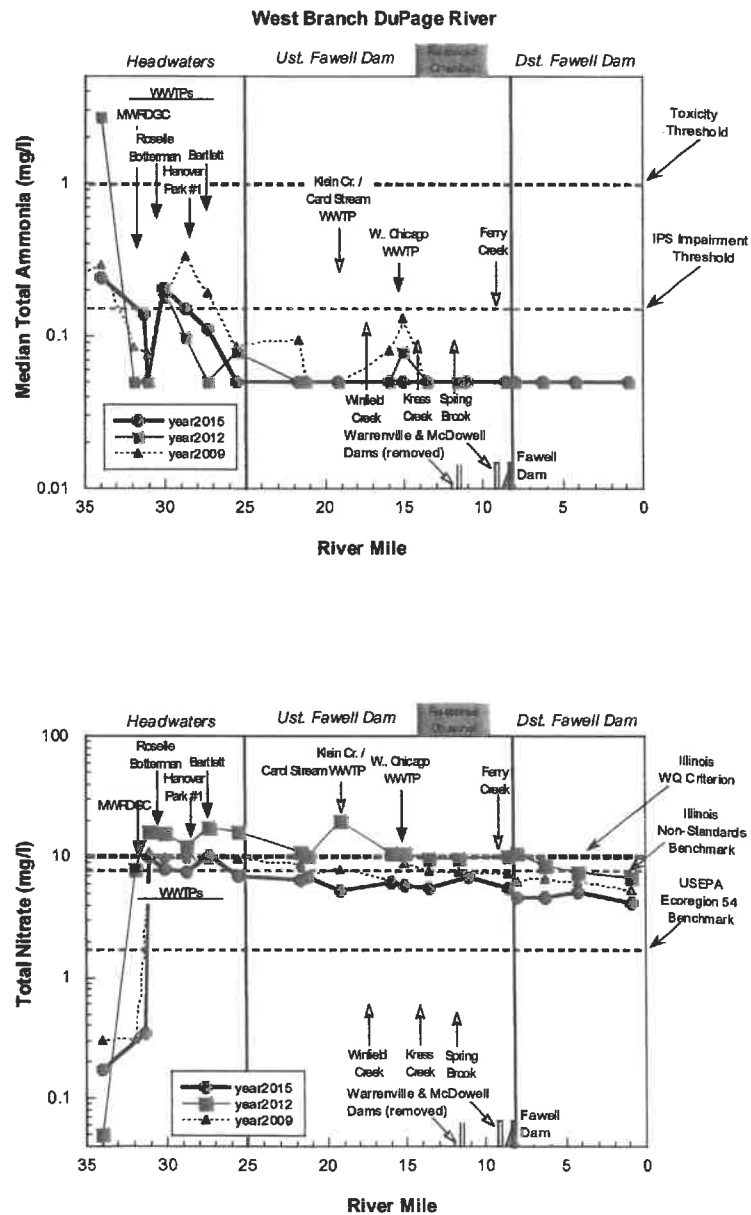
**Figure 14.**

Concentrations of total suspended solids (top panel) and TKN (lower panel) from W. Branch DuPage River samples in 2008, 2012 and 2015 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). Red dashed lines shows the upper limits of concentrations typical for relatively unpolluted waters for TSS (McNeeley et al. 1979). Orange dashed line in TSS plot is the Ohio reference threshold for headwater (HW) and wadeable (WD) streams. For TKN, the orange dashed line represents the IPS threshold (1.0 mg/l). IPS is a tool developed by the DRSCW and MBI.



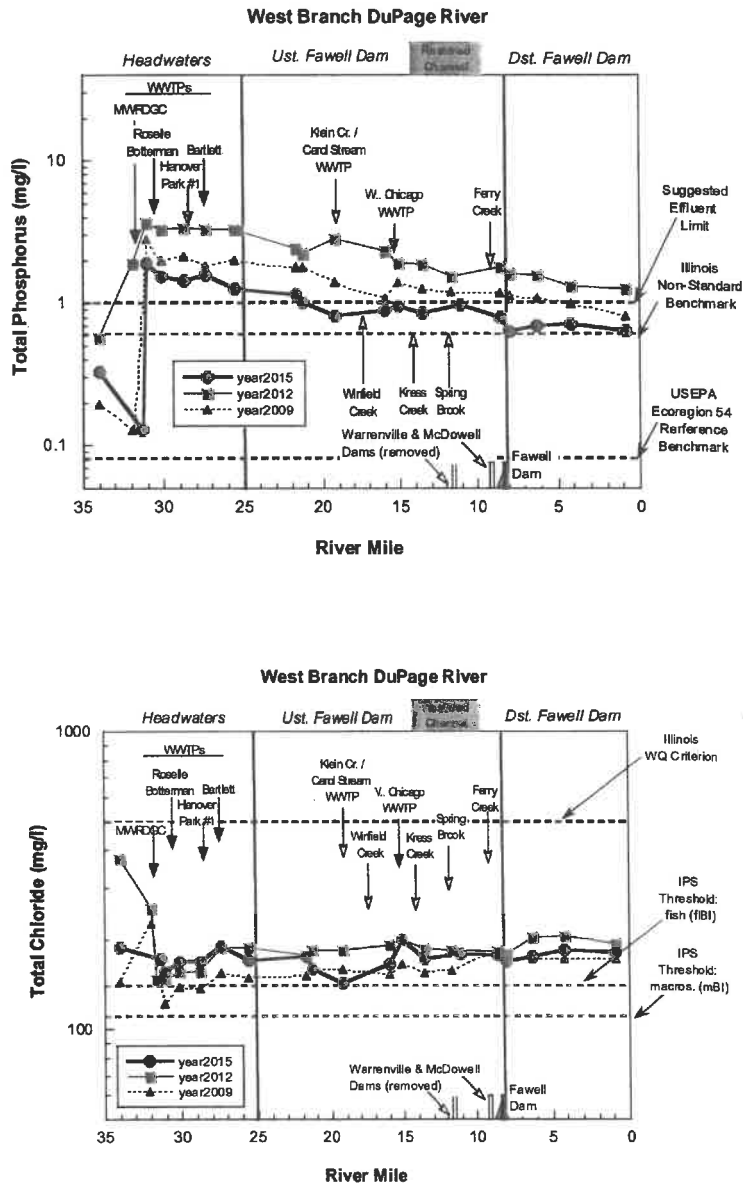
**Figure 15.**

Concentrations of ammonia-N (top panel) and total nitrate (lower panel) from W. Branch DuPage River samples in 2008, 2012 and 2015 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (only black bars for dams that impede fish passage). For ammonia-N, the red dashed line (1.0 mg/l) represents a threshold concentration beyond which acute toxicity is likely; the orange dashed line (0.15 mg/l) is correlated with impaired biota in the IPS study. For total nitrate, red line represents the Illinois Water Quality Criterion, orange dashed line represents the Illinois Non-Standards Benchmark, and purple line represents the US Ecoregion 54 Benchmark.



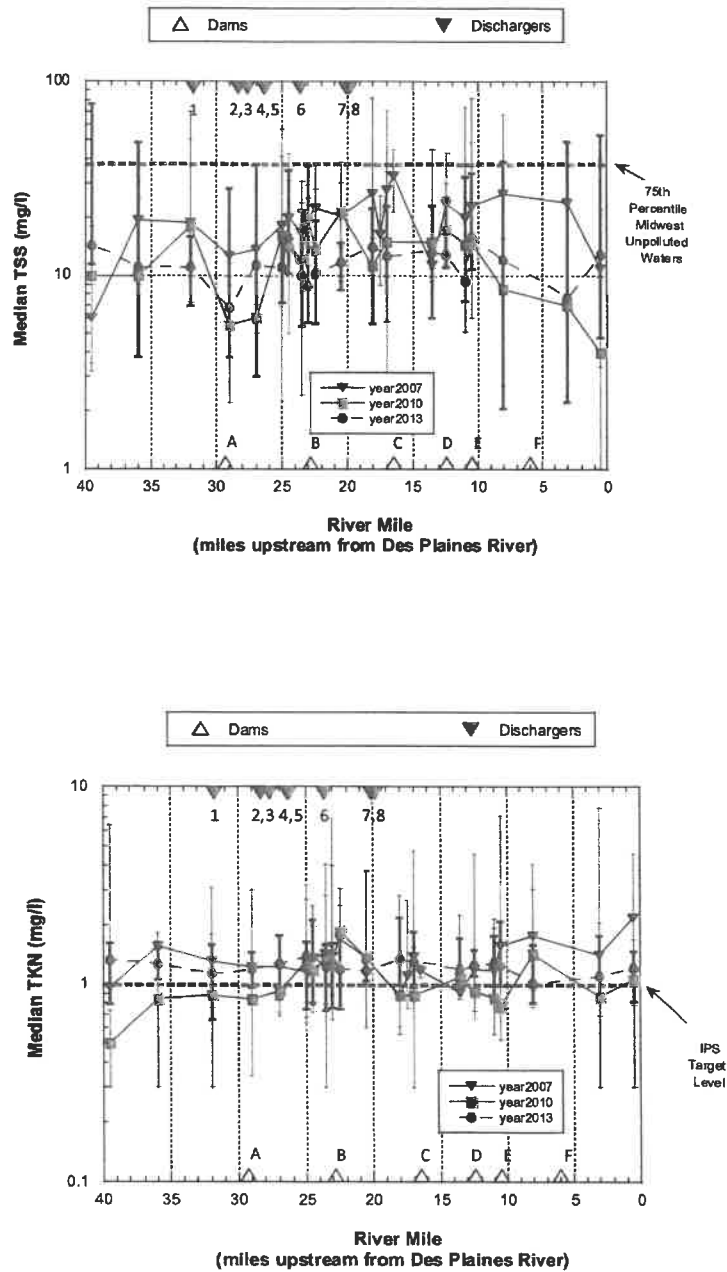
**Figure 16.**

Concentrations total phosphorus (top panel) and chloride (lower panel) from W. Branch DuPage River samples in 2008, 2012 and 2015 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). For phosphorus, orange dashed lines represent target concentrations for ecoregion 54 (0.07 mg/l) and the Illinois EPA non-standard based criterion (0.61 mg/l). The 1.0 mg/l dashed red line is the suggested effluent limit. For chloride, red dashed line represents the Illinois Water Quality Criterion (500 mg/L) and orange dashed lines represent the IPS threshold for fish and macroinvertebrates. IPS is a tool developed by the DRSCW and MBI.



**Figure 17.**

Concentrations of total suspended solids (top panel) and TKN (lower panel) from Salt Creek samples in 2007, 2010 and 2013 in relation to municipal WWTP discharges. Yellow triangles along the x-axis depict mainstem dams or weirs. Orange dashed lines shows the upper limits of concentrations typical for relatively unpolluted waters for TSS (McNeeley et al. 1979). Blue dashed line in TSS plot is the Ohio reference threshold for headwater (HW) and wadeable (WD) streams. For TKN, orange dashed line represents the IPS threshold (1.0 mg/l). IPS is a tool developed by the DRSCW and MBI.



**Figure 18.**

Concentrations of ammonia-N (top panel) and total nitrate (lower panel) from Salt Creek samples in 2007, 2010 and 2013 in relation to municipal WWTP discharges. Yellow triangles along the x-axis depict mainstem dams or weirs. For ammonia-N, the blue dashed line (1.0 mg/l) represents a threshold concentration beyond which acute toxicity is likely; the orange dashed line (0.15 mg/l) is correlated with impaired biota in the IPS study. For total nitrate, red line represents the Illinois Water Quality Criterion, orange dashed line represents the Illinois Non-Standards Benchmark, and purple line represents the US Ecoregion 54 Benchmark.

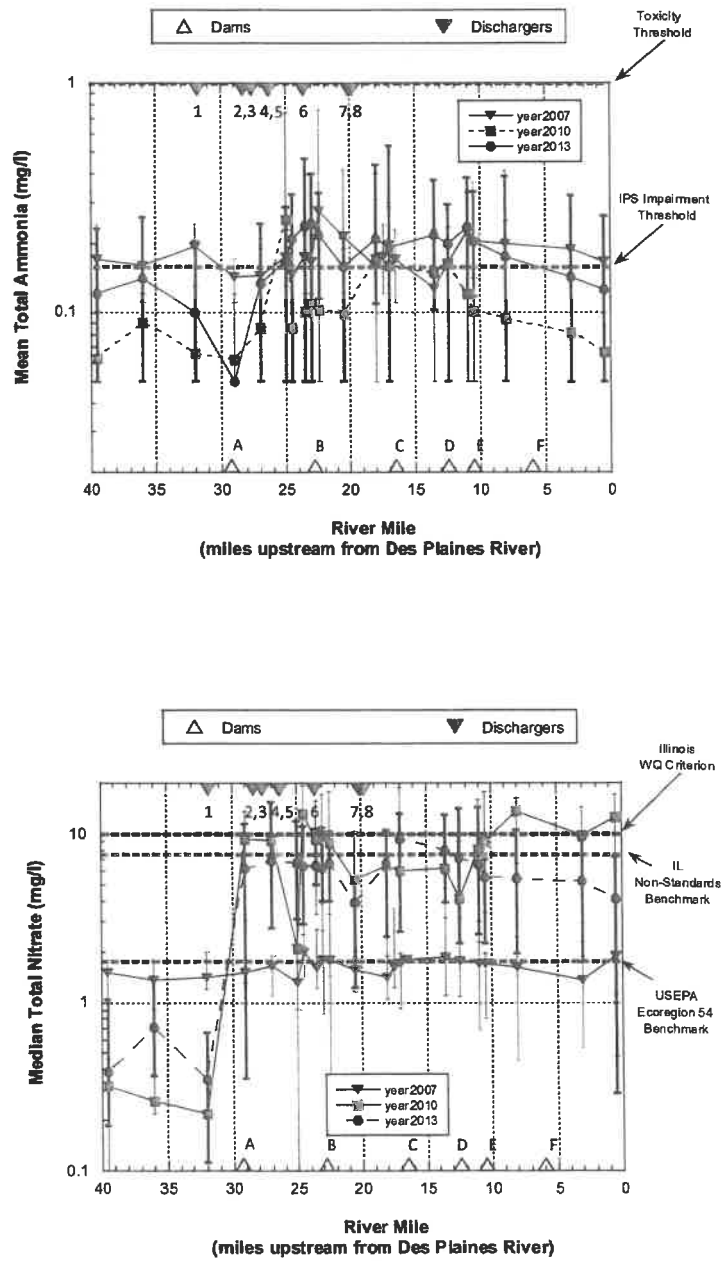
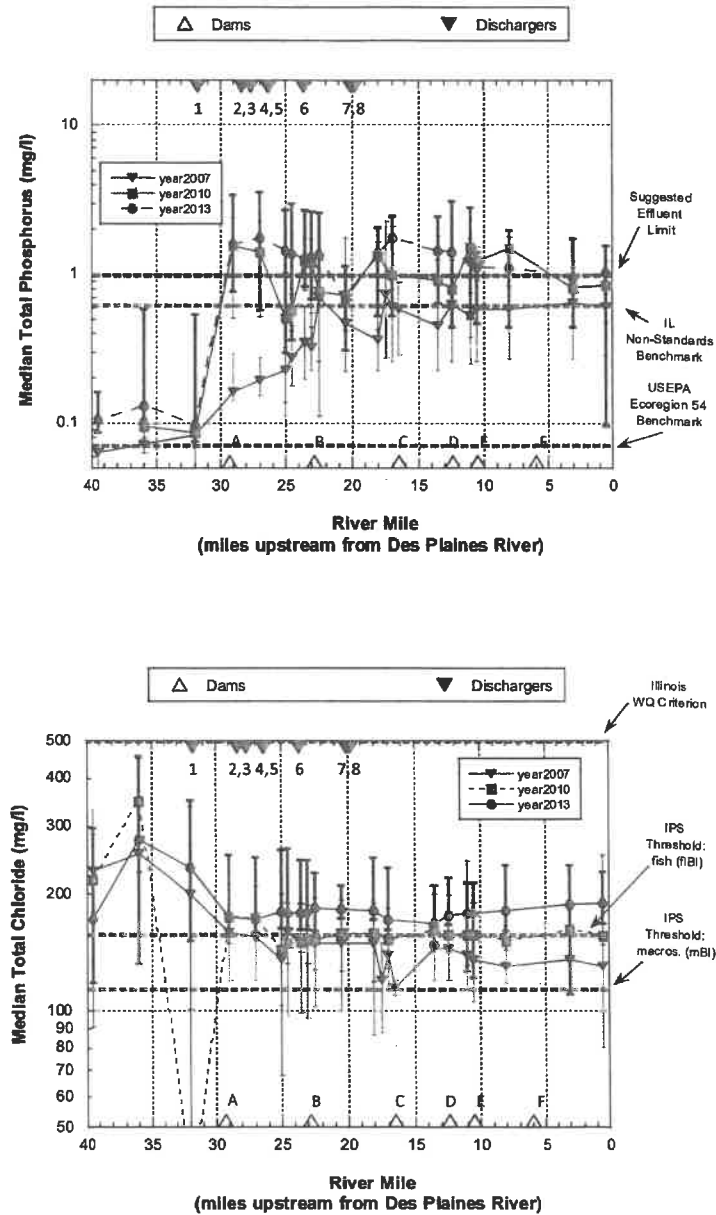


Figure 19.

Concentrations total phosphorus (top panel) and chloride (lower panel) from Salt Creek samples in 2007, 2010, and 2013 in relation to municipal WWTP discharges. Yellow triangles along the x-axis depict mainstem dams or weirs. For phosphorus, purple dashed lines represent target concentrations for ecoregion 54 (0.07 mg/l) and orange dashed line represents the Illinois EPA non-standard based criterion (0.61 mg/l). The 1.0 mg/l dashed red line is the suggested effluent limit. For chloride, red dashed line represents the Illinois Water Quality Criterion (500 mg/L) and orange dashed lines represent the IPS threshold for fish and macroinvertebrates. IPS is a tool developed by the DRSCW and MBI.





### Sediment Chemistry Results

Detailed analysis and results for sediment chemistry is located at

<http://drscw.org/wp/bioassessment/>.

### **DISSOLVED OXYGEN (DO) MONITORING**

#### Background and Methodology

The Illinois Environmental Protection Agency (IEPA) report, Illinois 2004 Section 303(d) List, listed dissolved oxygen (DO) as a potential impairment in Salt Creek, and the East and West Branches of the DuPage River. The report suggested that the DO levels in selected reaches of these waterways might periodically fall to levels below those required by healthy aquatic communities.

All rivers and creeks in DuPage County are classified as General Use Waters. The present water quality standards for dissolved oxygen in General Use Waters is:

1. During the period of March through July
  - a. 5.0 mg/L at any time; and
  - b. 6.0 mg/L as a daily mean averaged over 7 days.
  
2. During the period of August through February,
  - a. 3.5 mg/L at any time;
  - b. 4.0 mg/L as a daily minimum averaged over 7 days; and
  - c. 5.5 mg/L as a daily mean averaged over 30 days.

Following listing on the 303 (d) list three TMDLs were prepared by the IEPA for Salt Creek and the East Branch of the DuPage River. In response to the TMDLs, the DRSCW committed to develop and manage a continuous long-term DO monitoring plan for the project area in order to assess the nature and extent of the DO impairment and to allow the design of remedial projects. The continuous DO data is also used to assess the impact of DO improvement projects such as the Churchill Woods and Oak Meadow dam removals.

Typically, the continuous DO monitoring project includes two to three (2-3) sites on the West Branch DuPage River, four to five (4-5) sites of the East Branch DuPage River, and three to four (3-4) sites on Salt Creek. The program began in 2006 and data has been collected each year since. Each site is equipped with a HydroLab DS 5X which collects data on DO, pH, conductivity and water temperature. Stations have a sample interval of one hour and collect data from June through to October (the seasonal period recognized as containing the lowest annual levels of stream DO). The continuous DO monitoring program functions under a quality assurance plan agreed on with the Illinois Environmental Protection Agency (<http://drscw.org/wp/dissolved-oxygen/>). Details on the site location are included in Table 1 and site locations are included on Map 5.

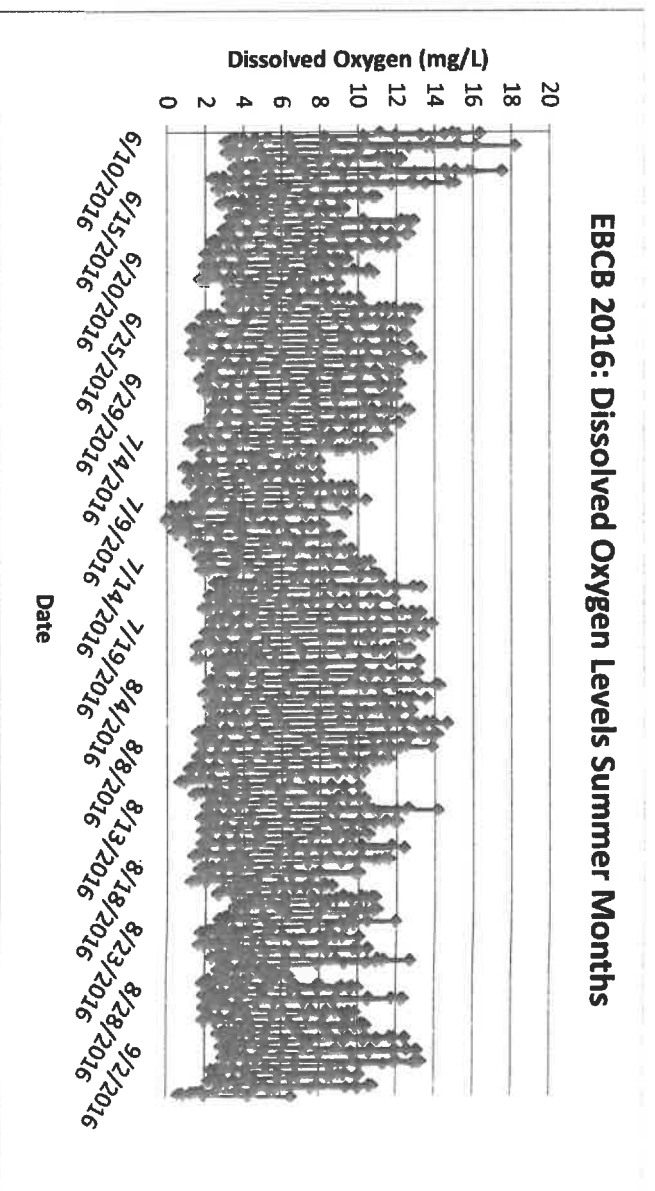
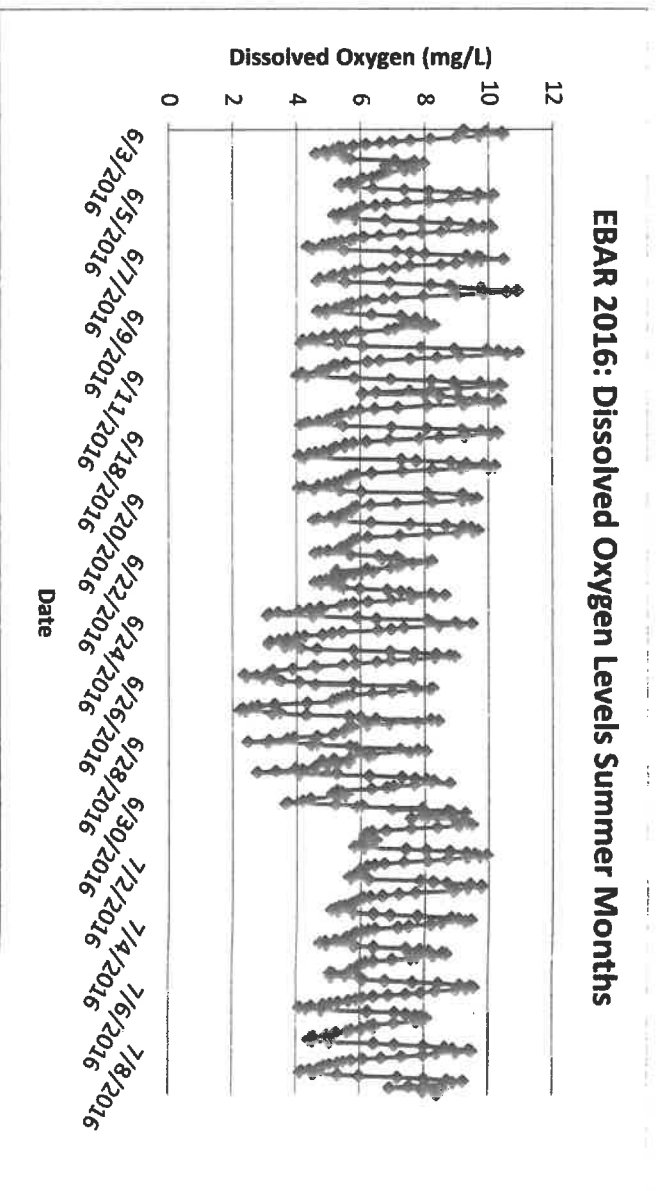
**Table 5.** Continuous DO monitoring locations in the DRSCW watersheds

Site ID	Stream Name	River Mile	Latitude	Longitude	Location
WBAD	W. Br. DuPage R.	29.9	41.9750	-88.1386	Arlington Drive
WBBR	W. Br. DuPage R.	11.7	41.825268	-88.179456	Butterfield Road
WBWD	W. Br. DuPage R.	11.1	41.82027	-88.17212	Downstream of Warrenville Grove Dam
EBAR	E. Br. DuPage R.	23.0	41.935171	-88.05843	Army Trail Road
EBCB	E. Br. DuPage R.	18.8	41.88510	-88.04110	Former Churchill Woods pool (Crescent Blvd)
EBHL	E. Br. DuPage R.	14.0	41.82570	-88.05316	Hidden Lake Preserve
EBHR	E. Br. DuPage R.	8.5	41.76800	-88.07160	Upstream Hobson Rd
EBWL	E. Br. DuPage R.	4.0	41.71230	-88.09160	Downstream of 2nd mine discharge
SCOM			41.941279	-87.983363	Oak Meadows Golf Course upstream of former Dam
SCBR	Salt Creek	16.1	41.864686	-87.95073	Butterfield Road
SCFW	Salt Creek	11.1	41.825493	-87.93158	Fullersburg Woods upstream of Dam
SCYR	Salt Creek	10.6	41.820552	-87.92658	York Road

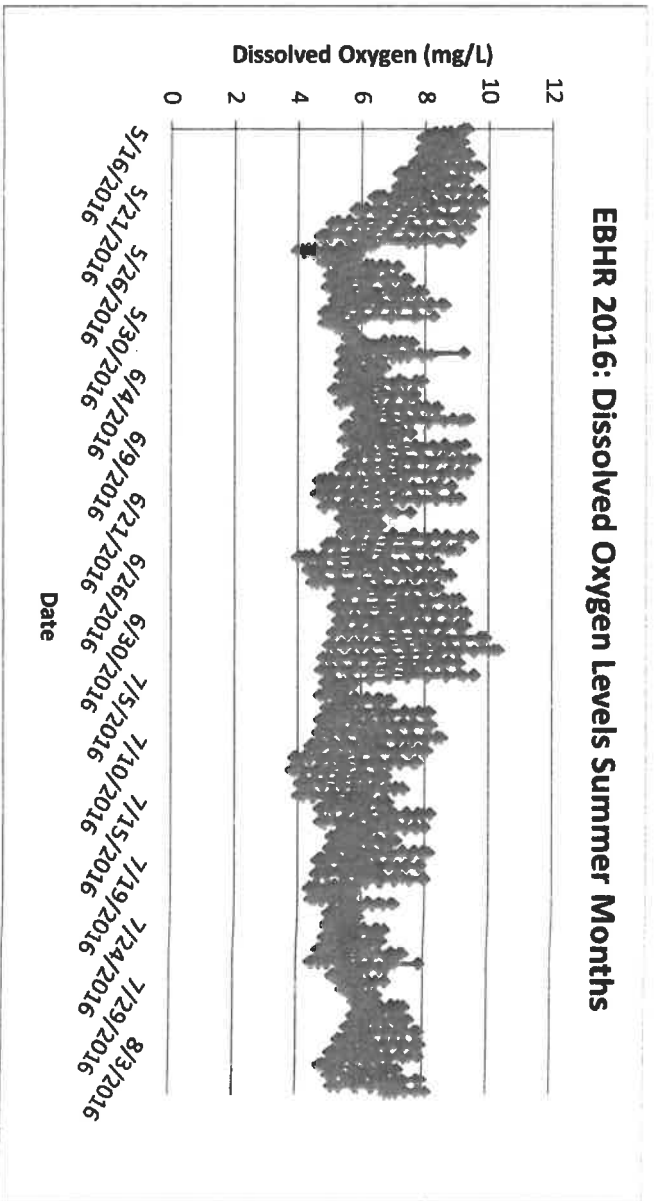
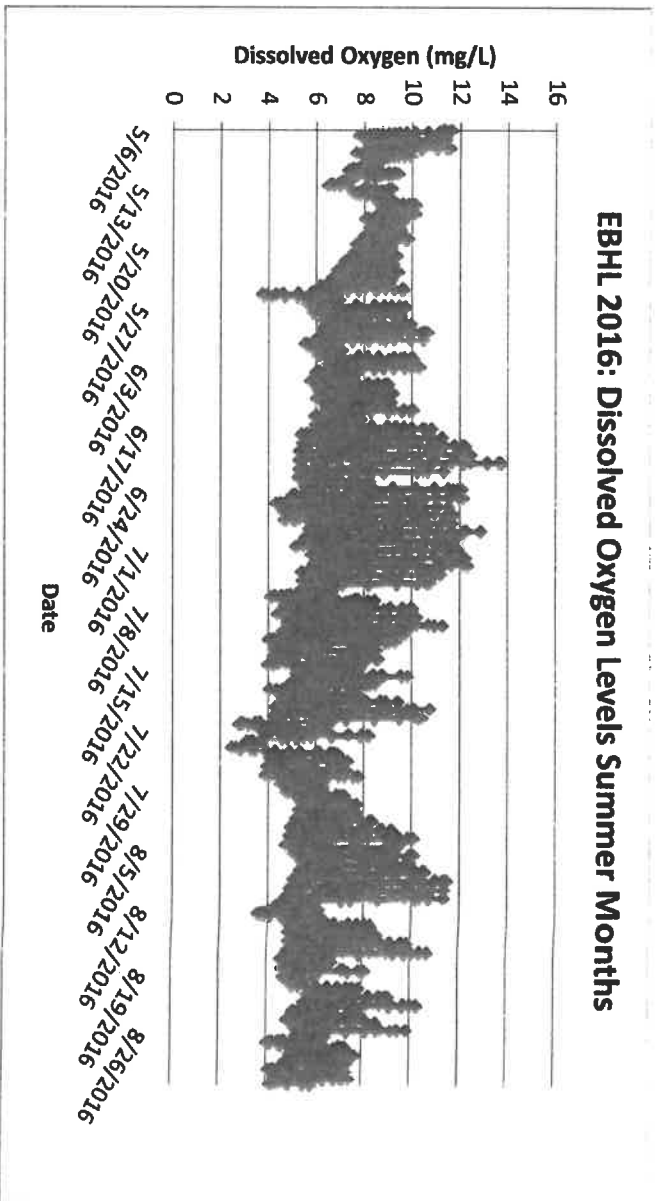
**Results**

Results of the continuous DO monitoring conducted in the summer of 2016 is included in Figures 20-24.

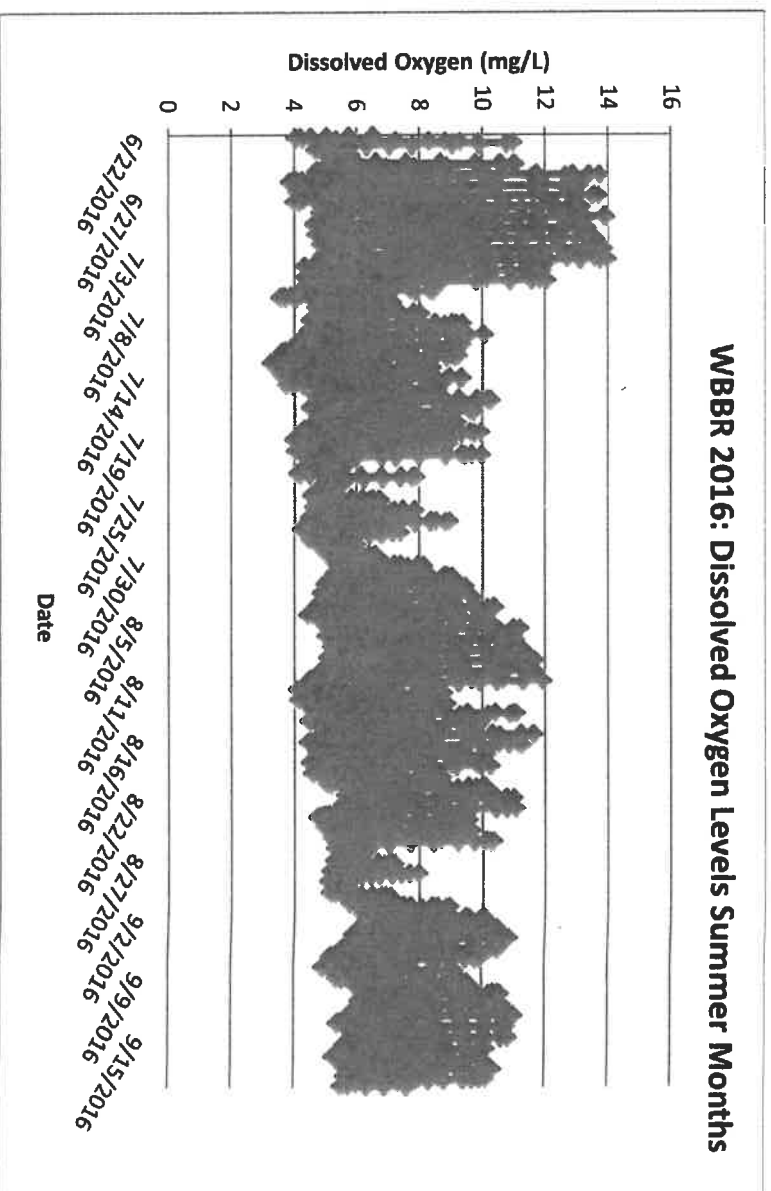
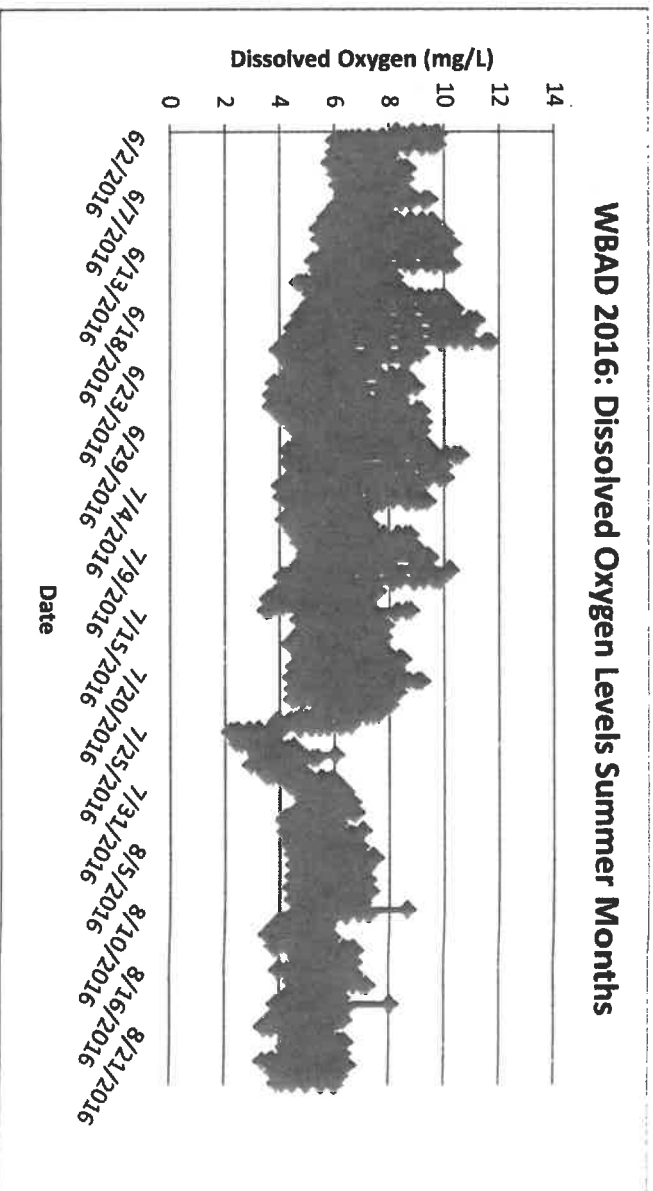
**Figure 20.** Dissolved Oxygen plots for East Branch DuPage River sites EBAR (top panel) and EBCB (lower panel).



**Figure 21.** Dissolved Oxygen plots for East Branch DuPage River sites EBHL (top panel) and EBHR (lower panel).



**Figure 22.** Dissolved Oxygen plots for West Branch DuPage River sites WBAD (top panel) and WBBR (lower panel).



**Figure 23.** Dissolved Oxygen plots for West Branch DuPage River sites WBWD (top panel) and WBMG (lower panel).

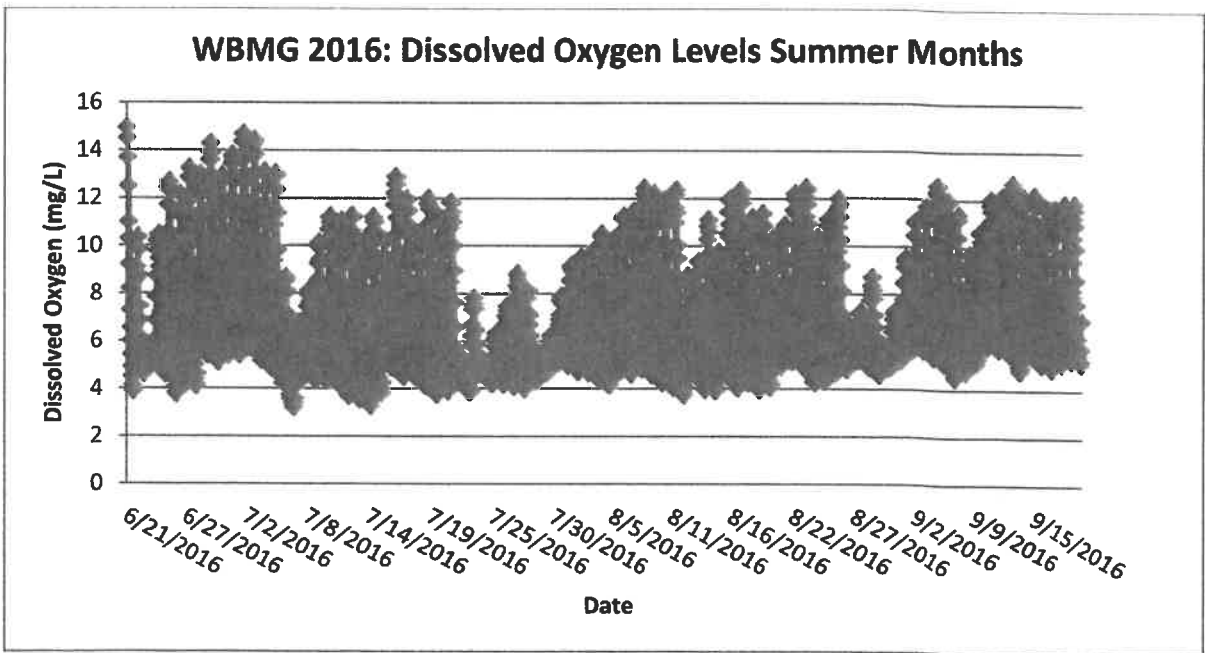
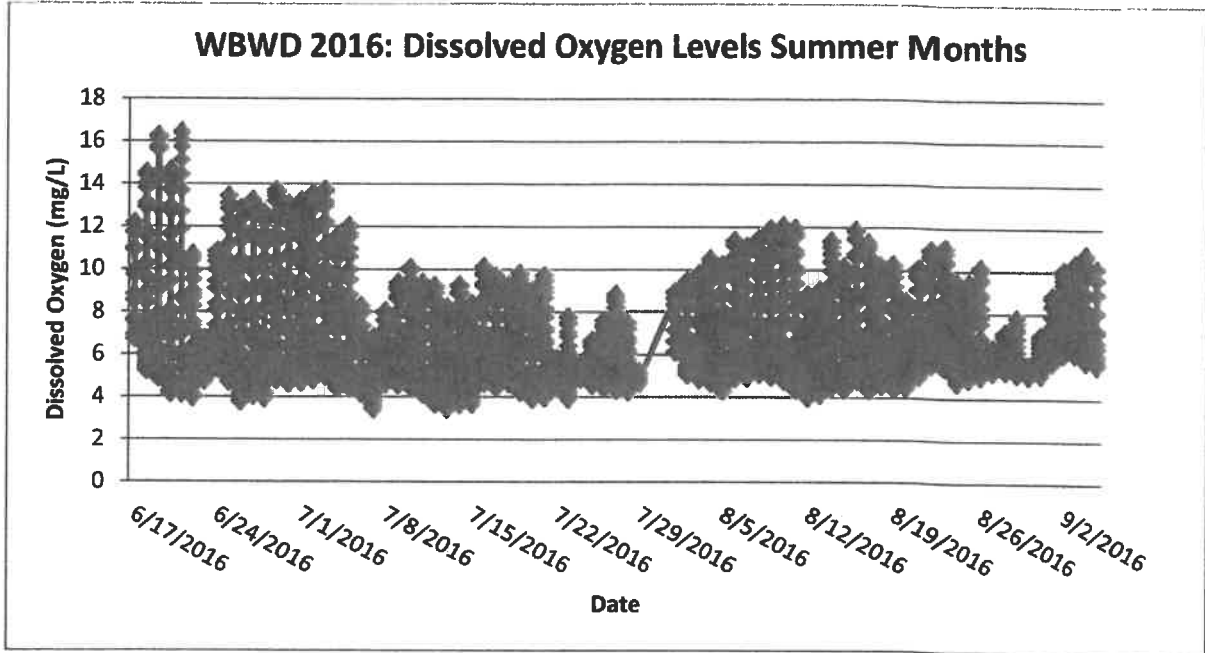
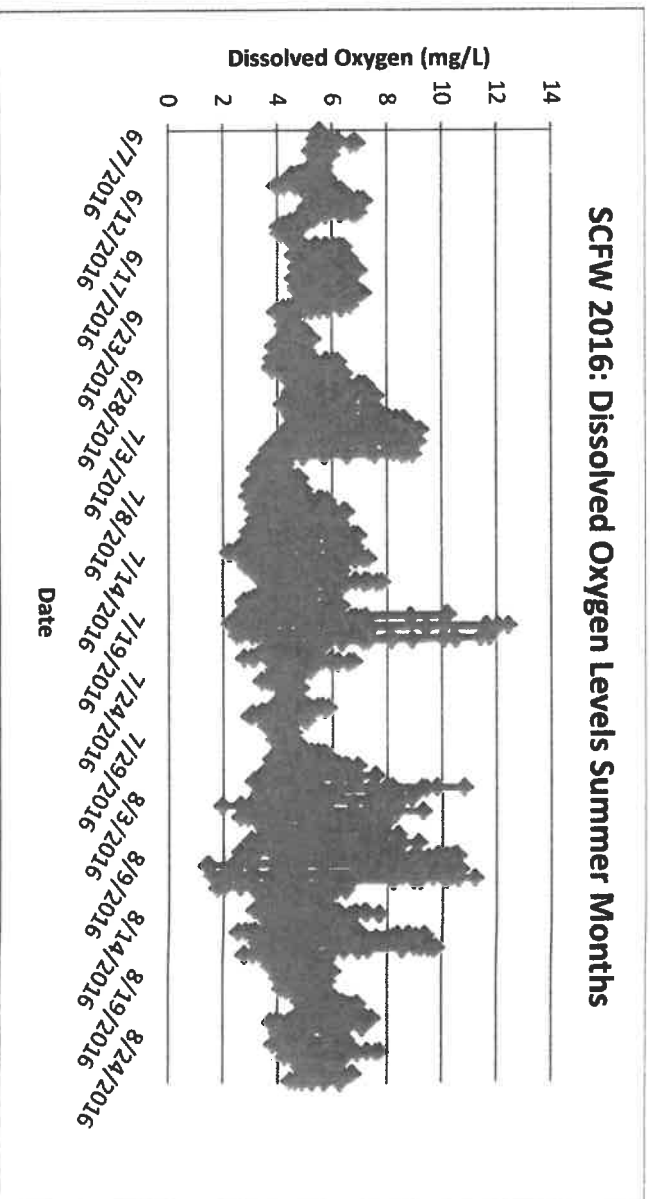
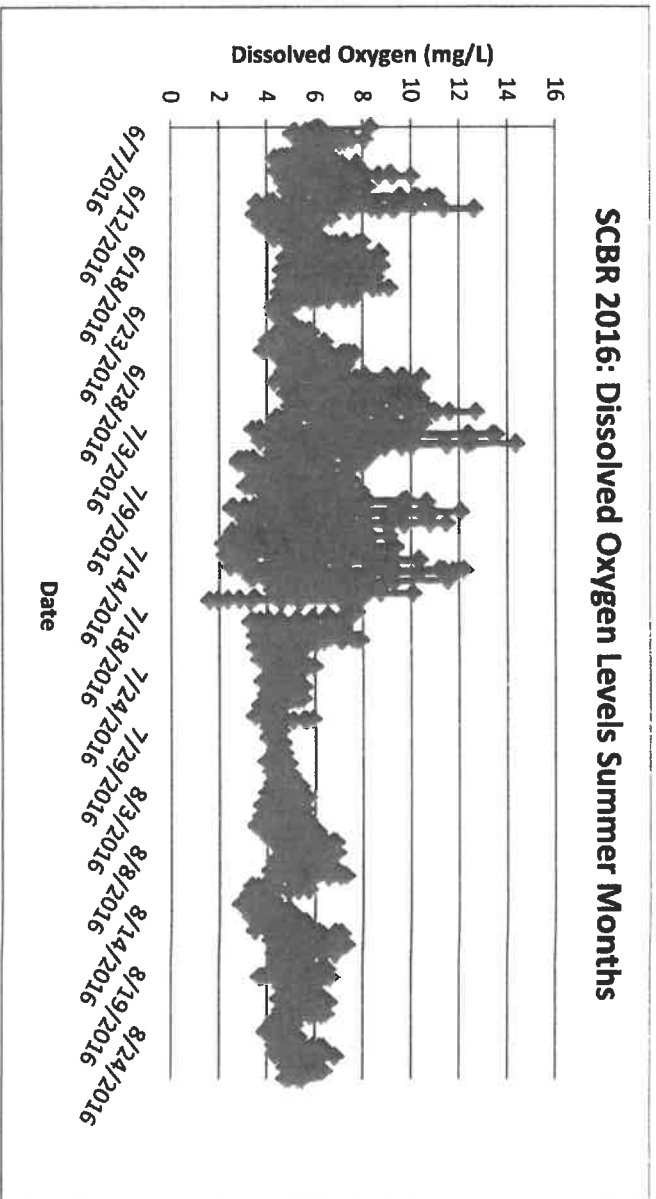


Figure 24. Dissolved Oxygen plots for Salt Creek sites SCBR (top panel) and SCFW (lower panel).



## **B. Recordkeeping**

All monitoring data including but not limited to laboratory results, chain of custody (COCs), and quality assurance protection plans (QAPP) will be maintained by the DRSCW for a minimum of 5 years after the expiration of the ILR40 (effective on 03/01/2016). The records are maintained at the DRSCW office located at The Conservation Foundation, 105404 Knock Knolls Road, Naperville, Illinois 60656 and are accessible to the IEPA for review.

## **C. Reporting**

The DRSCW is not responsible for preparing and submitting an Annual Report to the IEPA by the first day of June for each year that the permit is in effect. It is the responsibility of the individual ILR40 permit holders to utilize the information provided in this report to fulfill the reporting requirements outlined in the permit.