

# **BLOOMFIELD HILLS SCHOOLS STORM WATER MANAGEMENT PROGRAM**

BLOOMFIELD HILLS PS MS4-OAKLAND  
CERTIFICATE OF COVERAGE NO. MIS004048

APRIL 2018

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## **BLOOMFIELD HILLS SCHOOLS STORM WATER MANAGEMENT PROGRAM**

### **I. INTRODUCTION**

#### **A. BACKGROUND**

Storm water runoff from lands modified by human activities can harm surface waters, change natural hydrologic patterns, accelerate natural stream flows, destroy aquatic habitat, and elevate pollutant concentrations and loadings. Runoff, especially from urbanized areas, may contain high levels of contaminants, such as sediment, suspended solids, and chemicals from human activities.

In addition to pollutants being picked up by runoff, discharges from storm systems often include wastes and wastewater from non-storm water sources, referred to as illicit discharges. Municipal storm sewer systems are not designed to accept, process, or discharge such wastes. Sources include sanitary wastewater drains connected to the storm drain system; effluent from septic systems; car wash, laundry, and other industrial wastewaters; improper disposal of auto and household products (e.g., used motor oil and pesticides); and, spills from roadways.

The discharge of any pollutant to waters of the United States from a point source, unless the discharge is authorized by a permit. The permit process is governed by the National Pollutant Discharge Elimination System (NPDES).

#### **B. REGULATORY CONTEXT**

Bloomfield Hills Schools (BHS) has elected to obtain coverage under the NPDES General Permit. This Storm Water Management Program Plan covers the entire District and each of its facilities. Specifically, this Plan covers the following District facilities:

<b>BHS FACILITY</b>	<b>ADDRESS</b>
Bloomfield Hills High School	4200 Andover Road, Bloomfield Hills, MI
Fox Hills Elementary School	1661 Hunters Ridge Drive, Bloomfield Hills, MI
Bloomfield Hills Middle School	4200 W. Quarton Road, Bloomfield Hills, MI
West Hills Middle School	2601 Lone Pine Road, West Bloomfield Twp., MI
East Hills Middle School	2800 Kensington Road, Bloomfield Hills, MI
Transportation Facility	2780 Kensington Road, Bloomfield Hills, MI
Conant Elementary School	4100 W. Quarton Road, Bloomfield Twp., MI
Eastover Elementary School	1101 Westview Road, Bloomfield Hills, MI
Way Elementary School	765 W. Long Lake Road, Bloomfield Hills, MI
Lone Pine Elementary School	3100 Lone Pine Road, West Bloomfield Twp., MI
Wing Lake Elementary School	6490 Wing Lake Road, Bloomfield Hills, MI
Farm	1219 E. Square Lake Road, Bloomfield Hills, MI
International Academy	1020 E. Square Lake Road, Bloomfield Twp., MI
Doyle Center (Booth, Information Services)	7273 Wing Lake Road, Bloomfield Twp., MI
P.P.S. Office and Bloomfield Hills Youth Guidance (includes Recreation Building)	4174 Dublin, Bloomfield Twp., MI
P.P.S. Shop	2258 Franklin Rd., Bloomfield Hills, MI

BHS submitted a Storm Water Discharge Permit Application, or Notice of Intent (NOI), on July 30, 2008. The NOI included site plans/diagrams showing known discharge points, or outfalls, from each referenced BHS complex.

The MDEQ issued BHS a Certificate of Coverage under the General Permit Number MIS040000. The Certificate of Coverage Number is **MIS004048** and designated name is **Bloomfield Hill PS MS4-Oakland**.

### C. AUTHORIZED DISCHARGES, LEGAL AUTHORITY, AND ENFORCEMENT

The Permit authorizes the District to discharge storm water from the MS4 to waters of the state. Non-storm water discharges and illicit discharges are prohibited on District property. The following non-storm water discharges are not authorized by the Permit, but are not prohibited unless they are considered to be significant contributors of pollutants to the MS4:

- Water line flushing;
- Landscape and irrigation run-off;
- Rising groundwater and natural springs;
- Uncontaminated groundwater infiltration (as defined by 40 CFR 35.2005(20));
- Pumped groundwater (except for remedial groundwater effluent);
- Discharge from potable sources;
- Air conditioning condensate;
- Flows from riparian habitats and wetlands;
- Water from crawl spaces, basement, and foundation drains and sumps;
- Waters from non-commercial car washing;
- Residual street wash waters; and
- Emergency response firefighting activities.

BHS has the authority to regulate, inspect, and enforce site access, employee practices, and MS4 discharges as required by the Permit and this SWMP. BHS will be responsible for communicating and notifying District staff and their hired contractors of storm water violations. The District has the sole authority to enforce storm water practices on its property.

BHS does not have the authority to enforce storm water violations and illicit discharges of the public, and therefore will rely on local and state for enforcement response. The District will work closely with local police and the MDEQ to address illegal dumping and enforcement. Details of storm water incidents and response actions (e.g. names, locations, date of incident, date incident was resolved, response activities) shall be kept in the SWMP file.

### D. COORDINATION WITH LOCAL GOVERNMENT

The District will coordinate implementation of this plan with the respective local body of government within which the facilities are located, to the extent feasible. This coordination will entail identification of the watershed within which each complex is located, and notification of the implementation of this plan. See Section II.D for a listing of the government entities and watershed groups with which BHS will be coordinating. BHS will attempt to obtain and review the watershed management plans developed by local stakeholders for the District's receiving waters of the state and evaluate actions, if any, to take.

## E. RECEIVING WATERS IDENTIFICATION

The receiving waters from each complex based on the submittal of the NOI and review of the Oakland County Drain Commission (OCDC) maps for Bloomfield Township (Revised 7/24/2014), Pontiac Township (Revised 12/03/2015), and West Bloomfield Township (Revised 11/5/2015), are as follows:

BHS FACILITY	RECEIVING WATERS
Bloomfield Hills High School	Road Commission of Oakland County (RCOC) sewers in Andover Road; receiving stream is unknown, flow is believed to be to the south toward Adams Lake
Fox Hills Elementary School	Levinson Relief Drain (OCDC) to the Rouge River
Bloomfield Hills Middle School	Multiple outfalls to Road Commission of Oakland County (RCOC) along Wing Lake Road and Quarton Road; flow is to the east, to Telegraph Road, then south to Nicholls Relief Drain to River Rouge
West Hills Middle School	Unnamed swales and drains which discharge directly to Walnut Lake
East Hills Middle School	School discharges to Kensington Road (RCOC) and/or Hamlin Drain (OCDC); flows southeast along Kensington Road/railroad to River Rouge
Transportation Facility	Transportation facility discharges via oil/water separator to unknown drain (possibly RCOC in Bloomfield Crossing Subdivision #3) or Kensington Road (RCOC) and/or Hamlin Drain (OCDC)
Conant Elementary School	School discharges to Quarton Road (RCOC); flow is to the east, to Telegraph Road, then south to Nicholls Drain to River Rouge
Eastover Elementary School	On-site pond with no discharge
Way Elementary School	RCOC in Long Lake Road; receiving stream is unknown via Long Lake Road
Lone Pine Elementary School	Lone Pine Elementary discharges to Duck Lake pond. One direct connection to Blue Heron Drain (OCDC) which traverses the property; then flows to Walnut Lake which appears to discharge via other lakes and streams to River Rouge
Wing Lake Elementary School	RCOC in Wing Lake Road and ditch along Murfield to Nicholls Relief Drain to River Rouge
Farm	Unnamed tributary to the Rouge River; tributary traverses property
International Academy	Sheet flow only; no conveyances or outfalls
Doyle Center (Booth, Information Services)	RCOC drain along Wing Lake Road to Nicholls Drain (OCDC) which flows east to River Rouge
P.P.S. and Bloomfield Hills Youth Guidance (includes Recreation Building)	Several outfalls to RCOC sewers in Andover Road; flow is believed to be to the south toward Adams Lake; other outfall receiving streams are unknown; likely RCOC sewers that flow east toward Telegraph Road with eventual discharge to River Rouge
P.P.S. Shop	Several outfalls to RCOC sewers in Industrial Court and Franklin Road

## F. GOALS AND OBJECTIVES

The objective of development of a Storm Water Management Program by small MS4 owners/operators is to reduce pollutants in storm water to the maximum extent practicable (MEP) to protect water quality.

Implementation of a program that incorporates elements of the six minimum measures will help BHS achieve this goal.

MEP is a standard that establishes the level of pollutant reductions MS4 operators can achieve through implementation of a storm water management program. The strategies may be different for each MS4 and each facility because of unique local hydrologic, geologic, and water quality concerns in each location. Therefore, MEP has been considered in development of the general program, however, specific requirements may vary for implementation on a case-by-case basis for each BHS facility, as appropriate.

## II. PROGRAM ELEMENTS

### A. ILLICIT DISCHARGE ELIMINATION PROGRAM

#### 1. INTRODUCTION

An Illicit Discharge Elimination Program (IDEP) is a program designed to identify, prioritize, and minimize or eliminate illicit connections to the storm water system, and to prohibit future connections.

#### 2. DEFINITIONS

The following are key IDEP terms:

**Illicit discharge:** Any discharge (or seepage) to the separate storm water drainage system that is not composed entirely of storm water, uncontaminated groundwater, or one of a few other specifically defined exceptions.

**Illicit connection:** A physical connection to the separate storm water drainage system that primarily conveys illicit discharges into the system and/or is not authorized or permitted by the local authority.

#### 3. PERMIT REQUIREMENTS

There are five permit requirements for developing an IDEP. They include:

- A listing or map of known storm water point sources to be included in the Notice of Intent (NOI) for coverage under the General Permit.
- A schedule for providing an updated map of the location of each known storm water point source discharge. The drawing must include a description of the conveyances leading to these point source discharges and the respective receiving waters or drainage systems,
- A program to find, prioritize, and eliminate illicit connections, and minimize illicit discharges to the MS4 or waters of the state,
- A description of a program to minimize infiltration of seepage from sanitary sewers and septic systems into the MS4, and
- Legal authority to prohibit discharges into the drainage system.

#### 4. ILLICIT CONNECTION IDENTIFICATION

##### a. Notice of Intent

BHS submitted a Storm Water Discharge Permit Application, or Notice of Intent (NOI), on July 30, 2008. The NOI included site plans/diagrams showing known discharge points, or outfalls, from each referenced BHS complex.

## **b. Storm Water System Mapping**

BHS contracted SME to assist in the development and implementation of the IDEP. SME visited each facility to review existing drawings, interview maintenance staff, and conduct a walkover of the storm water system.

### **OUTFALL IDENTIFICATION**

SME field verified the outfalls identified in the NOI discovered during the site visits. Outfall identification included connections to other MS4s. Additionally, each outfall was field-located utilizing a global positioning system (GPS) unit for inclusion on the system maps prepared for each facility.

Following this initial step, where outfalls consist of connections to other MS4s, the down-gradient storm sewer operators will be contacted to verify the connections.

Identification of riparian lands that may be located on or traverses District property will also be made during this initial assessment.

### **CONVEYANCES DESCRIPTION**

Utilizing existing drawings, interviews with BHS maintenance staff, and field verification techniques, the storm water conveyance system at each facility will be compiled onto the site diagrams. Riparian lands will also be noted, if present.

## **c. Outfall Condition - Initial Visual Screening**

An initial visual screening was conducted to note and record outfall conditions, if accessible (e.g., those discharges which do not discharge to a down-gradient MS4). This was conducted during the initial site visit and field verification process.

## **d. Receiving Waters Condition - Initial Visual Screening**

An initial visual screening was conducted to note and record receiving water conditions, if the outfall discharges directly to a water body.

## **e. Questionnaires/Interviews/Training**

SME developed an initial awareness training outline and a questionnaire to survey District maintenance staff regarding operations and potential illicit discharges. Questionnaires will be provided to District custodial/maintenance staff following awareness training at the initial site visit of each complex. The questionnaire is included in Appendix A. Responses to the questionnaires will be used to help narrow the focus of the illicit connection identification process.

Additional training on recognition of potential illicit connections, discharges, and outfall indicator parameters will be developed and conducted as part of the PEP, or provided as necessary to custodial/maintenance staff.

## **f. Dry Weather Screening**

BHS is prioritizing dry weather screening as part of their IDEP. An initial dry weather visual screening of each identified outfall will be conducted for the District's outfalls to assist in the initial identification of potential illicit connections. The visual screening will be documented utilizing the Field Observation Checklist, attached as Appendix B. The screening will be conducted at all outfalls, including enclosed discharge points (i.e., connections to down-gradient MS4s) and outfalls to waters of the state. The screening will be performed at least 72 hours after a storm event.



### **g. Additional Assessment/ Confirmation of Illicit Discharges**

Based on the field observations from initial site visits, document review, interviews, initial outfall visual observations, and dry weather screening, gaps in conveyance mapping and potential illicit discharges/connections may be identified, which will require additional assessment/confirmation.

Additional assessment may involve tracer dye or smoke testing of storm water conveyances, or sampling of discharges and laboratory analysis of indicator parameters. All available visual methods, including flow monitoring (e.g., introduction of high water volume in specific conveyances in conjunction with visual observation of changes in flow), will be used prior to testing or sampling. Monitoring parameters, if required, will consist of pH, ammonia, fluoride, and surfactants/detergents.

If sources of storm water flow not attributable to rain water or permitted non-storm sources cannot be identified, tracer dye testing may be required. Tracer dye testing can only be conducted by permission of the MDEQ. If tracer dye testing is warranted, a letter will be submitted to MDEQ outlining the dye product to be used, the estimated concentration in receiving waters, and a date range within which testing will be conducted. Tracer dye testing will not commence until MDEQ authorization is received.

For potential illicit discharges that may result from a cross-connection with a sanitary wastewater source, confirmation biological sampling will be conducted. Laboratory analysis for E. coli will be conducted.

For potential illicit discharges that may result from a cross-connection with a process water, or non-rain water source not specifically exempted by the Permit, chemical sampling and analysis will be conducted. Analytical parameters will be dependent on the nature of the potential source. Appropriate indicator parameters will be selected on a case-by-case basis in order to confirm the illicit connection.

In the event a potential illicit discharge cannot be confirmed by a combination of the means described above, consideration will be given to utilizing a video assessment.

BHS will attempt to implement the visual and chemical sampling methods described above within 1-2 business days, but could possibly be delayed if the investigation will disrupt school operations or activities. This may result in the investigation being conducted after school hours, on weekends, or during summer months when school is not in session. Investigations requiring smoke, tracer dye testing, or video assessment will attempted to be conducted within 7 business days to required MDEQ approval and coordination of specialized equipment.

### **h. Prioritization of Potential Illicit Connections**

Once illicit connections, if any, are identified, a schedule will be developed to eliminate or minimize the connections. The illicit connections identified will be prioritized for elimination or minimization based on the level of impact to the surface water quality and the level of effort/fiscal feasibility to implement. Fiscal feasibility is determined by available funds and timing for budgeting implementation in the appropriate school year. Priority will be given to illicit connections/discharges that have the greatest potential to harm down-gradient aquatic habitats.

## **5. ILLICIT CONNECTION ELIMINATION/MINIMIZATION**

### **a. Implementation Plan**

Illicit connections that require major capital expenditures to eliminate or minimize the connection will be prioritized based on available funds and budgeted for implementation in subsequent school years. Since continuing discharges are non-permitted and subject to fines up to \$25,000 per day per violation, they will be prioritized for rapid elimination. If the removal of a connection or discharge is delayed because of weather, capital needs, or other critical factors, BHS will evaluate ways to collect and dispose of the source material so that the discharge is eliminated quickly. An implementation plan will be developed to

track the progress of elimination/minimization of confirmed illicit connections. The plan will allow for progress of elimination/minimization of confirmed illicit connections/discharges

In the event an illicit cross-connection to a sanitary line is identified, BHS is prepared to comply with the Sanitary Sewer Overflow (SSO) notification and annual reporting requirements for discharge of sewage from illicit sanitary cross-connections. Such an illicit connection will be given highest priority for elimination.

In the event a release of polluting materials from the facilities to the surface waters or ground waters of the state is observed, the Director of Facilities for BHS shall be notified immediately. The Director will then determine if the release shall be reported to the MDEQ District Office (ph: 586-753-3700) during business hours or the Pollution Emergency Alerting System (ph: 800-292-4706) during after hours per Part 5 Rules. A reportable release is defined as a release in excess of the reporting quantities in Part 5 Rules (see Appendix F).

## **b. Evaluation and Assessment Schedule**

The following outlines the completed activities and proposed schedule for implementation of the IDEP based on major tasks.

### **SYSTEM MAPPING OF OUTFALLS AND CONVEYANCES**

Preliminary outfall identification updates and field checks were completed in 2015 and 2016. Final outfall identification updates and field checks were made in 2017 at the P.P.S., and the Transportation Center. Final outfall identification updates and field checks at Bloomfield Hills High School will attempted to be made in summer 2018. Conveyances descriptions and system maps for each facility were completed in 2008 and revised in 2016. Outfalls and conveyances will be updated on storm sewer maps when affected by construction, damaged, or replaced.

The storm water system maps for each facility were developed and are available at the Bloomfield Hills Administrative Office at 4220 Andover Road, Bloomfield Township, Michigan.

### **INITIAL SCREENING OF OUTFALLS/RECEIVING WATERS**

Initial visual screening of each outfall and receiving waters was completed in 2007. Additional visual screening of select, higher priority outfalls (Transportation Center, direct discharges to lakes or ponds) and receiving waters were completed in 2015 through 2017.

### **INTERVIEWS/QUESTIONNAIRES/TRAINING**

Interviews with facility maintenance staff, distribution of the questionnaires, and initial awareness training will be completed each summer at the storm water awareness/good housekeeping training session.

### **DRY WEATHER SCREENING**

In April 2012, Bloomfield Hills Public Schools and SME conducted a full round of dry weather screening of the District's outfalls. In September 2015, SME performed a full round of dry weather screening at the newly constructed Bloomfield Hills High School.

To date, the dry weather screening identified flow from unknown (potentially non-storm water) sources at the following locations:

- Andover High School (now Bloomfield Hills High School)
- Bloomfield Hills Middle School
- Doyle Center
- East Hills
- Fox Hills (Model High School)

Note, Bloomfield Hills Middle School and West Hills Middle School were identified in 2008 as potential illicit connections. However, in 2012, no discharge was encountered at West Hills. In addition, the District capped and abandoned a sewer system at East Hills in 2015. The above listed locations were planned to be further evaluated in 2014/2015; however, the new high school construction project required significant time and resources the last two years and the assessment was not performed. Therefore, further illicit connection assessment is now planned throughout the remainder of the permit cycle (see upcoming activities). If the unknown sources cannot be identified by visual assessment, then dye-tracing may need to be conducted upon approval by MDEQ.

Additional dry weather screening of one half of the facilities will be completed within the first half of the permit cycle, and the remaining one half will be completed by the end of the permit cycle. The goal of the dry weather screening will be to evaluate the progress in elimination or minimization of illicit connections/discharges (see below).

#### **ADDITIONAL ASSESSMENT/CONFIRMATION/PRIORITIZATION**

Additional assessment of potential illicit discharges/connections will be phased in over the duration of the permit. One half of the facilities will be assessed in the first half of the permit cycle, and the other half will be assessed in the second half of the permit cycle. The facilities will be grouped based on the gravity of the potential illicit discharge/connection determined during the initial visual assessment and dry weather screening tasks. Video confirmation, if needed, will be scheduled for the following school year on a case-by-case basis.

#### **TMDL MONITORING/SAMPLING**

Part I.A.4 of the General Permit requires monitoring of the following Total Maximum Daily Loads (TMDLs) and pollutants:

<u><b>Name of TMDL</b></u>	<u><b>Pollutant of Concern</b></u>
Rouge River	Flow, Sedimentation/Siltation (Biota)
Rouge River	E. coli

BMPs were selected in order to make progress toward reducing the TMDL pollutant load (E. coli, flow, sedimentation and siltation [biota]). BMPs include:

- BHS will use its website to provide the public with information regarding pet waste (SEMCOG links). Additionally, SEMCOG pet waste posters may be placed at various school buildings. Posters will attempt to inform public of harmful E. coli introduced into waters of the state from pet waste and promote prompt cleanup and proper disposal.
- BHS will continue to prohibit, inspect, monitor, and work towards eliminating any illicit discharges; visually inspect storm water structural controls, sweep all parking lots and drives once per year, and remove excessive sediments from removal systems to maintain performance.
- BHS will continue to limit its use of fertilizer at all facilities to athletic areas and/or more visible areas designated as "curb appeal". Fertilizer will be applied per manufacturers instructions and avoided when rain is forecast.

BMPs were identified in December 2016 at the time of permit re-application. BMPs were sourced from DEQ staff, documents available on the DEQ MS4 resources website, and BMPs being implemented from other nearby school district MS4s. BMPs were identified and prioritized based off their feasibility and perceived effectiveness towards reducing TMDL contaminant load at high priority BHS facilities (i.e. those that demonstrate pet and farm animal waste, sediment accumulation at catch basins, high volume of parked vehicles/traffic, etc.). In order to review the effectiveness of BMPs, BHS will take at least two representative samples of a storm water discharge from the high priority discharge points discharging to the Rouge River during representative rainfall events (i.e. >0.25" and <1.5") throughout the permit cycle

(Years 2 and 4 will be selected for sampling if possible). The samples will be analyzed for total E. coli and Biota. The sampling locations are:

Outfall Name	Location	Coordinates	Comment
PPS 001	Physical Plant Services	42.60594° N, 83.28858° W	Salt/chemical storage
EHMS 003	Transportation Center	42.59961° N, 83.24269° W	Vehicle maintenance/fuel
LPE 002	Lone Pine Elementary	42.57428° N, 83.34183° W	Sediment/lake
AHS 002	Bloomfield Hills High School	42.57928° N, 83.28472° W	High vehicle traffic
BHMS 001	Bloomfield Hills Middle School	42.55881° N, 83.29036° W	High vehicle traffic
EHMS 002	East Hills Middle School	42.59722° N, 83.24531° W	High vehicle traffic
WHMS 002	West Hills Middle School	42.56486° N, 83.333° W	High vehicle traffic

The discharge points listed above were selected as high priority TMDL sampling locations because of their proximity to operations with a high potential to generate pollutants that could impair waters of the state. These include chemical and salt storage at the Physical Plant Services shop, fuel storage, dispensing, and vehicle maintenance at the Transportation Center, the proximity of Lone Pine Elementary to a high visibility lake, and a higher volume of vehicle traffic at Bloomfield Hills High School, Bloomfield Hills Middle School, and East and West Hills Middle Schools. BHS will evaluate the TMDL BMP effectiveness by comparing trends in TMDL sampling results over time, . Existing BMPs will be modified or new BMPs will be introduced following the revision for effectiveness and before the next permit cycle or TMDL sampling event. TMDL sampling results will be published on the BHS website, in the District newsletter, and in Progress Reports.

#### **SCHEDULE FOR ELIMINATION/MINIMIZATION**

Once potential illicit discharges/connections are confirmed, the connections/discharges, if feasible, will be eliminated within 30 days of discovery. Where elimination is impossible, measures to minimize the discharges will be implemented on the same schedule.

#### **c. Measurable Goals**

The following measurable goals will be used to assess the progress of IDEP implementation:

- Continue additional outfall visual inspection and/or tracer dye testing of outfalls at Bloomfield Hills High School, Bloomfield Hills Middle School, East Hills, and Fox Hills
- Perform storm water repair and modification projects in the event illicit connections are found
- Number of illicit discharges/connections eliminated versus number found
- Number of illegal dumping/spill incidents and District's response time to investigate
- Ability to meet the IDEP proposed schedule
- Number of personnel trained each year
- Number of new hires trained within first year
- Written procedure to monitor new construction to prevent cross connections
- Dry weather flow monitoring
  - Selection of indicator parameters to assess quality of discharge
  - Additional assessment as appropriate
- Ambient water quality monitoring/Estimated pollutant reductions for outfalls receiving non-storm water discharges
  - Quantitative evaluation of discharge locations based on inspection and E. coli.
  - Visual inspection of sediment/silt conditions (biota).

- Prioritization of locations requiring additional sampling.

#### **d. Fieldwork Manual/Checklists**

SME has developed a field checklist for conducting visual assessments. A similar checklist will be developed for conducting dry weather screening and ambient water quality monitoring. The checklist will include biological and chemical sampling and analysis guidance. SME has also developed Tracer Dye Testing Standard Operating Guidelines. The field checklist and tracer dye guidelines are included in Appendix B.

## **B. PUBLIC EDUCATION PROGRAM**

### **1. INTRODUCTION**

The purpose of the Public Education Program (PEP) is to promote, publicize, and facilitate education for the purpose of encouraging the “public,” as defined by the District, to reduce the discharge of pollutants in storm water to the maximum extent practicable (MEP).

### **2. PERMIT REQUIREMENTS**

The PEP permit requirements include educating the “public” in the following categories, as appropriate to each facility, the staff mix, and the audience:

- Hazards associated with illicit discharges and improper waste disposal;
- Potentially impacted water body at each location and stewardship of the watershed;
- Good housekeeping practices including lawn care, pesticide and herbicide application, vehicle, pavement, and equipment cleaning (power washing), de-icing;
- Availability and location of facilities for the collection and disposal of household hazardous wastes, travel trailer sanitary waste, chemicals, grass clippings, leaf litter, animal wastes, and motor vehicle fluids; and
- Other maintenance activities as may apply to each facility, such as proper septic system care, management of riparian lands, the role of vegetation in watershed maintenance, and the benefits of green infrastructure
- Identify and educate commercial, industrial, and institutional entities likely to contribute pollutants to storm water runoff.

### **3. DEFINITION OF PUBLIC**

For purposes of this plan, BHS has defined public as the Board of Education (Board), school District employees, District students, parents/guardians of District students, and outside contractors providing services to BHS.

### **4. AWARENESS PROGRAMS**

A training program, utilizing the MDEQ-sponsored Storm Water Savvy promotional and training materials was developed for this PEP. BHS management personnel will be responsible to disseminate appropriate information to employees whose job functions are directly related to activities that have the potential to affect storm water.

An awareness program was developed to notify BHS staff and contractors involved in planning and performing construction activities of their responsibilities to adhere to the Storm Water Management

Program requirements. The content of the various training/awareness materials was geared specifically to each audience, but will cover the major categories outlined in Section 2 above. The District's contract language includes provisions for complying with applicable regulations and permits, including Michigan's Soil Erosion and Sediment Control rule (Part 91 of Act 451). The District plans to conduct training on storm water awareness, good housekeeping procedures, and pollution prevention practices for its maintenance and janitorial staff annually each summer.

In addition, BHS will continue to publish storm water awareness articles and information in their bimonthly newsletter titled Bloomfield Hills Schools Community Connections. For example, notices are published notifying BHS employees, parents, and students of the implementation of the new storm water program for BHS. In addition, the District maintains a web site at [bloomfield.org](http://bloomfield.org) that will be used to post pertinent information for the students and their parents/guardians. Notices are periodically provided to the public in the Bloomfield Hills Schools newsletter regarding the storm water program.

In November 2015, the District and Township hosted a MDEQ MS4 training work shop open to other MS4 permittees.

The E. L. Johnson Nature Center and surrounding areas are used by the District to instruct students, as well as the public, on environmental issues affecting the Rouge River Watershed. Various elementary, middle, and high school classes get real "field" experience at the nature center. The class content, which varies based on grade level, ranges from discussing general watershed properties to conducting actual field measurements (pH, DO, etc.) of a Rouge River tributary.

Following are some of the applicable course descriptions offered to students since 2008:

- **The Eastover Initiative:** Eastover Elementary School, in collaboration with Lawrence Technological University, has implemented sustainability education. Through this initiative Eastover will improve teaching and learning using interdisciplinary classroom units, community based projects, and an inquiry based curriculum. The integrated curriculum will support the following areas: natural resources, food systems, land use, sustainable communities, renewable energy, urban revitalization, and green architecture.
- **MHS Environmental Science River Ecology:** This course will give students the opportunity to learn how stream preservation and conservation play a role in the sustainability of our surrounding ecosystems. Emphasis will be placed on organisms living in Michigan streams and the impact our community has on local watersheds. Students will also study an issue related to the health of the watershed through a lab investigation and further community action.
- **Environmental Science:** This full-year course emphasizes people and their relationship with earth's many different ecosystems. Topics included in this course will focus upon fossil energy, alternate energy, pollution, resources, population, and other related local and national problems.
- **Environmental Field Research:** This field course is intended to offer highly motivated students who are interested in science careers such as environmental protection, wildlife biology, forestry, or research, an opportunity to conduct field research projects. Local field studies will focus on water quality, habitat, and wildlife of the E. L. Johnson Nature Center and surrounding area. This multidisciplinary science program combines team projects with independent study. Preparing written research papers, presenting oral reports, and monitoring our local flora and fauna are the main components of the program.

In addition, the following Public Education initiatives take place within BHS:

- The Nature Center partners with Bloomfield Township to host a "Rouge Rescue" site every spring here at our nature center. Many volunteers help with habitat and trail projects that protect and enhance the local Rouge tributary that crosses our property.



- The Nature Center maintains a native plant "grow zone" demonstration area open to the public that slows run-off from our building and encourages visitors to try similar projects on their own property. Rouge watershed signage is part of the display.
- The Nature Center maintains a demonstration "buffer strip" next to our pond that promotes use of native plants to encourage wildlife and slow runoff into lakes. Signage is also included.
- The Nature Center often has educational displays in the Visitor Center that focus on Great Lakes and more locally the Rouge River water quality.
- All of BHSD 6th graders and many high school students monitor the macro-invertebrates of the Rouge as part of a water quality study held at the Nature Center.
- Several of our schools have participated in the spring "Rouge Monitoring Day" over the years.

## 5. SCHEDULE FOR IMPLEMENTATION

Initial awareness training of maintenance staff will be conducted within 90 days of submittal of the Plan or upon MDEQ approval. Awareness training for contractor and administrative staff (including the Board), will be developed and implemented within the first year of the permit cycle.

Notification to students/parents has been made periodically in the Bloomfield Hills Schools Community Connections newsletter and, as necessary, on the Bloomfield Hills Schools web site located at [www.bloomfield.org](http://www.bloomfield.org). Periodic information/surveys will be included in the newsletter or mailed.

## 6. EVALUATION/MEASURABLE GOALS

The following measurable goals will be used to assess the progress of PEP implementation:

- Periodic survey of the various groups comprising the District's definition of "public" including maintenance/janitorial, administration, contractors, and students/parents to assess behavior changes after awareness training/information dissemination.
- Track attendance at training for maintenance/janitorial/administrative staff
- Continue to hold classes and events at the E.L. Johnson Nature Center to promote stewardship in the watershed and protecting storm water
- Collect teacher feedback on effectiveness of the educational programs described above.

Conducting classes, tracking attendance, and evaluating awareness are high priority PEP activities for BHS.

## C. POLLUTION PREVENTION/GOOD HOUSEKEEPING PROGRAM

### 1. INTRODUCTION

BHS facility operations cover a wide variety of activities and land uses that are potential sources of storm water pollutants. These include roadway and parking lot maintenance, salting, transportation and equipment garages, open ditches and storm sewers, turf and landscaping activities, and waste handling and disposal activities. The purpose of a comprehensive pollution prevention and good housekeeping program is to document and evaluate current practices, identify opportunities for improvement, and help effect reduction of pollutants entering the storm water system from improper disposal of wastes, spills, and operations and maintenance activities.

Bloomfield Hills Schools submitted a list of storm water discharge point sources to MDEQ with its Storm Water Discharge Permit Application (dated July 30, 2008 and revised in 2016). New point source discharges have been introduced through the expansion of BHS facilities and are included in this SWMP.

## 2. PERMIT REQUIREMENTS

The permit requires development, implementation, and compliance with a program of operation and maintenance BMPs with the ultimate goal of preventing or reducing pollutant runoff from operations to the maximum extent practicable. BHS continues to use good housekeeping procedures including storing chemicals and polluting materials indoors, and limiting usage of fertilizers. This includes ensuring staff:

- Properly handle wastes, recyclables, chemicals (including salt for de-icing, and equipment used on the job;
- Maintain a clean work area;
- Regularly maintain storm water controls; and,
- Identify and report various storm water pollution sources, including illicit discharges, malfunctioning post-construction controls, and poor soil erosion and sedimentation controls at construction sites.

This requirement must be accomplished by providing staff with:

- Guidance or operation manuals;
- Employee training and testing; and
- Equipment and other resources necessary to prevent and reduce storm water pollution.

The permit requires the development and implementation of BMPs covering structural and administrative storm water controls, roadway construction and maintenance activities, fleet maintenance activities, and, turf management (pesticides and fertilizers).

## 3. OPERATION AND MAINTENANCE

Assessments were previously completed to evaluate and document current Operation and Maintenance (O&M) activities, BMPs, procedures, or policies, as appropriate. The assessment will be conducted annually during staff storm water awareness and good housekeeping training sessions, staff interviews, and activities, procedures, or policies will be reviewed to determine whether modifications are required in practices to help improve the quality of storm water discharge and to guide the implementation of training outlined in the PEP. The results of the assessment and modifications made to activities, procedures, or policies, were documented in previous annual reports.

BHS continues to implement the Pollution Prevention and Good Housekeeping Practices outlined in the Storm Water Management Program. The following are examples of existing O&M activities in place at BHS and potential BMP modifications to those practices:

### a. Lawn Chemical Management

Lawn care is managed and conducted by BHS. Lawn chemicals are only applied by trained and certified staff. The school District applies Weed & Feed to lawns three times per year in accordance with the manufacturer's instructions. Lawn chemicals are not applied when rain is forecast. A questionnaire will be used to obtain current information on fertilizer, pesticide and herbicide application from maintenance staff at each location. The questionnaires will be compiled and an assessment made as to whether



modifications can be made to improve the quality of storm water discharge. A copy of the questionnaire is included in Appendix C.

#### **b. Pest Management**

BHS has an Integrated Pest Management Plan (IPM) required by the Michigan Department of Public Health. Bloomfield Hills Schools contracts Rose Pest Solutions for pest management services. Pesticides were applied to interior areas in accordance with the District's IPM Plan. Pesticides were not applied on the exterior grounds with the exception of bee/wasp sprays at playgrounds when needed.

#### **c. Catch Basin Management**

BHS has committed to annual inspections of all catch basins at the time of annual street sweeping activities (see below). BHS will also assign high priority to those catch basins located in the high priority sweeping areas to be assessed and identified below. In addition to the annual inspections, BHS grounds and maintenance personnel will note catch basins that appear to have sediment accumulating near them and schedule them to be cleaned. In addition, Bloomfield Township will conduct catch basin inspections throughout the District and inform BHS if they observe catch basins that need cleaning. High priority catch basins are anticipated to be in high traffic areas, such as the Transportation Center and Bloomfield Hills High School. In addition, an evaluation into retrofitting catch basins with inserts will be made (see Post-Construction Storm Water Runoff Control). Since 2012, Bloomfield Hills Schools continued its service contract with Tri-County, a licensed waste hauling company, to clean out the storm water catch basins, septic tank system, and oil-water separator (pumped out on an annual basis). Tri-County is notified when catch basins are observed to be 50% filled with sediments. Other structural storm water controls, such as swales, are repaired if or when heavy erosion is observed. These structural storm water controls are observed throughout the permit cycle during field reconnaissance for dry weather screening, TMDL sampling, etc.

#### **d. Road/Parking Lot Maintenance**

BHS conducts limited maintenance on its roads and parking lots. Major reconstruction is contracted out. BHS has committed to annual street sweeping of its roads and parking lots throughout the District. Following the annual street sweeping event, an assessment will be made for additional sweeping of areas that are observed to accumulate sediment more quickly than other areas. These higher priority areas could potentially be near the Transportation Center or Bloomfield Hills High School, where there is increased vehicular traffic. Seasonal leaves and other debris are managed by BHS grounds and maintenance staff. An assessment of activities associated with maintenance as well as street cleaning activities on BHS managed roads and parking lots will be assessed to determine whether either implementation of street cleaning, or an increased frequency, is feasible.

#### **e. Salt and Sand/De-Icing**

Bloomfield Hills Schools stores 40-pound bags of salt at the P.P.S. building. Purchased salt is stored inside the building, and shielded from rain and nearby drains. Salt for road and parking lot de-icing is obtained from Bloomfield Hills Township and is applied by Bloomfield Hills Schools grounds staff utilizing truck-mounted calibrated spreaders. The District performed an assessment of the storage and application practices to determine whether reductions in quantities or substitution of materials used. BHS determined that pre-wetting material is not feasible. Salt application is limited to high traffic vehicle and pedestrian areas. The process of relocating plowed snow piles to vegetated areas to melt will be considered. The Street Sweeping, Catch Basin Cleaning, and Salt Application SOP (Appendix E) provides best management practices for salt application activities.

#### **f. Fleet Maintenance**

BHS operates a fleet of buses and service vehicles. Maintenance on the bus fleet is conducted off-site at Uncle Ed's maintenance shop. The bus washing facility is an indoor facility that drains to the sanitary sewer system. Maintenance activities involving oil or other chemicals are conducted inside, in areas located away from drains.

Continued assessments will be made to determine current maintenance practices and whether improvements can be made to reduce potential impact on storm water discharge. Areas to be evaluated will include hazardous materials storage, used oil management, vehicle washing, and spill prevention. In addition, the District operates a vehicle wash unit. This operation will also be included in the assessment and an evaluation made of potential impact to the storm system.

#### **g. Trash Dumpster Management**

Bloomfield Hills Schools established a contract with Capital Waste, a licensed waste hauling company, to empty the trash dumpsters on a daily basis. An evaluation of solid waste management practices, specifically dumpster handling, including containment or proximity to catch basins, will be conducted. Based on the assessment, modifications may be made to dumpster location/management. The evaluation will also assess the potential for impact to the storm water system from other sources of trash.

#### **h. Swimming Pool Maintenance**

BHS operates one swimming pool in Bloomfield Hills High School that discharges to the sanitary sewer system only in the event of an emergency (i.e. broken glass, light repair, etc.). Bloomfield Hills Township is notified in the event of such emergency so that they can be prepared for an increase in discharge volume and potential increase in pool-related chemicals. In addition, the newly designed pool utilizes ultraviolet light treatment to help reduce chemical usage.

#### **i. Septic System Management**

BHS operates a septic system at the farm. An evaluation will be made of the management of the system to assess potential for impact to the storm water system.

#### **j. Floor Maintenance**

Floor scrubber/stripper and carpet cleaning wash water is collected and discharged to the sanitary sewer via janitorial slop sinks.

#### **k. Sports Field Line Painting Equipment Cleaning**

The District maintains sports fields and sports field line painting equipment cleaning is conducted. The District will prohibit cleaning discharges to exterior storm drains; and will instruct staff on the appropriate cleaning location and procedures. Furthermore, the District has been phasing out athletic fields that require line painting and moving towards artificial turf.

### **4. ADDITIONAL BMPS**

In addition to implementing improvements to the existing management practices outlined above, the following BMPs for implementation at BHS:

- Overall District hazardous materials management and spill prevention, including material storage coverings
- Labeling of storm sewer structures installed after March 10, 2004 as "flows to stream"

## 5. STAFF AND CONTRACTOR TRAINING PROGRAMS

In order to effectively implement improvements to existing operations or implement additional BMPs, specific BMP information will be incorporated into the PEP staff training and awareness information dissemination. Training of facility and maintenance personnel will be performed on an annual basis. Following the training, new hires for maintenance and grounds operations will be provided a pollution prevention/best management practices guidance document to review and sign. An outline of training topics for the maintenance/janitorial/grounds staff is included in Appendix D.

The District will perform periodic “field audits” during maintenance, operations, and subcontractor activities that involve vehicle chemicals, fertilizers, salts, sediment management, or other potential pollutants. The purpose of the inspections is to assess the general field procedures and personnel training and qualifications. For example, the District may ask a subcontracted fertilizing company for proof of applicators license. Another example, the District may assess vehicle maintenance activities and chemical management and disposal practices. A field report will be created and kept on file. The District will promptly take action and resolve any violation or detrimental procedure.

## 6. IMPLEMENTATION SCHEDULE

BHS has conducted facility assessments (Appendix A) and interviews with grounds and maintenance personnel, and utilized discharge observation and facility checklists (Appendix B) to determine the materials stored/used, operations at each facility, and quality of storm water discharge. In general, facilities with chemical storage/use, vehicle fueling/maintenance, and/or farm activities are considered high priority sites. Facilities that have at least one storm water discharge to a pond or lake are considered medium priority sites. Sites that do not have the high risk operations listed above, and do not have storm water discharges to ponds or lakes, are considered low priority. For the operations taking place at these low and medium priority sites, the BMPs being implemented are provided in section IIC, 3.a-k. The effectiveness of the BMPs at each facility will be evaluated at least once throughout the permit cycle. BMPs will be ranked by potential for impact to the storm water system. Priority will be given to improving BMPs with the highest potential for improving down-gradient ambient water quality. Any observed deficiencies and improvements to BMPs will be communicated to the District within 30 days for implementation.

## 7. EVALUATION/MEASURABLE GOALS

The following measurable goals will be used to assess the progress of Pollution Prevention/Good Housekeeping Program implementation:

- BHS will implement a storm sewer maintenance program throughout the 5 year permit cycle. Sediment and other material removed from the cleaning activities will be appropriately disposed and manifested. Documentation of volumes of sediment removed will be tracked.
- BHS will label at least 50% of remaining catch basin drains located in high priority areas (e.g. near P.P.S., the Transportation Center, and other chemical storage locations) with “No Dumping, Drains to Surface Waters” by summer 2018
- BHS will perform storm water awareness and pollution prevention training for personnel involved in facility maintenance, landscaping, and janitorial maintenance during the summer annually.
- Ambient water quality monitoring program of BHS PSDs (see IDEP)
- Tracking percentage of existing BMPs upgraded or improved
- Track attendance at training sessions (see PEP)
- Track volume of solids removed from catch basins

## **D. PUBLIC INVOLVEMENT/PARTICIPATION**

### **1. INTRODUCTION**

BHS would prefer to minimize contact with the general public at large, opting to correspond with larger governmental groups or organizations for select issues that may affect the general public or the local watershed (e.g. OCDRC and RCOC). BHS prefers to communicate using written correspondence, notices, or distribution of plans.

### **2. PERMIT REQUIREMENTS**

The permit encourages public input in all aspects of the storm water management program. Minimum actions required include following public notice requirements, as appropriate, when notifying the public that a storm water management program must be implemented. Since BHS has narrowly defined public for purposes of implementing its storm water management plan, public notice, as outlined in the permit, is not required. However, BHS does intend to notify appropriate local governments surrounding District facilities and local watershed groups of the availability of the plan for review.

The second requirement includes participation in a citizen advisory committee for the purpose of encouraging public involvement in all aspects of the storm water management program. Again, as the storm water management program is a captive program, input from outside BHS will not be required, however, input from BHS management and staff will be encouraged as the program is implemented.

Finally, cooperation with local stream or watershed protection organizations is encouraged. This involvement can include:

- Informing the organizations of activities under the storm water management program;
- Providing copies of the Plan and requesting input on the Plan;
- Seeking volunteer assistance including water quality monitoring assistance; and,
- Seeking ways to meet general permit requirements by assisting the local organizations with their ongoing programs for water resource protection and enhancement.

As discussed above, BHS has elected to communicate with the local organizations using written correspondence, notices, limited distribution of its Storm Water Management Program written plan, or making the plan available for review under controlled conditions.

### **3. WATERSHED GROUP IDENTIFICATION**

The local watershed organizations for the various receiving streams from BHS discharges will be identified. BHS discharges storm water into the Rouge River and several lakes. BHS will identify the appropriate organizations for each of its facilities.

### **4. CORRESPONDENCE WITH WATERSHED GROUP**

BHS intends to prepare a notification letter to submit to the watershed groups identified above outlining the District's efforts in developing and implementing this Plan.

### **5. NOTIFICATION TO PUBLIC**

As outlined in the PEP, notification to students ("the Public") of the requirement for the District to develop a storm water management program was previously made, and information on the implementation will be made periodically thereafter in the Bloomfield Hills Schools Community Connections newsletter and, as

necessary, on the Bloomfield Hills Schools web site located at [www.bloomfield.org](http://www.bloomfield.org). Periodic information/surveys will be included in the newsletter or mailed.

## **6. COOPERATIVE ARRANGEMENT WITH WATERSHED GROUP**

BHS will co-operate with the watershed groups for facilitating the watershed group's PEP (e.g., provide facilities for outreach meetings to the greater public by the watershed group). In addition, BHS staff will consider attending watershed group meetings to foster cooperation.

## **7. ADVISORY COMMITTEE**

To achieve the requirement for public participation, and given the District's definition of public, BHS will set up an internal committee made up of Maintenance and Grounds staff, and an administration representative. The purpose of the committee will be to provide input into the implementation of the District's Storm Water Management Program.

## **8. SCHEDULE FOR IMPLEMENTATION/MEASURABLE GOALS**

The following measurable goals will be used to assess the progress of BMP implementation:

- Identification of watershed groups will be completed within the first year of the permit cycle
- Notification to local watershed groups will be completed within the first year of the permit cycle
- A representative of BHS will attend a meeting at the Alliance of Rouge Communities, Friends of the Rouge, or the Rouge River Project to assess current watershed group initiatives, evaluate possible public involvement opportunities, and discuss other storm water awareness and outreach topics
- Monitor activities of watershed group via other means (social media, conferences)
- The Bloomfield Hills Public Schools Nature Center will continue to host a "Rouge River Rescue Day" in partnership with the Friends of the Rouge.

## **E. CONSTRUCTION STORM WATER RUNOFF CONTROL**

### **1. INTRODUCTION**

Polluted storm water from construction sites often flows to MS4s and ultimately is discharged into the receiving waters or drainage systems operated by others. Pollutants commonly discharged from construction sites can include:

- Sediment;
- Solid and sanitary wastes;
- Phosphorous (fertilizer);
- Nitrogen (fertilizer);
- Pesticides;
- Oil and grease;
- Concrete truck washout;
- Construction chemicals; and
- Construction debris.

Of these, sediment is the main pollutant of concern. Sediment runoff rates from construction sites are generally 10 to 20 times greater than from agricultural lands, and 1,000 times greater than from forest lands. During a short time, therefore, construction sites can contribute more sediment to waters of the state than are deposited naturally over several decades.

**BHS certifies that no development or redevelopment is planned during the Permit cycle that will disturb greater than or equal to one acre. Therefore, Post Construction Controls are not applicable at this time. If construction is planned and funded, the District will notify the MDEQ that a change to the Permit may be required.**

## 2. PERMIT REQUIREMENTS

The Phase II Final Rule and the permit require control of storm water discharges from construction activity that results in land disturbance of greater than or equal to one acre, or disturb less than one acre but is part of a larger common plan of development or sale that would disturb one acre or more. In addition, Michigan's Soil Erosion and Sedimentation Control statute (Part 91 of Act 451 of 1994) prohibits offsite sedimentation for sites less than one acre if located within 500 feet of a wetland, lake or stream.

Construction projects meeting these requirements, therefore, are subject to soil erosion and sedimentation control (SESC) requirements outlined in the State of Michigan's Permit by Rule (Rule 323.2190), including design and implementation of runoff control measures. The construction site developer or BHS must control waste, such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality. Each construction site must be inspected during construction to make sure control measures are enforced.

## 3. EXISTING PROGRAM

The District contracts out all construction projects involving earthwork. Currently, SESC permitting and Certified Storm Water Operator (CSWO) monitoring is the responsibility of the architectural/engineering firm responsible for civil engineering design, or the construction manager managing the construction project. The new Bloomfield Hills High School was constructed at the Andover High School. The construction project was completed in the summer of 2016. The contractor obtained a Soil Erosion and Sedimentation Controls permit for the project. The general contractor, Cortis Contracting (Cortis), performed the weekly and post-rain inspections at the Bloomfield Hills High School construction site. Cortis also prepared the inspection reports and maintaining existing construction SESC.

## 4. ADDITIONAL BMPS

The District contractually requires architects/engineers and/or construction managers be responsible for compliance with SESC permits and bonds. Consideration will also be given to contractually require architects/engineers and/or construction managers be responsible for compliance with other environmental regulations and BMPs for construction (e.g., construction debris, concrete truck washout, and hazardous materials management) and Michigan's Permit-by-Rule for construction storm water runoff control for construction disturbing more than one acre.

## 5. SCHEDULE FOR IMPLEMENTATION/MEASURABLE GOALS

The following measurable goals will be used to assess the progress of BMP implementation:

- Evaluate the contractual requirements currently in place by 2018



- Track compliance of contractors to permit-by-rule requirements for construction sites over one acre and other BMPs outlined above when construction projects involving earthwork are conducted while the current permit is in effect

## F. POST CONSTRUCTION STORM WATER RUNOFF CONTROL

### 1. INTRODUCTION

Post-construction storm water management in areas undergoing new development or reconstruction is necessary because runoff from these areas has been shown to significantly affect receiving waters. There are generally two types of impacts from post-construction runoff. The first is caused by an increase in the type and quantity of pollutants. As runoff flows over areas altered by development, harmful sediment and substances, such as oil and grease, pesticides, heavy metals, and nutrients (e.g., nitrogen and phosphorous), can become suspended and carried to receiving waters.

The second type occurs by increasing the volume of water delivered to receiving waters during storms. Increased impervious surfaces interrupt the natural cycle of gradual percolation of water through vegetation and soil. Instead, large volumes of water are collected from surfaces such as roofs, and asphalt or concrete roads/parking lots, is routed to the drainage system, and quickly flows to the nearest receiving water. This may result in stream bank scouring and downstream flooding, impacting aquatic life and property.

**BHS certifies that no development or redevelopment is planned during the Permit cycle that will disturb greater than or equal to one acre. Therefore, Post Construction Controls are not applicable at this time. If construction is planned and funded, the District will notify the MDEQ that a change to the Permit may be required.**

The following is a summary of typical post construction permit requirements and activities.

### 2. PERMIT REQUIREMENTS

The permit requires development and implementation of a comprehensive storm water program for new development and redevelopment projects that outlines development, implementation, and enforcement of controls across the entire urbanized area at each facility to protect the designated uses in all receiving waters from the effects of urbanization.

- The common effects of urbanization to be considered by the program include:
- Stream "flashiness" (higher peak flow and lower base flow);
- Stream bank erosion;
- Increased stream temperature and pollutant load;
- Reduced stream bank vegetation; and,
- Degraded fish and aquatic habitat.

BHS does not have the authority to enact ordinances requiring post-construction controls for any entities or storm water discharges that may inadvertently discharge to its MS4. And, the District is not subject to local site plan review, nor does it have control over review of site plans for off-site development. The District does, however, have the authority to develop its own site plans for development or redevelopment at the referenced affected complexes subject to this plan.

### 3. EXISTING SYSTEMS

#### a. Structural Controls

BHS will conduct an evaluation and compile an inventory of existing structural controls in place at BHS facilities and verify the controls are maintained to ensure effectiveness. Where appropriate, significant structural controls will be noted on the system maps prepared for the IDEP.

#### b. Non-Structural Controls

As part of the Pollution Prevention/Good Housekeeping evaluation, existing non-structural controls will be evaluated and documented.

### 4. COORDINATION WITH LOCAL OR REGIONAL STORM WATER MASTER PLANS

BHS will take into consideration the local or regional storm water master plan when evaluating new BMPs for post-construction flow controls during new development or renovation planning. BHS will attempt to reduce flow and pollutant loading for discharges to receiving waters that are deemed high priority by the local or regional watershed master plan.

### 5. POST CONSTRUCTION FLOW CONTROLS FOR NEW DEVELOPMENT AND REDEVELOPMENT

Although the District is not subject to local site plan review, for construction or re-development projects disturbing greater than or equal to 1 acre, BHS will evaluate, as part of the site planning process, the implementation of BMPs to comply with the local or regional storm water master plan into whose storm water system the District's storm water is discharged. Some of the BMPs BHS will consider include, but are not limited to, the following:

#### STRUCTURAL BMPs

- Dry extended detention ponds
- Infiltration basins/trenches
- Porous pavement (when shown to be effective in cold climates)
- Sand filters
- Vegetative practices
- Catch basin inserts

#### NON-STRUCTURAL BMPs

- Buffer zones
- Open space design
- Urban forestry
- Green parking
- Alternative pavers

Permanent SESC's were installed at the Bloomfield Hills High School site upon completion of renovation activities. No other post construction controls were installed during this period. A Notice of Termination was obtained upon completion of the project.



## **6. SCHEDULE FOR IMPLEMENTATION/MEASURABLE GOALS**

The following measurable goals will be used to assess the progress of BMP implementation:

- Assessment/documentation of existing systems by the end of the current permit cycle
- Develop a form by the end of the current permit cycle to track maintenance of implemented BMPs and to identify/schedule BMPs that may need to be renovated or re-engineered
- Tracking potential BMPs implemented should new construction or renovation be planned while the current permit is in effect

Bloomfield Hills Schools MS4  
Public Education Program  
BMP Implementation Plan

BMP Topic	Description of BMP	Timeframe	Measureable Goal & Key Messages	Measure of Assessment	Target Audience	Responsible Party
Promote public responsibility and stewardship in the watershed	Storm water awareness training via presentation and DEQ and other agency handouts	Annually during permit cycle: 2017-2021	90% attendance; promote awareness that BHS is connected to other MS4s and waterbodies, that our operations and actions can impair water quality, and what we can do to decrease impairment	Track attendance of those required to be there	BHS custodial and grounds staff	SME/BHS
	Storm water awareness articles and information published in BHS Community Connections newsletter	Annually during permit cycle: 2017-2021	Promote awareness of BHS SWMP and BMPs that can be implemented at home via newsletter	Maintain copies of BHS newsletters	BHS custodial and grounds staff, employees, and parent/guardians of students.	BHS
	Consider placing pet waste cleanup information and/or dog bags at a high pet walking traffic area.	2019 and 2021	Promote awareness of public responsibility to decrease TMDL load	Measure E. coli levels	Parent/guardians of staff, neighbors of BHS facilities.	BHS
Inform and educate the public about the connection of the MS4 to area waterbodies and the potential impacts discharges could have on surface waters of the state.	Storm water awareness training via presentation and DEQ and other agency handouts	Annually during permit cycle: 2017-2021	90% attendance; promote awareness that BHS is connected to other MS4s and waterbodies, that our operations and actions can impair water quality, and what we can do to decrease impairment	Track attendance of those required to be there	BHS custodial and grounds staff	SME/BHS
	Storm water awareness articles and information published in BHS Community Connections newsletter	Ongoing during permit cycle	Promote awareness of BHS SWMP and BMPs that can be implemented at home via newsletter	Track number of newsletters mailed.	BHS custodial and grounds staff, employees, and parent/guardians of students.	BHS
Educate the public on illicit discharges and promote public reporting of illicit discharges and improper disposal of materials into the MS4.	Storm water awareness training via presentation and DEQ and other agency handouts	Annually during permit cycle: 2017-2021	90% attendance; promote awareness that BHS is connected to other MS4s and waterbodies, that our operations and actions can impair water quality, and what we can do to decrease impairment	Track attendance of those required to be there	BHS custodial and grounds staff	SME/BHS
	Storm water awareness articles and information published in BHS Community Connections newsletter	2019 and 2021	Promote awareness of BHS SWMP and BMPs that can be implemented at home via newsletter	Develop an awareness illustration board or boards to be displayed at key times	BHS custodial and grounds staff, employees, and parent/guardians of students.	BHS

Bloomfield Hills Schools MS4  
Public Education Program  
BMP Implementation Plan

Promote preferred cleaning materials and procedures for car, pavement, and power washing.	Storm water awareness training via presentation and DEQ and other agency handouts	Annually during permit cycle 2017-2021	90% attendance; promote awareness that BHS is connected to other MS4s and waterbodies, that our operations and actions can impair water quality, and what we can do to decrease impairment	Track attendance of those required to be there	BHS custodial and grounds staff	SME/BHS
Inform and educate the public on proper application and disposal of pesticides, herbicides, and fertilizers.	Storm water awareness training via presentation and DEQ and other agency handouts	2019 and 2021	90% attendance; promote awareness that BHS is connected to other MS4s and waterbodies, that our operations and actions can impair water quality, and what we can do to decrease impairment	Track attendance of those required to be there	BHS custodial and grounds staff	SME/BHS
Promote proper disposal practices for grass clippings, leaf litter, and animal wastes that may enter into the MS4	Storm water awareness articles and information published in BHS Community Connections newsletter	2019 and 2021	Promote practices and materials that can be implemented at home via newsletter	Develop an awareness illustration board or boards to be displayed at key times	BHS custodial and grounds staff, employees, and parent/guardians of students.	BHS
Identify and promote the availability, location, and requirement of facilities for collection or disposal of household hazardous wastes, travel trailer sanitary wastes, chemicals, and motor vehicle fluids.	Storm water awareness articles and information published in BHS Community Connections newsletter	2019 and 2021	Promote practices and materials that can be implemented at home via newsletter	Develop an awareness illustration board or boards to be displayed at key times	BHS custodial and grounds staff, employees and educators at farm site, and parent/guardians of students.	BHS
Inform and educate the public on proper septic system care and maintenance, and how to recognize system failure.	Storm water awareness articles and information published in BHS Community Connections newsletter	Ongoing during permit cycle	Educate audience why and how sewer overflows and failed septic systems can impair waters of the state.	Develop an awareness illustration board or boards to be displayed at key times	BHS custodial and grounds staff, employees and educators at farm site, and parent/guardians of students.	BHS
Educate the public on, and promote the benefits of, green infrastructure and low impact development.	Review K-12 Curriculum with BHS to identify classes that could highlight benefits of green infrastructure and BMPs.	Once in 2019	Identify at least one faculty member and communicate the importance of providing green infrastructure and low impact development education to students	Document date and time of meeting with faculty member(s)	BHS students and parents	BHS
Identify and educate commercial, industrial, and institutional entities likely to contribute pollutants to storm water runoff.	Require contractors or vendors (such as construction employees, pesticide/fertilizer applicators, irrigation, etc.) whose activities have the potential to impact water quality to train staff and be aware of the requirements of the SWMP, and have proper licenses and certifications.	Ongoing during permit cycle	Require storm water compliance language in contracts, contractors and vendors trained on pollution prevention and good housekeeping BMPs.	Obtain copies of SOPs, certification, sign-in sheets, pre-construction meeting notes, and inspections.	Contractors & vendors	BHS

## **APPENDIX A**

### **INITIAL ASSESSMENT QUESTIONNAIRE**

**Bloomfield Hills Public Schools**  
**MS4 Storm Water Permit # MIS040000 Certificate of Coverage # MIS040048**

<b>Potential Illicit Discharges - Initial Assessment</b>						
<b>Water Discharges and Other Activities</b>	<b>Yes</b>	<b>No</b>	<b>Building Name</b>	<b>Sanitary Discharge</b>	<b>Storm Discharge</b>	<b>Unknown Discharge</b>
Pool water drains						
Washing of vehicles						
Power washing equipment, engines						
Maintenance of HVAC filters						
Janitorial water						
Floor scrubber water						
Cleaning waste bins/roll-offs						
Boiler blow down						
Air compressor blow down						
Heat exchanger water (warm)						
Cooling tower – biocides/algacides						
Remediation waters (old tanks/spills)						
Water treatment chemicals						
Elevated temperature water						
Floor drains						
Sumps						
Other discharges						
Art classrooms – paints/cleaners						
Automotive shops						
Vehicle fluids						
Wood/Metal Shops						
Science labs						
Biology labs						
Food preparation/serving areas						
Food vendors						
Truck wells						
Shipping/receiving (truck well drains)						
Paint booths						
Paints/solvents/cleaners						
Adhesives/glues						
Roofing Activities						
Coating of Asphalt						
Excess fertilizers/pesticides						
Salt de-icer storage						

Comments:

Completed By: \_\_\_\_\_

Date: \_\_\_\_\_



## **APPENDIX B**

### **FIELD OBSERVATION CHECKLIST**

Bloomfield Hills Schools  
Field Manual for  
Ammonia and Detergent Sampling

**Ammonia Sampling**

HACH Chemical Company ammonia testing field kit can be purchased for \$58.30 from the HACH Chemical Company at 800 227 4224 (100 samples). The kit identification number is 2428700. The test measures nitrogen ammonia at the concentration range of 0 to 2.5 mg/l. The test uses the method of matching the water sample color with a color wheel to determine the concentration of ammonia. The water sample color is developed through a chemical reaction by the addition of ammonia salicylate with ammonia cyanurate. The color change is proportional to the concentration.

The chemicals added are preloaded powder pillows that are opened in the field and added to the water sample for color development. The color wheel has a stand that allows the water sample to be next to the color wheel for matching color purposes. The concentration of ammonia is read off the color wheel/sample match point.

**Procedure**

1. Rinse the two glass sample tubes with the water to be tested and fill to the 5-ml mark with the water sample.
2. Use the clippers to open an Ammonia Salicylate Reagent Powder Pillow. Add the contents of the pillow to the sample in one of the tubes, cap the tube and shake until all the powder is dissolved. Wait three (3) minutes.
3. Add the contents of one Ammonia Cyanurate Reagent Powder Pillow to the tube containing the salicylate-treated sample. Recap the tube and shake until all the powder is dissolved. Allow at least 15 minutes for the color to develop fully. The color is stable for several hours if the tube is kept capped.
4. Clean the outsides of both tubes with a dry cloth or tissue.
5. Insert the color-developer into the right-hand opening of the color comparator.
6. Hold the comparator up to a light such as the sky, window or lamp and view through the two openings in the front. Rotate the disc until a color match is obtained.
7. Read and record the concentration of ammonia nitrogen in mg/l through the scale window.

Bloomfield Hills Schools  
Field Manual for  
Ammonia and Detergent Sampling

**Detergents Sampling**  
**LAS/ABS**

HACH Chemical Company detergent testing field kit can be purchased for \$197.70 from the HACH Chemical Company at 800 227 4224 (32 samples). The kit identification number is 143203. The test is similar to the ammonia test in that a color development of the water sample is compared to a color wheel for the determination of concentration.

**Procedure**

1. Fill one of the test tubes to the upper mark (20 ml) with the water to be tested.
2. Add 12 drops of Detergent Test solution and shake to mix.
3. Add chloroform to the lowest mark (5 ml) on the test tube. Stopper, shake vigorously for 30 seconds and allow to stand for one minute to allow chloroform to separate.
4. Using the draw-off pipet, remove only the water from the tube and discard.
5. Refill the test tube to the upper mark with the Wash Water Buffer and, using the draw-off pipet, remove only the Wash Buffer and discard. This step washes away the remaining water sample.
6. Refill the test tube to the upper mark with the Wash Water Buffer, stopper and shake vigorously for 30 seconds. Allow to stand for one minute to allow the chloroform to separate.
7. Insert the test tube containing the prepared sample in the right opening of the color comparator.
8. Fill the other test tube with demineralized water and place it in the left opening of the comparator.
9. Hold the comparator up to the light, such as the sky, a window or a lamp, and view through the two openings in the front. Rotate the Detergents Color Disc until a color match is obtained. Read and record the ppm Detergents (LAS and or ABS) from the scale window.
10. If the color is darker on the highest reading on the color disc, the original sample may be diluted 20 to 1 by adding 1 ml of the sample to the test tube and filling the test tube to the upper mark (20 ml) with demineralized water. Repeat Steps 2 through 9 and multiply the results by 20. Note that if the water sample is turbid, it must be filtered after Step 6 using glass wool which is included in the kit.



**BLOOMFIELD HILLS SCHOOLS  
ILLCIT DISCHARGE ELIMINATION PROGRAM**

**FIELD SAMPLING CHECKLIST**

Facility: \_\_\_\_\_

Outfall Identification: \_\_\_\_\_ SME or District Representative: \_\_\_\_\_

Please describe the physical features of the outfall: (size, construction, materials, condition, etc.)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Is flow visible ☐ Yes ☐ No Estimated rate: \_\_\_\_\_

Estimate the discharge water clarity/turbidity: \_\_\_\_\_

Estimate the standing water clarity/turbidity: \_\_\_\_\_

Describe the discharge water color: \_\_\_\_\_

Describe the standing water color: \_\_\_\_\_

Note which parameters tested and colorimetric result (see Field Manual Instructions):

■ Detergent ☐ Yes ☐ No Estimated ppm: \_\_\_\_\_

○ Filtered? ☐ Yes ☐ No Comments: \_\_\_\_\_

■ Ammonia ☐ Yes ☐ No Estimated mg/l: \_\_\_\_\_

Please take a digital photograph of each outfall structure and record observations for future reference.

**FIELD OBSERVATION CHECKLIST AND REPORT  
ILLCIT DISCHARGE ELIMINATION PLAN  
DRY WEATHER SCREENING OF OUTFALLS  
AND FIELD SAMPLING CHECKLIST  
BLOOMFIELD HILLS SCHOOLS  
SME Project No. 072519.00**

Facility: \_\_\_\_\_ Date: \_\_\_\_\_

Outfall Identification: \_\_\_\_\_ SME Representative: \_\_\_\_\_

Please describe the physical features of the outfall: (size, construction, materials, condition, etc.)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Is flow visible ☐ Yes ☐ No Estimated rate: \_\_\_\_\_

Estimate the discharge water clarity/turbidity: \_\_\_\_\_

Estimate the standing water clarity/turbidity: \_\_\_\_\_

Describe the discharge water color: \_\_\_\_\_

Describe the standing water color: \_\_\_\_\_

Are the following present at or near the discharge point:

- Foam ☐ Yes ☐ No Natural Soapy
- Oil Sheen ☐ Yes ☐ No Estimate extent: \_\_\_\_\_
- Trash ☐ Yes ☐ No Describe: \_\_\_\_\_
- Floatable Materials ☐ Yes ☐ No Describe: \_\_\_\_\_
- Bacterial Sheen ☐ Yes ☐ No Describe: \_\_\_\_\_
- Slimes ☐ Yes ☐ No Describe: \_\_\_\_\_
- Staining on the:
  - Banks ☐ Yes ☐ No Color: \_\_\_\_\_
  - Outfall Structure ☐ Yes ☐ No Color: \_\_\_\_\_
  - Vegetation ☐ Yes ☐ No Color: \_\_\_\_\_
- Excessive Vegetative Growth or different from surrounding area ☐ Yes ☐ No
- Odors ☐ Yes ☐ No "Like": \_\_\_\_\_

If an illicit connection is suspected, describe:

\_\_\_\_\_

Note which parameters tested and colorimetric result (see Field Manual Instructions):

- Detergent ☐ Yes ☐ No Estimated ppm: \_\_\_\_\_
  - Filtered? ☐ Yes ☐ No Comments: \_\_\_\_\_
- Ammonia ☐ Yes ☐ No Estimated mg/l: \_\_\_\_\_

Please take a digital photograph of each outfall structure and observations for future reference.

## **APPENDIX C**

### **FERTILIZER/PESTICIDE/HERBICIDE APPLICATION QUESTIONNAIRES**

[illegible]

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## **APPENDIX D**

### **MAINTENANCE/JANITORIAL/GROUND STAFF TRAINING TOPICS**

**SCHOOL DISTRICT  
STORM WATER MANAGEMENT PROGRAM  
SURVEY**

**Name:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**1. WHAT RULES/REGULATIONS REQUIRE TODAY'S TRAINING?**

- ☐ A. Internal Revenue Service (IRS)
- ☐ B. Occupational Safety and Health Act (OSHA)
- ☐ C. National Pollutant Discharge Elimination System (NPDES)
- ☐ D. Resource Conservation and Recovery Act (RCRA)

**2. WHAT IS STORM WATER?**

- ☐ A. Water churned up in rivers and lakes during storms
- ☐ B. Water that flows over land or hard surfaces from rainfall or snow melt
- ☐ C. Drinking water from the kitchen sink
- ☐ D. Rain water that falls into lakes during storms

**3. WHY IS STORM WATER A PROBLEM?**

- ☐ A. It helps keep waterways flowing
- ☐ B. It carries debris, chemicals, and sediments directly to our waterways
- ☐ C. It replenishes our drinking water
- ☐ D. It keeps our streets clean

**4. WHAT ARE THE IMPACTS FROM STORM WATER RUN-OFF?**

- ☐ A. Erosion and Sedimentation
- ☐ B. Flooding
- ☐ C. Pollution
- ☐ D. All of the above

**5. WHERE DOES POLLUTION COME FROM?**

- ☐ A. Commercial Sources
- ☐ B. Construction Activities
- ☐ C. Automotive Facilities
- ☐ D. All of the above

**6. WHAT ARE SOME OF THE EFFECTS FROM POLLUTION?**

- ☐ A. Can help prevent problems with algae
- ☐ B. Can cause erosion of river banks
- ☐ C. Can cause problems with plant and animal habitats
- ☐ D. None of the above

**7. WHAT IS AN ILLICIT DISCHARGE?**

- ☐ A. Discharge of water from the kitchen sink to sanitary sewer
- ☐ B. Discharge of water from non-storm water sources to storm sewer
- ☐ C. Discharge of water from a lawn sprinkler to storm sewer
- ☐ D. All of the above

**8. WHAT CAN YOU UTILIZE TO MINIMIZE POLLUTION?**

- ☐ A. Best Management Practices
- ☐ C. Soap and water
- ☐ B. Good housekeeping
- ☐ D. All of the above

**9. WHAT ARE SOME BEST MANAGEMENT PRACTICES?**

- ☐ A. Routine catch basin cleaning and sediment disposal
- ☐ B. Use of vinegar and water for washing windows instead of soap
- ☐ C. Keep trash from entering storm water drains
- ☐ D. All of the above

## **APPENDIX E**

### **STANDARD OPERATING PROCEDURES**

## STANDARD OPERATING PROCEDURE

### FACILITY PRIORITY ASSESSMENT OKEMOS PUBLIC SCHOOLS SME Project No. 071889.00

Facility Name: \_\_\_\_\_ Date: \_\_\_\_\_

Inspector: \_\_\_\_\_

#### Instructions:

1. Interview key facility maintenance and management personnel knowledgeable of site operations and history.
2. Conduct a reconnaissance of the facility to observe site operations, chemical and polluting material use and storage, ground surface conditions, and nearby surface water bodies. The inspector should look for evidence of spilled chemical and polluting materials (e.g. staining, sheen), lack of secondary containment, poor housekeeping practices, erosion, or other facility features that would pose a concern to storm water runoff.

#### Observations and Notes:

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3. Rank the facility as a “high”, “medium”, or “low” potential to discharge pollutants to surface water: \_\_\_\_\_



## STANDARD OPERATING PROCEDURE

### MAINTENANCE AND BUS GARAGE FACILITIES OKEMOS PUBLIC SCHOOLS SME Project No. 071889.00

The following standard operating procedures shall be implemented at the maintenance and bus garage facilities:

1. Identify all structural (e.g. secondary containment) and non-structural controls (e.g. spill kits) at the facility.
2. Identify the person responsible for oversight of the facility and maintenance of controls.
3. Provide a list of significant materials present on the site including but limited to all fuels, oil, parts cleaners, paints, fertilizer/pesticides, salts, janitorial chemicals, etc. The lists should also include a description of the storage and handling practices, as well as statement regarding the potential for the significant materials to reach surface water.
4. Conduct bi-weekly routine maintenance and inspections of onsite storm water management control devices (e.g. catch basins, secondary containment, etc.). The inspections shall be logged and kept onsite.
5. Perform and document a comprehensive inspection every 6 months. The inspection shall include all structural and non-structural controls. Based on weather conditions and school seasons, March 15<sup>th</sup> and September 15<sup>th</sup> are target dates for the 6 month inspection.

The onsite facility manager shall maintain the above documentation onsite.

## **STANDARD OPERATING PROCEDURE CONT'D**

### **MAINTENANCE AND BUS GARAGE FACILITIES**

#### **OKEMOS PUBLIC SCHOOLS**

SME Project No. 071889.00

#### **Significant Materials at Maintenance and Bus Garage**

Significant materials and chemicals are used as part of the routine maintenance and fueling of the District's fleet vehicles. Below is a list of the identified materials on site. Two underground storage tanks and a fuel island are present on site. Vehicle maintenance and chemical storage is located inside the garage.

Significant materials located outside of the garage:

- Underground unleaded gas tank - 4000 gal
- Underground diesel fuel tank - 10,000 gal

Significant materials located inside the garage:

- Automatic trans fluid - 55 gal
- Motor oil - 55 gal
- Windshield washer fluid - 10, 1 gallon plastic containers
- Used motor oil - 55 gal
- DEF fluid - 275 gal
- Bus wash soap concentrate - 2, 100 gal containers

#### **Housekeeping and BMPs**

Okemos Public Schools operates a fleet of buses and service vehicles at this facility. An assessment of maintenance activities was made to determine current practices and whether improvements can be made to reduce potential impact on storm water discharge. Areas evaluated included hazardous materials storage, used oil management, periodic vehicle inspections for leaks, and spill prevention. In addition, the district operates a vehicle wash unit that discharges to the sanitary sewer.

The assessment determined that the significant materials and chemical use on the facility is relatively limited and contained inside the garage building or within USTs. The biggest risk for storm water exposure appears to be related to a potential UST fueling release. Therefore, spill response training of facility personnel is important part of the SWMP. A spill response kit for cleanup of minor spills is on site. Facility personnel are trained to look for spills, observe contractor fueling activities, and appropriately respond and report spills.

The catch basin at the Bus Garage facility is equipped with an oil/water separator and the water is discharged to the sanitary sewer. The oil/water separator is maintained by Spartan Oil, which collects the oil for recycling off-site. A visual assessment of the catch basin is performed routinely (monthly) by staff.

## Catch Basin Cleaning Activities Guidance Document

### Catch Basin Cleaning Activities

Catch basins are included in storm sewer system designs in order to remove solids such as gravel, sand, oils, and organic material carried by storm water. Catch basins also contain elevated concentrations of metals (attached to the solids) from street runoff or drainage from industrial, commercial and residential properties. In order to maintain the storm sewer systems effectiveness, catch basins must be periodically cleaned out. The Department of Environmental Quality (DEQ) Water Bureau (WB) and Waste and Hazardous Materials Division (WHMD) oversee environmental regulations pertaining to this activity. The Michigan Occupational Safety and Health Administration ([MIOSHA](#)) within the Department of Labor and Economic Growth oversee confined space entry and other worker health and safety standards.

In the past, the waste generated from the catch basin cleaning activities was typically discharged back into the storm sewer system. This type of discharge is unauthorized per [Part 31, Water Resources Protection \(Part 31\) of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended \(NREPA\)](#) and is therefore illegal. The combined solid and liquid waste stream (solid/liquid waste) from cleaning storm sewers systems is legally defined as “liquid industrial waste” pursuant to [Part 121, Liquid Industrial Wastes \(Part 121\) of NREPA](#).

The following are options recommended to properly deal with the waste stream generated from catch basin cleaning activities:

1. Have the waste transported to drying beds to separate the solid/liquid waste. This is usually performed at a publicly owned treatment plant or at a privately owned permitted facility where the liquid portion of the waste stream is separated from the solids and treated.
2. Request permission from the local wastewater treatment plant operator to discharge the combined solid/liquid waste into the sanitary system. Most treatment plants will require pre-treatment prior to the discharge. All applicable local ordinance provisions must be followed.
3. When conducting catch basin maintenance activities where the above options are not available, the following method can be used as long as there are no discharges to surface waters during dry weather conditions.

- Conduct visual inspection to ensure the water in the sump has not been contaminated. If necessary, collect a grab sample of the water and look for signs of contamination such as visible sheen, discoloration, obvious odor, etc. See the EPA [Visual Inspection](#) guidance for more tips. If there is any doubt of the quality of the water, it should be collected into the Vactor truck and treated as waste under Part 121 or [Part 115 Solid Waste Management \(Part 115\) of NREPA](#).
- Using a sump pump, or any other pumping mechanism, remove the majority of water in the sump of the basin without disturbing the solid material below. Do not use pumps connected to the Vactor truck's holding tank.
- The clear water may then be directly discharged to one of the following:
  - Sanitary system (with prior approval from local sewer authority)
  - Curb and gutter
  - Back into the storm sewer system as long as it is contained within the system during dry weather condition to ensure no discharge into surface water
  - Applied to the ground adjacent to the catch basin (evenly distributed at a maximum rate of 250 gallons/acre/year)
- The remaining liquid/solid in the sump should be collected with a Vactor truck and disposed of off-site in accordance with Parts 115 or 121.

The entity whose catch basin is being cleaned is responsible for meeting the generator requirements under Part 121. See the [Liquid Industrial Waste Generator](#) guidance for more information.

The entity transporting the solid/liquid waste must meet the applicable transporter requirements. A local, state, or federal government may use its own vehicle to service catch basins or other parts of the sewer system without being a permitted and registered transporter under the provisions of the [Hazardous Materials Transportation Act, 1998 PA 138, as amended \(HMTA\)](#).

If the local government contracts with a private company to transport the liquids generated from cleaning the catch basins or other parts of the sewer system, that entity must be registered and permitted as a uniform liquid industrial waste transporter under the provisions of HMTA.

The transporter must notify the WHMD about their activity and obtain a site identification number. Follow the instructions and links to the form EQP5150 and online paying option posted at [www.deq.state.mi.us/wdspi](http://www.deq.state.mi.us/wdspi). There is a fee.

A [uniform hazardous waste manifest](#) must accompany the load, or a consolidated manifest may be used per [Operational Memo 121-3](#), when the liquid waste is transported over public roadways by the local government or by a contract transporter. Keep the records at least three years from shipment. The waste transporting portion of the vehicle and/or containers used to

transport the waste must be kept closed except when adding or removing the waste, and the exteriors must be kept free of the liquid waste and residue.

The facility accepting the solid/liquid waste must meet operating requirements:

- They must notify the WHMD that they are operating a liquid industrial waste designated facility, obtain a site identification number, and meet operating requirements under Part 121. This includes practices to prevent unauthorized discharge of the waste, sign manifests, and keep required records. If waste containers are used, they must be kept closed and protected from the weather, fire, physical damage and vandals.
- The discharge of the liquids into the treatment plant that is permitted by the WB must meet the wastewater treatment plant requirements. Any other discharge of the liquids would require a separate DEQ discharge permit.
- The resulting solid waste must be managed under Part 115 requirements. Dispose of the solid waste in a licensed landfill. Contact the landfill authority for their specific disposal requirements, including any tests they require to document the solids are not hazardous or liquid waste. Do not use the solids as fill on local government or private property, or for any other use, unless it meets the conditions of being an inert material according to the solid waste rules [R299.4114 through R299.4118](#). See the [Waste Characterization Guidance](#) for information how to determine if the waste is hazardous or not.

Street sweeping activities are also subject to the above solid waste requirements. Street sweeping involves the use of specialized equipment to remove litter, loose gravel, soil, pet waste, vehicle debris and pollutants, dust, de-icing chemicals, and industrial debris from road surfaces. See the BMPs for [Street Sweeping](#) and [Parking Lot and Street Cleaning](#).

Follow-up Answers Can be Found as Follows:	
Topic	Contact:
Using the solids as fill or other use under Part 115	Duane Roskoskey at 517-335-4712
Part 121 transportation requirements and HMTA	<a href="#">WHMD District Office</a>
Managing waste under Part 31, or general questions regarding this guidance	Mark Fife at 517-241-8993
Confined space entry requirements	MIOSHA Consultation, Education and Training Division at 517-322-1809

## **STANDARD OPERATING PROCEDURE**

### **STREET SEWEEPING, CATCH BASIN CLEANOUT, AND SALT APPLICATION OKEMOS PUBLIC SCHOOLS SME Project No. 071889.00**

This standard operating procedures (SOP) applies to contractors performing street sweeping, catch basin cleaning, and salting activities. All contractors hired by the District to perform the aforementioned activities shall perform maintenance activities consistent with the Storm Water Management Plan and shall agree to implement the following best management practices:

#### **Street Sweeping**

1. Sweeping shall be performed based on priorities including paved areas with excessive sediment and nearby drains and surface water bodies.
2. All collected sediment from the cleaning activities shall be containerized, characterized and properly disposed at a licensed facility. No collected sediment shall be dumped or deposited near surface water bodies or drains.
3. Manifest and receipts of street sweeping activities shall be kept in the SWMP file.

#### **Catch Basin Cleaning**

1. Contractor shall follow the attached MDEQ Catch Basin Cleaning Activities Guidance Document.
2. All collected sediment from the cleaning activities shall be containerized, characterized and properly disposed at a licensed facility.
3. No collected sediment shall be dumped or deposited near surface water bodies or drains.
4. Manifest and receipts of catch basin cleaning activities shall be kept in the SWMP file.

#### **Salting/De-Icing**

1. Contractor shall prioritize salt application to areas of high vehicle and pedestrian traffic.
2. The salt application to the pavement surface shall be performed based on industry guidelines. No excessive salt application (e.g. piles) shall be allowed by the Contractor.
3. If salt alternatives are considered (e.g. agricultural by-products), the Contractor must obtain permission from the District. Guidance regarding ABPs is attached.

## Catch Basin Cleaning Activities Guidance Document

### Catch Basin Cleaning Activities

Catch basins are included in storm sewer system designs in order to remove solids such as gravel, sand, oils, and organic material carried by storm water. Catch basins also contain elevated concentrations of metals (attached to the solids) from street runoff or drainage from industrial, commercial and residential properties. In order to maintain the storm sewer systems effectiveness, catch basins must be periodically cleaned out. The Department of Environmental Quality (DEQ) Water Bureau (WB) and Waste and Hazardous Materials Division (WHMD) oversee environmental regulations pertaining to this activity. The Michigan Occupational Safety and Health Administration ([MIOSHA](#)) within the Department of Labor and Economic Growth oversee confined space entry and other worker health and safety standards.

In the past, the waste generated from the catch basin cleaning activities was typically discharged back into the storm sewer system. This type of discharge is unauthorized per [Part 31, Water Resources Protection \(Part 31\) of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended \(NREPA\)](#) and is therefore illegal. The combined solid and liquid waste stream (solid/liquid waste) from cleaning storm sewers systems is legally defined as “liquid industrial waste” pursuant to [Part 121, Liquid Industrial Wastes \(Part 121\) of NREPA](#).

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2. Request permission from the local wastewater treatment plant operator to discharge the combined solid/liquid waste into the sanitary system. Most treatment plants will require pre-treatment prior to the discharge. All applicable local ordinance provisions must be followed.
3. When conducting catch basin maintenance activities where the above options are not available, the following method can be used as long as there are no discharges to surface waters during dry weather conditions.



- Conduct visual inspection to ensure the water in the sump has not been contaminated. If necessary, collect a grab sample of the water and look for signs of contamination such as visible sheen, discoloration, obvious odor, etc. See the EPA [Visual Inspection](#) guidance for more tips. If there is any doubt of the quality of the water, it should be collected into the Vactor truck and treated as waste under Part 121 or [Part 115 Solid Waste Management \(Part 115\) of NREPA](#).
- Using a sump pump, or any other pumping mechanism, remove the majority of water in the sump of the basin without disturbing the solid material below. Do not use pumps connected to the Vactor truck's holding tank.
- The clear water may then be directly discharged to one of the following:
  - Sanitary system (with prior approval from local sewer authority)
  - Curb and gutter
  - Back into the storm sewer system as long as it is contained within the system during dry weather condition to ensure no discharge into surface water
  - Applied to the ground adjacent to the catch basin (evenly distributed at a maximum rate of 250 gallons/acre/year)
- The remaining liquid/solid in the sump should be collected with a Vactor truck and disposed of off-site in accordance with Parts 115 or 121.

The entity whose catch basin is being cleaned is responsible for meeting the generator requirements under Part 121. See the [Liquid Industrial Waste Generator](#) guidance for more information.

The entity transporting the solid/liquid waste must meet the applicable transporter requirements. A local, state, or federal government may use its own vehicle to service catch basins or other parts of the sewer system without being a permitted and registered transporter under the provisions of the [Hazardous Materials Transportation Act, 1998 PA 138, as amended \(HMTA\)](#).

If the local government contracts with a private company to transport the liquids generated from cleaning the catch basins or other parts of the sewer system, that entity must be registered and permitted as a uniform liquid industrial waste transporter under the provisions of HMTA.

The transporter must notify the WHMD about their activity and obtain a site identification number. Follow the instructions and links to the form EQP5150 and online paying option posted at [www.deq.state.mi.us/wdspi](http://www.deq.state.mi.us/wdspi). There is a fee.

A [uniform hazardous waste manifest](#) must accompany the load, or a consolidated manifest may be used per [Operational Memo 121-3](#), when the liquid waste is transported over public roadways by the local government or by a contract transporter. Keep the records at least three years from shipment. The waste transporting portion of the vehicle and/or containers used to



transport the waste must be kept closed except when adding or removing the waste, and the exteriors must be kept free of the liquid waste and residue.

The facility accepting the solid/liquid waste must meet operating requirements:

- They must notify the WHMD that they are operating a liquid industrial waste designated facility, obtain a site identification number, and meet operating requirements under Part 121. This includes practices to prevent unauthorized discharge of the waste, sign manifests, and keep required records. If waste containers are used, they must be kept closed and protected from the weather, fire, physical damage and vandals.
- The discharge of the liquids into the treatment plant that is permitted by the WB must meet the wastewater treatment plant requirements. Any other discharge of the liquids would require a separate DEQ discharge permit.
- The resulting solid waste must be managed under Part 115 requirements. Dispose of the solid waste in a licensed landfill. Contact the landfill authority for their specific disposal requirements, including any tests they require to document the solids are not hazardous or liquid waste. Do not use the solids as fill on local government or private property, or for any other use, unless it meets the conditions of being an inert material according to the solid waste rules [R299.4114 through R299.4118](#). See the [Waste Characterization Guidance](#) for information how to determine if the waste is hazardous or not.

Street sweeping activities are also subject to the above solid waste requirements. Street sweeping involves the use of specialized equipment to remove litter, loose gravel, soil, pet waste, vehicle debris and pollutants, dust, de-icing chemicals, and industrial debris from road surfaces. See the BMPs for [Street Sweeping](#) and [Parking Lot and Street Cleaning](#).

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Managing waste under Part 31, or general questions regarding this guidance	Mark Fife at 517-241-8993
Confined space entry requirements	MIOSHA Consultation, Education and Training Division at 517-322-1809

## POTENTIAL ADVERSE IMPACTS OF DEICERS WITH A FOCUS ON AGRICULTURAL BY-PRODUCT DEICERS ON WATER RESOURCES

The selection of deicing substances is an issue that involves careful balance between economics, safety and environmental concerns. When it comes to the nation's roadways, public safety is considered the primary concern. Alternative deicers have been explored for use in Michigan by the Michigan Department of Transportation (MDOT) and road maintenance agencies for the past several years due to the potential negative impacts of road salt. Like any deicing substance, use of road salt has some negative consequences such as corrosivity related to both vehicles and building structures (i.e. bridges, overpasses and highway ramps), it is harmful to both ornamental and agricultural vegetation, and in certain areas salt runoff has potential to lead to unacceptable chloride concentrations in lakes and rivers.

Various road maintenance agencies and citizens have contacted the Michigan Department of Environmental Quality (MDEQ) regarding potential environmental impacts of deicing substances, especially agricultural by-products (ABP), which include beet waste (de-sugared molasses). This document offers information regarding potential water quality impacts of ABPs. It also provides information on pertinent water quality regulations implemented by the MDEQ's Water Resources Division.

### **Q: Does guidance exist that will help road maintenance agencies evaluate and select pre-icing and deicing substances that could help mitigate environmental impacts to surface and ground waters?**

- The National Cooperative Highway Research Program developed a comprehensive report entitled "Guidelines for the Selection of Snow and Ice Control Materials to Mitigate Environmental Impacts" in 2007. This guidance is available online at: [www.trb.org/TRBNet/ProjectDisplay.asp?ProjectID=883](http://www.trb.org/TRBNet/ProjectDisplay.asp?ProjectID=883)

This project also involved the development of a Material Selection Decision Tool that can be downloaded from the webpage above.

This is a publication of the Transportation Review Board of the National Academies. These academies bring together committees of experts in areas of scientific and technological endeavor. These experts serve pro bono to address critical national issues and give advice to the federal government and the public. A representative from the United States Environmental Protection Agency participated in this project.

- MDOT has been studying the economical, safety, and environmental issues associated with deicing substances and pre-wetting agents. In 2002, MDOT published a report regarding their evaluation of anti-icing compounds developed from ABPs. Their published information can be found online at: [www.michigan.gov/documents/mdot/MDOT\\_Research\\_Report\\_R1418\\_245018\\_7.pdf](http://www.michigan.gov/documents/mdot/MDOT_Research_Report_R1418_245018_7.pdf)

In their report, MDOT recommends that agencies considering implementing anti-icing should "contact those agencies currently practicing anti-icing to determine how to get started: What equipment, budget, and materials are required; the process of dealing with the public; and training needs for its own agency personnel. A successful anti-icing program needs the buy-in of all participants."

**Q: Are ABPs, including beet pulp, proven to be environmentally-friendly alternatives for use in deicing activities when considering potential discharges to surface waters?**

De-icing products derived from ABPs have the potential to adversely affect water quality if allowed to enter surface waters. These products often contain high levels of organic materials which exert a high biochemical oxygen demand (BOD) when broken down by microorganisms in an aquatic environment. This results in reduced in-stream levels of dissolved oxygen (DO), which is necessary for the survival of aquatic life. Fish kills, impaired biological communities, and noxious growths of bacterial slimes can result from elevated BOD and reduced levels of DO in streams and lakes.

Some ABP deicers have the potential to greatly impact DO concentrations in surface waters, as they may contain many times the amount of BOD found in strong wastes like raw sewage. To illustrate, one organic deicer contains 210,000 mg/l of BOD (as measured through a five-day test called BOD5) according to its manufacturer, whereas strong untreated domestic waste typically contains about 400 mg/l of BOD5. Unpolluted ambient surface waters contain around 2 to 3 mg/l of BOD5.

The effect that BOD from deicers may have on a given stream's DO concentrations depends on the chemical and physical characteristics of the water body. Many of Michigan's rivers and streams have relatively low slopes and low velocities, which makes them especially susceptible to DO impacts from elevated BOD. Deicers may have different degradation rates so may affect DO levels to varying degrees.

ABP deicers may also contain nutrients that can harm water quality. Increased concentrations of pollutants like phosphorus can cause noxious plant growths and contribute to low levels of DO. ABP deicers can contain heavy metals that may be toxic to aquatic life at sufficient concentrations. Solids in the de-icing materials may negatively affect aquatic life habitat if they enter a surface water.

Adverse impacts on aquatic resources can occur if deicers enter water bodies. Responsible handling of deicers is necessary to prevent the entry of the de-icing materials into surface waters.

**Q: How do the Water Resource Protection regulations regarding discharges to waters apply to deicing substances that are used in Michigan?**

The MDEQ is charged with protecting and conserving the water resources of the state. Part 31, Water Resources Protection of the Natural Resources Environmental Protection Act, PA 451 of 1994, as amended provides the legal framework for MDEQ's role in water quality protection. If a scenario developed where surface or groundwater resources were impaired due to a deicing application, Part 31 authorizes the MDEQ to take action against the responsible party. To learn more about Part 31 of NREPA, refer to the guidance document found online at [www.michigan.gov/deq](http://www.michigan.gov/deq), select the "News and Events" browser button on the left side of the webpage, then select "Citizen Involvement."

**Groundwater Discharge Permit Program:**

Deicing substances are often authorized for use in Michigan through Rules 323.2204 and 323.2210 related to Groundwater Quality (Part 22 Rules, Groundwater Quality), which provide for the controlled application of deicing products to roads. Under these rules, deicing products may be used (i.e. discharged to the ground) without a groundwater discharge permit so long as various conditions are met. These conditions include:

- a) The discharge shall not be, or is not likely to become, injurious;
- b) The discharge shall not cause runoff to, ponding on, or flooding of adjacent property, shall not cause erosion, and shall not cause nuisance conditions.

**National Pollutant Discharge Elimination System (NPDES):**

The Michigan Department of Transportation (MDOT) and more than 300 urbanized municipalities have coverage under the NPDES permit program for control of storm water discharges from municipal separate storm sewer systems (MS4). These permits include a pollution prevention criteria that require the permittee to:

Construct, operate, and maintain its streets, roads, highways, parking lots, and other permittee-owned or operated impervious infrastructure in a manner so as to reduce the discharge of pollutants into the MS4 and the surface waters of the state, including pollutants related to snow removal practices.

Require that salt and sand applied for improved traction be prevented from entering MS4s and receiving streams to the maximum extent practicable.

In addition, other site-specific and pollutant specific requirements within the permits can apply to snow and ice-fighting road maintenance activities. For example, the permits have special conditions related to water bodies that are impaired (i.e. areas where Total Maximum Daily Loads have been developed), such as from an overabundance of plant growth.

The permittee is encouraged to use guidance and training materials that are available from federal, state, or local agencies, or other organizations.

### **Conclusion**

The selection of deicers is a policy decision that involves the careful balance of many considerations. This decision is the responsibility of road maintenance agencies. Environmental concerns are just one of the factors that road maintenance agencies need to consider. As such, this document does not recommend the use of any type of deicer over another but instead provides water protection information that should be considered as part of the deicing/pre-icing product selection process and related management practices.

## POTENTIAL ADVERSE IMPACTS OF DEICERS WITH A FOCUS ON AGRICULTURAL BY-PRODUCT DEICERS ON WATER RESOURCES

The selection of deicing substances is an issue that involves careful balance between economics, safety and environmental concerns. When it comes to the nation's roadways, public safety is considered the primary concern. Alternative deicers have been explored for use in Michigan by the Michigan Department of Transportation (MDOT) and road maintenance agencies for the past several years due to the potential negative impacts of road salt. Like any deicing substance, use of road salt has some negative consequences such as corrosivity related to both vehicles and building structures (i.e. bridges, overpasses and highway ramps), it is harmful to both ornamental and agricultural vegetation, and in certain areas salt runoff has potential to lead to unacceptable chloride concentrations in lakes and rivers.

Various road maintenance agencies and citizens have contacted the Michigan Department of Environmental Quality (MDEQ) regarding potential environmental impacts of deicing substances, especially agricultural by-products (ABP), which include beet waste (de-sugared molasses). This document offers information regarding potential water quality impacts of ABPs. It also provides information on pertinent water quality regulations implemented by the MDEQ's Water Resources Division.

### **Q: Does guidance exist that will help road maintenance agencies evaluate and select pre-icing and deicing substances that could help mitigate environmental impacts to surface and ground waters?**

- The National Cooperative Highway Research Program developed a comprehensive report entitled "Guidelines for the Selection of Snow and Ice Control Materials to Mitigate Environmental Impacts" in 2007. This guidance is available online at: [www.trb.org/TRBNet/ProjectDisplay.asp?ProjectID=883](http://www.trb.org/TRBNet/ProjectDisplay.asp?ProjectID=883)

This project also involved the development of a Material Selection Decision Tool that can be downloaded from the webpage above.

This is a publication of the Transportation Review Board of the National Academies. These academies bring together committees of experts in areas of scientific and technological endeavor. These experts serve pro bono to address critical national issues and give advice to the federal government and the public. A representative from the United States Environmental Protection Agency participated in this project.

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## **APPENDIX F**

### **PART 5 RULES – REPORTABLE QUANTITIES FOR RELEASE REPORTING**



## REPORTING RELEASES PER PART 5 RULES

Revised May 1, 2014

Facilities with reportable releases as defined in Rule 324.2002(b) and (g) and [Section 3111b](#) of Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, must notify specific agencies. Oil storage facilities subject to [federal SPCC regulations](#) must notify the DEQ if they have reportable releases of oil (see [WRD Policy No. WRD-036](#)). Due to the reorganization of the DEQ, submittal of written reports about releases as required in R 324.2007 now go to the Water Resources Division instead of the Waste Management Division as noted in the rules.

### **If a release occurs and is reportable, the facility needs to meet the following requirements:**

1. Call to report releases exceeding threshold reporting quantities:
  - PEAS at 800-292-4706 or from out of state call 517-373-7660, and
  - 911 (or their primary public safety answering point) per Section 3111b of Part 31 of Act 451, effective June 15, 2004
2. Submit written report within 10 days after the release to:
  - DEQ, Water Resources Division, District Supervisor (mailing addresses are the same as [Part 5 Staff Contacts](#))
  - [Local health department](#), environmental health section per Section 3111b of Part 31 of Act 451, effective June 15, 2004

You may use the form EQP 3465 "Spill or Release Report" available on the Internet in [Word](#) or [PDF format](#), or submit a written report containing the information identified in Rule 7(2). Include

- a. Cause of release
  - b. Discovery of release
  - c. Response measures taken or schedule for completion of measures to be taken, or both
  - d. Measures taken to prevent recurrence of similar releases
3. Report releases as required under [other regulations](#).

If you are required to submit a written release report to a DEQ division (for example a permit may require reporting of releases) and are subject to the Part 5 Rules reporting requirements, if the other required report contains the information listed, it is not necessary to also submit a separate report to the Water Resources Division.

Releases that go into a public wastewater treatment plant and meet Part 5 Rules conditions are also reportable to the Water Resources Division.

[Section 3115 of Part 31](#) was revised to include penalties for failing to report a release as required or having discharges in violation of Part 31. Effective June 15, 2004.

**SPILL OR RELEASE REPORT***Issued by authority of the Michigan Department of Environmental Quality.*

**NOTE:** Some regulations require a specific form to use and procedures to follow when reporting a release. Those forms and procedures **MUST** be used and followed if reporting under those regulations. This report form is to aid persons reporting releases under regulations that do not require a specific form. This report form is not required to be used. **To report a release, some regulations require a facility to call the PEAS Hotline at 800-292-4706 (or the DEQ District Office that oversees the county where it occurred) and other agencies and provide information that is included in this form. A written follow-up report might be required. This form may be used for the written follow-up report and to document the initial report. If you prefer to submit this report electronically by FAX or e-mail, contact the regulating agency for the correct telephone number or e-mail address. Go to [www.michigan.gov/chemrelease](http://www.michigan.gov/chemrelease) for more information.**

**Please print or type all information.**

Name and Title of Person Submitting Written Report		Telephone Number (provide area code) (      )		
Name of Business		<b>RELEASE LOCATION</b> (Provide address if different than business, if known, and give directions to the spill location. Include nearest highway, town, road intersection, etc.)		
Street Address				
City, State, ZIP				
Business Telephone Number (provide area code) (      )				
<b>SITE IDENTIFICATION NUMBER AND OTHER IDENTIFYING NUMBERS</b> (if applicable)		County	Township	Tier/Range/Section (if known)

**RELEASE DATA:** Complete all applicable categories. Check all the boxes that apply to the release. Provide the best available information regarding the release and its impacts. Attach additional pages if necessary.

<b>DATE &amp; TIME OF RELEASE</b> (if known) ____/____/____ ____ am/pm	<b>DATE &amp; TIME OF DISCOVERY</b> ____/____/____ ____ am/pm	<b>DURATION OF RELEASE</b> (if known) ____ days ____ hours ____ minutes	<b>TYPE OF INCIDENT</b> <input type="checkbox"/> Explosion <input type="checkbox"/> Fire <input type="checkbox"/> Leaking container <input type="checkbox"/> Other _____ <input type="checkbox"/> Loading/unloading release <input type="checkbox"/> Pipe/valve leak or rupture <input type="checkbox"/> Vehicle accident
<b>MATERIAL RELEASED</b> (chemical or trade name) <input type="checkbox"/> CHECK HERE IF ADDITIONAL MATERIALS LISTED ON ATTACHED PAGE.		<b>CAS NUMBER OR HAZARDOUS WASTE CODE</b>	<b>ESTIMATED QUANTITY RELEASED</b> (indicate unit e.g. lbs, gals, cu ft or yds)
			<b>PHYSICAL STATE RELEASED</b> (indicate if solid, liquid, or gas)

<b>FACTORS CONTRIBUTING TO RELEASE</b> <input type="checkbox"/> Equipment failure <input type="checkbox"/> Operator error <input type="checkbox"/> Faulty process design <input type="checkbox"/> Training deficiencies <input type="checkbox"/> Unusual weather conditions <input type="checkbox"/> Other _____		<b>SOURCE OF LOSS</b> <input type="checkbox"/> Container <input type="checkbox"/> Railroad car <input type="checkbox"/> Pipeline <input type="checkbox"/> Ship <input type="checkbox"/> Tank <input type="checkbox"/> Other _____ <input type="checkbox"/> Tanker <input type="checkbox"/> Truck
<b>TYPE OF MATERIAL RELEASED</b> <input type="checkbox"/> Agricultural: manure, pesticide, fertilizer <input type="checkbox"/> Chemicals <input type="checkbox"/> Flammable or combustible liquid <input type="checkbox"/> Hazardous waste <input type="checkbox"/> Liquid industrial waste <input type="checkbox"/> Oil/petroleum products or waste <input type="checkbox"/> Salt <input type="checkbox"/> Sewage <input type="checkbox"/> Other _____ <input type="checkbox"/> Unknown	<b>MATERIAL LISTED ON OR DEFINED BY</b> <input type="checkbox"/> CAA Section 112(r) list (40 CFR Part 68) <input type="checkbox"/> CERCLA Table 302.4 (40 CFR Part 302) <input type="checkbox"/> EPCRA Extremely Hazardous Substance (40 CFR Part 355) <input type="checkbox"/> NREPA Part 31, Part 5 Rules polluting material <input type="checkbox"/> NREPA Part 111 or RCRA hazardous waste <input type="checkbox"/> NREPA Part 121 liquid industrial waste <input type="checkbox"/> Other list _____ <input type="checkbox"/> Unknown	<b>IMMEDIATE ACTIONS TAKEN</b> <input type="checkbox"/> Containment <input type="checkbox"/> Dilution <input type="checkbox"/> Evacuation <input type="checkbox"/> Hazard removal <input type="checkbox"/> Neutralization <input type="checkbox"/> System shut down <input type="checkbox"/> Other _____ <input type="checkbox"/> Diversion of release to treatment <input type="checkbox"/> Decontamination of persons or equipment <input type="checkbox"/> Monitoring

<b>RELEASE REACHED</b> <input type="checkbox"/> Surface waters (include name of river, lake, drain involved) _____ <input type="checkbox"/> Drain connected to sanitary sewer (include name of wastewater treatment plant and/or street drain, if known) _____ <input type="checkbox"/> Drain connected to storm sewer (include name of drain or water body it discharges into, if known) _____ <input type="checkbox"/> Groundwater (indicate if it is a known or suspected drinking water source and include name of aquifer, if known) _____ <input type="checkbox"/> Soils (include type e.g. clay, sand, loam, etc.) _____ <input type="checkbox"/> Ambient Air <input type="checkbox"/> Spill contained on impervious surface	Distance from spill location to surface water, in feet _____
--	--

<b>EXTENT OF INJURIES</b> (if any)	<b>WAS ANYONE HOSPITALIZED?</b> <input type="checkbox"/> Yes Number Hospitalized: _____ <input type="checkbox"/> No	<b>NUMBER OF INJURIES TREATED ON SITE</b>																																																						
Describe the incident, the type of equipment involved in the release, how the volume of loss was determined, along with any resulting environmental damage caused by the release. Identify who immediately responded to the incident (own employees or contractor — include cleanup company name, contact person, and telephone number). Also identify who did further cleanup activities if performed or known when report submitted. <input type="checkbox"/> <b>CHECK HERE IF DESCRIPTION OR ADDITIONAL COMMENTS ARE INCLUDED ON ATTACHED PAGE</b>																																																								
Estimated quantity of any recovered materials and a description of how those materials were managed (include disposal method if applicable) <input type="checkbox"/> <b>CHECK HERE IF DESCRIPTION OR ADDITIONAL COMMENTS ARE INCLUDED ON ATTACHED PAGE</b>																																																								
Assessment of actual or potential hazards to human health (Include known acute or immediate and chronic or delayed effects, and where appropriate, advice regarding medical attention necessary for exposed individuals.) <input type="checkbox"/> <b>CHECK HERE IF DESCRIPTION OR ADDITIONAL COMMENTS ARE INCLUDED ON ATTACHED PAGE</b>																																																								
<b>MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY NOTIFIED:</b>  <b>INITIAL CONTACT BY:</b> <input type="checkbox"/> Telephone <input type="checkbox"/> FAX <input type="checkbox"/> Email <input type="checkbox"/> Other <b>DATE/TIME INITIAL CONTACT:</b> _____  <input type="checkbox"/> PEAS: 800-292-4706 Log Number Assigned _____ <input type="checkbox"/> DEQ District or Field Office Divisions or Offices Contacted: <div style="display: flex; flex-wrap: wrap;"> <div style="width: 33%;"> <input type="checkbox"/> Bay City         </div> <div style="width: 33%;"> <input type="checkbox"/> Gwinn         </div> <div style="width: 33%;"> <input type="checkbox"/> Air Quality         </div> <div style="width: 33%;"> <input type="checkbox"/> Cadillac         </div> <div style="width: 33%;"> <input type="checkbox"/> Jackson         </div> <div style="width: 33%;"> <input type="checkbox"/> Remediation &amp; Redevelopment         </div> <div style="width: 33%;"> <input type="checkbox"/> Calumet         </div> <div style="width: 33%;"> <input type="checkbox"/> Kalamazoo         </div> <div style="width: 33%;"> <input type="checkbox"/> Office of Oil Gas &amp; Minerals         </div> <div style="width: 33%;"> <input type="checkbox"/> Crystal Falls         </div> <div style="width: 33%;"> <input type="checkbox"/> Lansing         </div> <div style="width: 33%;"> <input type="checkbox"/> Water Resources         </div> <div style="width: 33%;"> <input type="checkbox"/> Detroit         </div> <div style="width: 33%;"> <input type="checkbox"/> Newberry         </div> <div style="width: 33%;"> <input type="checkbox"/> Office of Waste Management         </div> <div style="width: 33%;"> <input type="checkbox"/> Gaylord         </div> <div style="width: 33%;"> <input type="checkbox"/> Warren         </div> <div style="width: 33%;"> <input type="checkbox"/> &amp; Radiological Protection         </div> <div style="width: 33%;"> <input type="checkbox"/> Grand Rapids         </div> <div style="width: 33%;"> <input type="checkbox"/> Office of Drinking Water &amp; Municipal Assistance         </div> </div> <p><b>NOTE:</b> DEQ Office locations are subject to change</p> <b>NAME AND TITLE OF PERSON MAKING INITIAL REPORT:</b>  _____	<b>OTHER ENTITIES NOTIFIED:</b> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;"></th> <th style="width: 10%; text-align: center;">Date:</th> <th style="width: 10%; text-align: center;">Time:</th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/> National Response Center (NRC): 800-424-8802</td><td style="text-align: center;">_____</td><td style="text-align: center;">_____</td></tr> <tr><td><input type="checkbox"/> US Coast Guard Office:</td><td style="text-align: center;">_____</td><td style="text-align: center;">_____</td></tr> <tr><td style="padding-left: 20px;"><input type="checkbox"/> Detroit <input type="checkbox"/> Grand Haven <input type="checkbox"/> Sault Ste. 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## **DEPARTMENT OF ENVIRONMENTAL QUALITY**

### **WASTE MANAGEMENT DIVISION**

### **WATER RESOURCES PROTECTION**

(By authority conferred on the director and the department of environmental quality by sections 3102 and 3106 of 1994 PA 451, MCL 324.3102 and 324.3106, and Executive Reorganization Order No. 1991-22, MCL 299.13)

## **PART 5. SPILLAGE OF OIL AND POLLUTING MATERIALS**

### **R 324.2001 Definitions; a to o.**

Rule 1. As used in this part:

(a) "Act" means 1994 PA 451, MCL 324.101 et seq., and known as the natural resources and environmental protection act.

(b) "Department" means the department of environmental quality.

(c) "Indoors" means within a building or other enclosure which provides protection from the elements, which has doors or other means of entry that can be closed or otherwise protected from unauthorized entry, and which has a floor capable of containing liquid or solid materials.

(d) "Manufactured item" means any solid article, other than a container holding solid or liquid polluting materials, which is formed to specific shape during manufacture, and which does not leach or otherwise release polluting materials to the groundwaters or surface waters of the state under normal conditions of use or storage.

(e) "Oil" means oil of any kind or in any form, including any of the following:

(i) Petroleum.

(ii) Gasoline.

(iii) Fuel oil.

(iv) Grease.

(v) Oily sludges.

(vi) Oil refuse.

(vii) Oil mixed with waste.

(f) "Oil storage facility" means a temporary or permanent land-based industry, plant, establishment, firm, or other facility which receives, processes, manufactures, uses, stores, or ships oil, and at which there is present an amount of oil equal to or more than the threshold management quantity and which is so situated that oil could directly or indirectly reach the surface or groundwaters of this state,

including any facility that discharges through a public sewer system. "Oil-storage facility" does not include an oil field petroleum or brine storage facility, a recreational marina, installations of oil-containing electrical equipment, or any transportation-related facility, as defined in 40 C.F.R. part 112.

(g) "On-land facility" means a temporary or permanent land-based industry, plant, establishment, firm, storage site, or other facility, which receives, processes, manufactures, uses, stores or ships polluting materials and at which there is present an amount of any polluting material equal to or more than its threshold management quantity and which is so situated that loss of polluting materials could directly or indirectly reach the surface or groundwaters of this state, including any facility which discharges through a public sewer system. "On-land facility" does not include an oil storage facility, an oil field petroleum or brine storage facility, a recreational marina, installations of oil containing electrical equipment, or a transportation-related facility as defined in 40 C.F.R. part 112.

History: 2001 AACCS.

## **R 324.2002 Definitions; p to u.**

Rule 2. As used in this part:

(a) "Polluting material" means all of the following:

(i) Oil.

(ii) Salt.

(iii) Any material specified in table 1 in R 324.2009.

(iv) Any compound or product that contains 1%, or more, by weight, of any material listed in paragraphs (i) through (iii) of this subdivision based on material safety data sheet formulation information for the compounds or products.

(v) "Polluting material" does not include manufactured items.

(b) "Release" is defined in section 20101(1)(bb) of the act. For the purposes of this rule, "release" does not include any of the following:

(i) Spilling, leaking, or discharging less than 1000 gallons of a polluting material into a secondary containment structure that complies with these rules, if recovery of the material spilled, leaked, or discharged is initiated within 24 hours of detection, is completed as soon as practicable, but not more than 72 hours after detection, and if no polluting materials are released directly or indirectly to any public sewer system or to the surface waters or groundwaters of this state.

(ii) Spilling, leaking, or discharging less than 55 gallons of oil to the ground surface, if the spill, leak, or discharge is detected and the oil recovered within 24 hours of the spill, leak, or discharge, and if oil is not released directly or indirectly to any public sewer system or to the surface waters or groundwaters of this state.

(iii) Spilling, leaking, or discharging less than 55 gallons of oil to the surface waters of this state, if effective recovery measures are implemented in response to the spill, leak, or discharge immediately upon detection.

- (iv) Releases of air contaminants as defined in section 5501(a) of the act.
- (v) Permitted releases as defined in section 20101(1)(aa) of the act.
- (c) "Salt" means sodium chloride, potassium chloride, calcium chloride, and magnesium chloride, and solutions or mixtures of these compounds in solid or liquid form.
- (d) "Secondary containment structure" means a unit, other than the primary container in which polluting material is packaged or held, that is designed, constructed, and operated so that the polluting material cannot escape from the unit through public sewers, drains, or otherwise directly or indirectly into any public sewer system or to the surface waters or groundwaters of this state.
- (e) "Sewer system" is defined in R 299.2903(8).
- (f) "Threshold management quantity" means any of the following:
  - (i) For salt in solid form used, stored, or otherwise managed at any location at or within an on-land or oil storage facility, 5 tons.
  - (ii) For salt in liquid form used, stored, or otherwise managed at any location at or within an on-land or oil storage facility, 1000 gallons.
  - (iii) For oil, 1320 gallons in aboveground tanks or containers if no single tank or container has a capacity of more than of 660 gallons.
  - (iv) For all other polluting materials at any discrete outdoor use or storage location at an on-land or oil storage facility, 200 kilograms (440 pounds).
  - (v) For all other polluting materials at any discrete indoor use or storage location at an on-land or oil storage facility, 1000 kilograms (2200 pounds).
- (g) "Threshold reporting quantity" means any of the following:
  - (i) For releases of oil to the surface of the ground, 50 pounds.
  - (ii) For releases of oil to the waters of the state, any quantity that causes unnatural turbidity, color, visible sheens, oil films, foams, solids, or deposits in the receiving waterbody.
  - (iii) For release of salt to the surface of the ground, or waters of the state, 50 pounds in solid form, unless the use is authorized by the department for deicing purposes, or 50 gallons in liquid form, unless authorized by the department as a dust suppressant or deicing agent or permitted under part 31 of the act.
  - (iv) For releases of all other polluting materials, the quantity specified in table 1 in R 324.2009, or any quantity that causes unnatural turbidity, color, visible sheens, oil films, foams, solids, or deposits in the receiving waterbody.
- (h) "Use area" means any area within an oil storage facility or on-land facility that is used for handling, treating, or processing polluting materials.

History: 2001 AACS.

### **R 324.2003 Conditional exemptions.**

Rule 3. (1) Except as otherwise provided in these rules, the following facilities are exempt from these rules subject to the following conditions:

(a) Any facility that manages polluting materials in excess of threshold quantities is exempt from these rules if the polluting materials are managed in containers that do not individually exceed 10 gallons or 100 pounds in capacity and that are located indoors at a facility that is designed, constructed, maintained, and operated to prevent any spilled polluting material from being released directly or indirectly to the surface or groundwaters of the state.

(b) An on-land or oil storage facility which does not manage any other polluting materials in excess of an applicable threshold management quantity and which is otherwise subject to the federal oil pollution prevention requirements of 40 C.F.R. part 110 or 112, (1997), shall comply with these rules by fully complying with the federal requirements and shall also report all releases of oil as required in R 324.2007. The owner or operator of such a facility shall submit a copy of the facility's spill prevention, control, and countermeasure plan in accordance with R 324.2006(2). An oil storage facility that manages both oil and other polluting materials in excess of an applicable threshold management quantity shall comply with these rules for the other polluting materials. Failure to fully comply with the federal oil pollution prevention requirements is a violation of these rules and the federal requirements and is subject to the provisions of part 31 of the act.

(c) An on-land or oil storage facility subject to 1941 PA 207, MCL 29.1, et seq., and known as the fire prevention code, shall comply with these rules by fully complying with the provisions of 1941 PA 207, for any flammable liquids, or combustible liquids, or both, subject to 1941 PA 207. An on-land facility that manages flammable liquids, or combustible liquids, or both, and other polluting materials in excess of an applicable threshold management quantity shall comply with these rules for the other polluting materials.

(d) An on-land or oil storage facility that owns or manages underground storage tanks subject to part 211 or 213 of the act shall comply with these rules by fully complying with the requirements of part 211 or 213 of the act for the underground storage tanks. An on-land or oil storage facility that has underground storage tanks subject to part 211 or 213 of the act that also manages other polluting materials in excess of an applicable threshold management quantity that are not subject to part 211 or 213 of the act shall comply with these rules for the other polluting materials.

(e) An on-land or oil storage facility that manages hazardous wastes subject to part 111 of the act shall comply with these rules by fully complying with the requirements of part 111 of the act for those hazardous wastes. An on-land or oil storage facility that manages hazardous wastes subject to part 111 of the act that also manages other polluting materials in excess of an applicable threshold management quantity that are not subject to part 111 of the act shall comply with these rules for the other polluting materials.

(f) An on-land or oil storage facility that is subject to part 615 of the act shall comply with these rules by fully complying with the requirements of part 615 of the act. An on-land or oil storage facility subject to part 615 of the act that also manages other polluting materials in excess of an applicable threshold management



quantity that are not subject to part 615 of the act shall comply with these rules for the other polluting materials.

(2) Notwithstanding any other provision of these rules, if the department determines, on the basis of the physical state, chemical properties, location, manner of management, or proximity to vulnerable natural resources, that a facility that receives, uses, processes, manufactures, stores, or ships polluting materials in amounts less than an applicable threshold management quantity, can, if there is a release, be reasonably expected to cause substantial harm to the surface or groundwaters of the state, then the facility may be required to comply with these rules by a permit or an order issued under part 31 of the act and the rules promulgated under part 31 of the act.

History: 2001 AACCS.

#### **R 324.2004 Oil storage and on-land facilities: surveillance.**

Rule 4. Oil storage and on-land facilities shall maintain adequate surveillance of all manufacturing processes, treatment systems, storage areas, and other such areas so that any polluting material loss therefrom can be detected in a timely manner and procedures implemented to prevent any polluting materials from reaching the waters of this state.

History: 2001 AACCS.

#### **R 324.2005 Secondary containment.**

Rule 5. (1) Except as may be authorized under subrule (5) of this rule, not later than 24 months after the effective date of these rules, any on-land facility that has any outdoor storage areas used to store liquid polluting materials in excess of a threshold management quantity shall provide secondary containment structures for those outdoor storage areas as required in subrule (2) of this rule.

(2) Secondary containment structures for liquids shall comply with all of the following provisions:

(a) Be constructed of materials that are compatible with, and impervious to, or otherwise capable of containing, any spilled, leaked, or discharged polluting materials so that the materials can be recovered and so that polluting materials cannot escape directly or indirectly to any public sewer system or to the surface waters or groundwaters of this state.

(b) Provide a capacity that is not less than 10% of the total volume of the tanks or containers within the secondary containment structure or provide a capacity of 100% of the largest single tank or container within the secondary containment structure, whichever is larger.

(c) Allow surveillance of the tanks or containers, the timely detection of any leaks and recovery of any spillage, and the removal and proper disposal of any captured



precipitation so that the minimum required capacity is maintained at all times. Captured precipitation may be removed by drainage through normally closed valves if all of the following conditions are met:

(i) The drainage is conducted under the direct supervision of qualified facility personnel.

(ii) The valves are secured closed at all times, except during precipitation removal.

(iii) The drainage is performed in full compliance with all applicable local, state, and federal requirements.

(3) All use areas and indoor storage areas shall be designed, constructed, maintained, and operated to prevent the release of polluting materials through sewers, drains, or otherwise directly or indirectly into any public sewer system or to the surface or groundwaters of this state.

(4) Polluting materials in solid form shall be enclosed, covered, contained, or otherwise protected to prevent run-on and any runoff, seepage, or leakage to any public sewer system or to the surface or groundwaters of the state. Solid polluting materials shall not be stored within 50 feet of a designated wetland or the shore or bank of any lake or stream. Solid polluting material containment structures located within a 100-year floodplain as defined by the federal flood disaster protection act of 1973, 42 U.S.C. 4001 et seq., shall be designed and constructed to remain effective during a 100-year flood.

(5) Alternate secondary containment, control, or treatment systems other than those required in subrule (1) of this rule that provide adequate protection may be used upon written approval of the department. Requests for alternate secondary containment, control, or treatment systems shall be submitted in writing to the chief of the department's waste management division. The chief of the department's waste management division, or his or her authorized delegate, shall either approve, approve with specific modifications, or disapprove a request for an alternate secondary containment, control, or treatment system not more than 180 days after receipt.

History: 2001 AACs.

### **R 324.2006 Pollution incident prevention plan.**

Rule 6. (1) Except as provided in subrule (3) of this rule, not more than 24 months after the effective date of these rules, the owner or operator of any on-land facility that receives, uses, processes, manufactures, stores, or ships polluting materials in excess of the applicable threshold management quantity shall develop, maintain, and operate in accordance with, a pollution incident prevention plan. At a minimum, the pollution incident prevention plan shall include all of the following information:

(a) All of the following general facility information:

- (i) Facility name.
- (ii) Mailing address.
- (iii) Street address, if other than the mailing address.
- (iv) Facility phone number.
- (v) 24-hour emergency phone number or numbers.
- (vi) Internal emergency notification procedures.
- (vii) The name of the designated spill prevention and control coordinator.
- (viii) The name of the person or persons responsible for on-site spill prevention and control, if different than the designated spill prevention and control coordinator.
- (ix) The name of the facility owner.
- (x) A map showing the facility relative to the surrounding area, including thoroughfares.
- (b) Procedures for emergency notification of all of the following entities:
  - (i) The department's pollution emergency alerting system (PEAS).
  - (ii) National response center.
  - (iii) Local emergency planning committee.
  - (iv) Local fire department.
  - (v) Local law enforcement agency.
  - (vi) Municipal wastewater treatment plant if the facility is served by a municipal wastewater treatment plant.
  - (vii) Appropriate spill cleanup contractor, or consulting firm, or both.
- (c) All of the following spill control and cleanup procedures:
  - (i) Inventory and location of spill control and cleanup equipment available on-and off-site.
  - (ii) Procedures for response and cleanup.
  - (iii) Procedures for characterization and disposal of recovered materials.
- (d) A polluting material inventory, including all of the following information:
  - (i) Identification of all polluting materials typically on-site in quantities exceeding the threshold management quantity during the preceding 12 months. The materials shall be identified by product name, chemical name, and chemical abstracts service number.
  - (ii) The location of material safety data sheets for all polluting materials on-site in quantities exceeding the threshold management quantity.
- (e) A site plan depicting relevant site structures and all storage and use areas where polluting materials are managed on-site in quantities exceeding the threshold management quantity, including any of the following:
  - (i) Aboveground and underground tanks.
  - (ii) Floor drains.
  - (iii) Loading and unloading areas.
  - (iv) Sumps.
  - (v) On-site water supplies.

(f) Outdoor secondary containment structures, including all of the following information:

- (i) Location or locations.
- (ii) Design and construction data, including dimensions, materials, capacity, and the amount of the polluting materials stored in each area.
- (iii) Provisions for the capture and removal of spilled polluting materials.
- (iv) Provisions for secondary containment structure physical security, including signage, gates, fences, and barriers.
- (v) Precipitation management procedures, including characterization and disposal procedures and copies of any permits authorizing discharge.
- (vi) Inspection and maintenance procedures.
- (g) Other controls.
- (h) Provisions for general facility physical security.

(2) The facility owner or operator shall maintain the plan at the facility available for inspection upon request of the department. Within 30 days after its completion, the facility owner or operator shall notify the department and certify that the facility is in full compliance with these rules and notify the local emergency planning committee and the local health department serving the facility that the pollution incident prevention plan has been completed and is available upon request. Within 30 days after receiving a request for a copy of the plan from the department, the local emergency planning committee or the local health department, the facility owner or operator shall submit a copy of the pollution incident prevention plan to the requesting agency.

(3) A facility that is subject to other local, state, or federal emergency or contingency planning requirements may integrate the pollution incident prevention plan with other plans if the required elements of the pollution incident prevention plan are contained in the integrated plan. Upon preparation of an integrated plan, the facility owner or operator shall submit the updated plan and shall renotify the department and recertify compliance with these rules in accordance with subrule (2) of this rule.

(4) The facility owner or operator shall evaluate the pollution incident prevention plan or integrated plan every 3 years or after any release that requires implementation of the plan, whichever is more frequent. The facility owner or operator shall update the plan when facility personnel, processes, or procedures identified in the plan change or as otherwise necessary to maintain compliance with this rule. Upon preparation of an updated plan, the facility owner or operator shall renotify the department and recertify compliance with these rules in accordance with subrule (2) of this rule.

(5) If the department determines that a pollution incident prevention plan prepared under subrule (1) of this rule or the applicable portions of an integrated plan prepared under subrule (3) of this rule is incomplete or inadequate, then the department may inform the owner or operator of an oil storage or on-land facility, in writing, of the department's findings and recommendations and request modification of the

plan. The owner or operator of the oil storage or on-land facility shall modify the plan and resubmit it in accordance with subrule (2) of this rule within 30 days after receipt of the department's request, unless a longer response period is authorized by the department in writing.

History: 2001 AACS.

#### **R 324.2007 Pollution incident report.**

Rule 7. (1) As soon as practicable after detection of a release, the owner, operator, or manager of an oil storage facility or an on-land facility that releases or permits to be released any polluting material in excess of a threshold reporting quantity during any 24-hour period shall notify the department by contacting the department's PEAS at 1-800-292-4706.

(2) Within 10 days after the release, the owner or operator shall file a written report with the chief of the department's waste management division outlining the cause of the release, discovery of the release, and the response measures taken or a schedule for completion of measures to be taken, or both, to prevent recurrence of similar releases.

(3) This rule does not supersede, rescind, or otherwise alter any other existing procedure, rule, or statute pertaining to pollution of the waters of this state, nor does it relieve any person from any reporting requirement imposed under federal law or regulation.

History: 2001 AACS.

#### **R 324.2008 Enforcement.**

Rule 8. A person who violates any provision of this part is subject to the procedures and penalties prescribed in sections 3112, 3114, 3115, and 3115a of part 31 of the act.

History: 2001 AACS.

#### **R 324.2009 Table 1; polluting materials.**

Rule 9. Table 1 reads as follows:

Name	CAS	TRQ (lbs)
1,1,1,2 Tetrachloroethane	630206	10
1,1,1-Trichloroethane	71556	100
1,1,2,2-Tetrachloroethane	79345	10
1,1,2-Trichloroethane	79005	10
1,1-Dichloroethane	75343	100
1,1-Dichloroethylene	75354	10
1,1-Dichloropropane	78999	100
1,2-Dimethylhydrazine	540738	1

1,1-Dimethylhydrazine	57147	10
1,2,3,4-tetrachlorobenzene	634662	10
1,2,3,5-tetrachlorobenzene	634902	10
1,2,3-trichlorobenzene	87616	10
1,2,4,5-Tetrachlorobenzene	95943	500
1,2,4-Trichlorobenzene	120821	10
1,2:3,4-diepoxybutane	298180	10
1,2-Butylene oxide	106887	10
1,2-Dibromo-3-chloropropane	96128	1
1,2-Dibromoethane	106934	1
1,2-Dichloroethane	107062	10
1,2-Dichloroethylene	156605	100
1,2-Dichloropropane	78875	100
1,2-Diphenylhydrazine	122667	10
1,3,5-Trinitrobenzene	99354	10
1,3-Butadiene	106990	10
1,3-Dichlorobenzene	541731	10
1,3-Dichloropropane	142289	500
1,3-Dichloropropylene	542756	10
1,3-Pentadiene	504609	10
1,4-Dichloro-2-butene	764410	1
1,4-Dichlorobenzene	106467	10
1,4-Dioxane	123911	10
1,4-Naphthoquinone	130154	500
1,5-naphthalenediamine	2243621	10
1-Acetyl-2-thiourea	591082	100
1-amino-2-methylanthraquinone	82280	10
1-chloropropene	590-21-6	10
1H-Azepine-1 carbothioic acid, hexahydro-S-ethyl ester	2212671	1
2,2,4-Trimethylpentane	540841	100
2,2-Dichloropropionic acid	75990	500
2,2-Dimethyl-1,3-benzodioxol-4-ol methylcarbamate	22781233	1
2,3,4,5-tetrachlorophenol	4901513	10
2,3,4,6-Tetrachlorophenol	58902	10
2,3,4-Trichlorophenol	15950660	10
2,3,5,6-tetrachlorophenol	935955	10
2,3,5-Trichlorophenol	933788	10
2,3,6-Trichlorophenol	933755	10
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746016	1
2,3-Dichloropropene	78886	10
2,4,5-T acid	93765	100
2,4,5-T amines	1319728	500
2,4,5-T amines	6369966	500
2,4,5-T amines	2008460	500
2,4,5-T amines	6369977	500
2,4,5-T amines	3813147	500
2,4,5-T esters	25168154	100
2,4,5-T esters	61792072	100
2,4,5-T esters	2545597	100

2,4,5-T esters	93798	100
2,4,5-T esters	1928478	100
2,4,5-T salts	13560991	100
2,4,5-TP esters	32534955	10
2,4,5-Trichlorophenol	95954	10
2,4,5-trichlorotoluene	6639301	10
2,4,5-trimethylaniline	137177	10
2,4,6-Trichlorophenol	88062	10
2,4-D chlorocrotyl ester	2971382	10
2,4-D Esters	1320189	10
2,4-D Esters	94791	10
2,4-D Esters	53467111	10
2,4-D Esters	1928387	10
2,4-D Esters	1928616	10
2,4-D Esters	2971382	10
2,4-D Esters	1929733	10
2,4-D Esters	94111	10
2,4-D Esters	25168267	10
2,4-D Esters	94804	10
2,4-D, salts and esters	94757	10
2,4-diaminoanisole sulfate	39156417	10
2,4-Diaminotoluene	95807	10
2,4-Dichlorophenol	120832	10
2,4-Dimethylphenol	105679	10
2,4-Dinitrophenol	51285	10
2,4-Dinitrotoluene	121142	10
2,4-Dithiobiuret	541537	10
2,5-Dinitrophenol	329715	10
2,6-Dichlorophenol	87650	10
2,6-Dinitrophenol	573568	10
2,6-Dinitrotoluene	606202	10
2-Acetylaminofluorene	53963	1
2-aminoanthraquinone	117793	10
2-Butenal	4170303	10
2-Butenal, (e)-	123739	10
2-Chloroacetophenone	532274	10
2-Chloroethyl vinyl ether	110758	100
2-Chloronaphthalene	91587	500
2-Chlorophenol	95578	10
2-Cyclohexyl-4,6-dinitrophenol	131895	10
2-Ethoxyethanol	110805	100
2-methyl-1-nitroanthraquinone	129157	10
2-Methylacetonitrile	75865	10
2-Methylpyridine	109068	500
2-Nitrophenol	88755	10
2-Nitropropane	79469	10
3-(chloromethyl)pyridine hydrochloride	6959484	10
3,3'-Dichlorobenzidine	91941	1
3,3'-Dimethoxybenzidine	119904	10

3,3'-Dimethylbenzidine	119937	10
3,4,5-Trichlorophenol	609198	10
3,4-Dinitrotoluene	610399	10
3,6-Dichloro-2-methoxybenzoic acid	1918009	100
3-amino-9-ethylcarbazole	132321	10
3-amino-9-ethylcarbazole hydrochloride	57360175	10
3-Chloropropionitrile	542767	100
3-Iodo-2-propynyl butylcarbamate	55406536	1
3-Methylcholanthrene	56495	10
4,4'-diaminodiphenyl ether	101804	10
4,4'-Methylenebis(2-chloroaniline)	101144	10
4,4'-methylenebis(2-methylaniline)	838880	10
4,4'-methylenebis(N,N-dimethyl)benzenamine	101611	10
4,4'-Methylenedianiline	101779	10
4,4'-thiodianiline	139651	10
4,6-Dinitro-o-cresol and salts	534521	10
4-Aminobiphenyl	92671	1
4-Aminopyridine	504245	100
4-Bromophenyl phenyl ether	101553	10
4-chloro-m-phenylenediamine	5131602	10
4-chloro-o-phenylenediamine	95830	10
4-Chloro-o-toluidine, hydrochloride	3165933	10
4-Chlorophenyl phenyl ether	7005723	500
4-Nitrobiphenyl	92933	10
5-(Aminomethyl)-3-isoxazolol	2763964	100
5-chloro-o-toluidine	95794	10
5-nitroacenaphthene	602879	10
5-nitro-o-anisidine	99592	1
5-Nitro-o-toluidine	99558	10
7,12-Dimethylbenz[a]anthracene	57976	1
abietic acid	514103	10
Acenaphthene	83329	10
Acenaphthylene	208968	500
Acetaldehyde	75070	100
Acetaldehyde, trichloro-	75876	500
Acetamide	60355	10
Acetic acid	64197	500
Acetic anhydride	108247	500
Acetone	67641	500
Acetonitrile	75058	500
Acetophenone	98862	500
Acetyl bromide	506967	500
Acetyl chloride	75365	500
Acrolein	107028	1
Acrylamide	79061	500
Acrylic acid	79107	500
Acrylonitrile	107131	10
actinomycin D	50760	10

Adipic acid	124049	500
Aflatoxins	1402682	1
Aldicarb	116063	1
Aldicarb sulfone	1646884	1
Aldrin	309002	1
Allyl alcohol	107186	10
Allyl chloride	107051	100
alpha – Endosulfan	959988	1
alpha-BHC	319846	10
alpha-Hexachlorocyclohexane	319846	10
alpha-Naphthylamine	134327	10
Aluminum phosphide	20859738	10
Aluminum sulfate	10043013	500
Aminoazobenzene	60093	10
Amitrole	61825	10
Ammonia	7664417	10
Ammonium acetate	631618	500
Ammonium benzoate	1863634	500
Ammonium bicarbonate	1066337	500
Ammonium bichromate	7789095	10
Ammonium bifluoride	1341497	10
Ammonium bisulfite	10192300	500
Ammonium carbamate	1111780	500
Ammonium carbonate	506876	500
Ammonium chloride	12125029	500
Ammonium chromate	7788989	10
Ammonium citrate, dibasic	3012655	500
Ammonium fluoborate	13826830	500
Ammonium fluoride	12125018	10
Ammonium hydroxide	1336216	100
Ammonium oxalate	14258492	500
Ammonium oxalate	5972736	500
Ammonium oxalate	6009707	500
Ammonium picrate	131748	10
Ammonium silicofluoride	16919190	100
Ammonium sulfamate	7773060	500
Ammonium sulfide	12135761	10
Ammonium sulfite	10196040	500
Ammonium tartrate	3164292	500
Ammonium tartrate	14307438	500
Ammonium thiocyanate	1762954	500
Ammonium vanadate	7803556	100
Amyl acetate	628637	500
Anilazine	101053	1
Aniline	62533	500
aniline hydrochloride	142041	10
Anthracene	120127	500
Antimony	7440360	500
ANTIMONY COMPOUNDS		1



Antimony pentachloride	7647189	100
Antimony potassium tartrate	28300745	10
Antimony tribromide	7789619	100
Antimony trichloride	10025919	100
Antimony trifluoride	7783564	100
Antimony trioxide	1309644	100
antimycin A	1397940	1
Aramite	140578	1
Aroclor 1016	12674112	1
Aroclor 1221	11104282	1
Aroclor 1232	11141165	1
Aroclor 1242	53469219	1
Aroclor 1248	12672296	1
Aroclor 1254	11097691	1
Aroclor 1260	11096825	1
Arsenic	7440382	1
Arsenic acid	1327522	1
Arsenic acid	7778394	1
ARSENIC COMPOUNDS		1
Arsenic disulfide	1303328	1
Arsenic pentoxide	1303282	1
Arsenic trioxide	1327533	1
Arsenic trisulfide	1303339	1
Arsenous trichloride	7784341	1
Asbestos (friable)	1332214	1
Auramine	492808	10
Azaserine	115026	1
azinphos-ethyl	2642719	1
Aziridine, 2-methyl	75558	1
Azobenzene	103333	1
Barban	101279	1
Barban	101279	10
Barium cyanide	542621	10
Bendiocarb	22781233	10
Bendiocarb phenol	22961826	1
Benezeneamine, 2,6-dinitro-N,N-dipropyl-4-	1582098	10
Benomyl	17804352	1
Benomyl	17804352	10
Benz[a]anthracene	56553	10
Benz[c]acridine	225514	10
Benzal chloride	98873	500
Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl	23950585	500
Benzene	71432	10
Benzene, 2,4-diisocyanato-1-methyl-	584849	10
Benzeneacetic acid, 4-chloro-.alpha.-(4-chlorophenyl)-.alpha.- hydroxy-, ethyl ester	510156	10
Benzeneethanamine, alpha, alpha-dimethyl-	122098	500
Benzenemethanol, 4-chloro-.alpha.-4-chlorophenyl)-.alpha.- (trichloromethyl)-	115322	10

Benzenesulfonyl chloride	98099	10
Benzenethiol	108985	10
Benzidine	92875	1
Benzidine (and salts)		1
Benzo(k)fluoranthene	207089	500
Benzo[a]pyrene	50328	1
Benzo[b]fluoranthene	205992	1
Benzo[ghi]perylene	191242	500
Benzoic acid	65850	500
Benzoic trichloride	98077	10
Benzonitrile	100470	500
Benzoyl chloride	98884	100
Benzyl chloride	100447	10
Beryllium	7440417	10
Beryllium chloride	7787475	1
BERYLLIUM COMPOUNDS		1
Beryllium fluoride	7787497	1
Beryllium nitrate	7787555	1
Beryllium nitrate	13597994	1
beta – Endosulfan	33213659	1
beta-BHC	319857	1
beta-Naphthylamine	91598	10
beta-Propiolactone	57578	10
Biphenyl	92524	10
Bis(2-chloro-1-methylethyl)ether	108601	100
Bis(2-chloroethoxy) methane	111911	100
Bis(2-chloroethyl) ether	111444	10
Bis(2-ethylhexyl)phthalate	117817	10
Bis(chloromethyl) ether	542881	10
Bis(dimethylthiocarbamoyl) sulfide	97745	1
Bromoacetone	598312	100
Bromoform	75252	10
Bromomethane	74839	100
Bromoxynil	1689845	1
Brucine	357573	10
Butyl acetate	123864	500
Butyl benzyl phthalate	85687	10
Butylamine	109739	100
Butylate	2008415	1
butylbutanol nitrosamine	3817116	10
Butylethylcarbamothioic acid S-propyl ester	1114712	1
Butyric acid	107926	500
Cacodylic acid	75605	1
Cadmium	7440439	10
Cadmium acetate	543908	10
Cadmium bromide	7789426	10
Cadmium chloride	10108642	10
CADMIUM COMPOUNDS		1
Calcium arsenate	7778441	1

Calcium arsenite	52740166	1
Calcium carbide	75207	10
Calcium chromate	13765190	10
Calcium cyanamide	156627	100
Calcium cyanide	592018	10
Calcium dodecylbenzenesulfonate	26264062	100
Calcium hypochlorite	7778543	10
Caprolactam	105602	500
Captafol	2425061	1
Captan	133062	10
Carbamic acid, methyl-, O-(((2,4-dimethyl-1,3-dithiolan-2-	26419738	1
Carbamodithioic acid, dibutyl-, sodium salt	136301	1
Carbamodithioic acid, diethyl-, sodium salt	148185	1
Carbamothioic acid, bis(1-methylethyl)-S-(2,3-dichloro-2-propenyl)ester	2303164	10
Carbamothioic acid, dipropyl-, S-(phenylmethyl) ester	52888809	1
Carbamothioic acid, dipropyl-, S-propyl ester	1929777	1
Carbaryl	63252	10
Carbendazim	10605217	1
Carbofuran	1563662	10
Carbofuran phenol	1563388	1
Carbon disulfide	75150	10
Carbon oxide sulfide (COS)	463581	10
Carbon tetrachloride	56235	10
Carbonic difluoride	353504	100
Carbonochloridic acid, methylester	79221	100
Carbonyl sulfide	463581	10
Carbophenothion	786196	1
Carbosulfan	55285148	1
Catechol	120809	10
Chloramben	133904	10
Chlorambucil	305033	10
Chloramines		1
Chlordane	57749	1
Chlorfenvinphos	470906	10
CHLORINATED BENZENES		1
Chlorinated dibenzofurans		1
Chlorinated dioxins		1
CHLORINATED ETHANES		1
CHLORINATED NAPHTHALENE		1
CHLORINATED PHENOLS		1
Chlorine	7782505	10
Chlorine (elemental and hypochlorite salts)		10
Chlornaphazine	494031	10
Chloroacetaldehyde	107200	100
Chloroacetic acid	79118	10
CHLOROALKYL ETHERS		1
Chlorobenzene	108907	10

Chlorodibromomethane	124481	10
Chloroethane	75003	10
Chloroform	67663	10
Chloromethane	74873	10
Chloromethyl methyl ether	107302	10
Chloroprene	126998	10
Chlorosulfonic acid	7790945	100
Chlorpyrifos	2921882	1
Chromic acetate	1066304	100
Chromic acid	7738945	10
Chromic acid	11115745	10
Chromic sulfate	10101538	100
Chromium	7440473	500
CHROMIUM COMPOUNDS		1
Chromous chloride	10049055	100
Chrysene	218019	10
Clonitralid	1420048	10
COBALT COMPOUNDS		1
Cobaltous bromide	7789437	100
Cobaltous formate	544183	100
Cobaltous sulfamate	14017415	100
COKE OVEN EMISSIONS		1
Copper	7440508	500
COPPER COMPOUNDS		1
Copper cyanide	544923	10
Copper, bis(dimethylcarbamodithioato-S,S')-	137291	1
Coumaphos	56724	10
Creosote	8001589	1
Cresol (mixed isomers)	1319773	10
Crotoxyphos	7700176	10
Cumene	98828	500
Cumene hydroperoxide	80159	10
Cupferron	135206	10
Cupric acetate	142712	10
Cupric acetoarsenite (Paris green)	12002038	1
Cupric chloride	7447394	10
Cupric nitrate	3251238	10
Cupric oxalate	5893663	10
Cupric sulfate	7758987	10
Cupric sulfate, ammoniated	10380297	10
Cupric tartrate	815827	10
CYANIDE COMPOUNDS		1
Cyanides (soluble salts and complexes)	57125	10
Cyanogen	460195	10
Cyanogen bromide	506683	100
Cyanogen chloride	506774	10
Cycasin	14901087	10
Cycloate	1134232	1
Cyclohexane	110827	100

Cyclohexanone	108941	500
Cycloheximide	66819	1
Cyclophosphamide	50180	10
Daunomycin	20830813	10
DDD	72548	1
DDE	3547044	500
DDE	72559	1
DDT	50293	1
DDT (p'p', o'p' and technical salts)		1
DDT AND METABOLITES		1
dehydroabietic acid	1740198	10
delta-BHC	319868	1
Demeton	8065483	1
Diaminotoluene	496720	10
Diaminotoluene	823405	10
Diazinon	333415	1
Diazomethane	334883	10
Dibenz[a,h]anthracene	53703	1
Dibenz[a,i]pyrene	189559	10
Dibenzofuran	132649	10
Dichlobenil	1194656	10
Dichlone	117806	1
Dichlorobenzene	25321226	10
DICHLOROBENZIDENE		1
Dichlorobromomethane	75274	500
Dichlorodifluoromethane (CFC-12)	75718	500
Dichloroisopropyl ether	108601	100
Dichlorophenylarsine	696286	1
Dichloropropane	26638197	100
Dichloropropane – Dichloropropene (mixture)	8003198	10
Dichloropropene	26952238	10
Dichlorvos	62737	10
Dichrotophos	141662	1
Dicofol	115322	10
Dieldrin	60571	1
Diepoxybutane	1464535	10
Diethanolamine	111422	10
Diethyl phthalate	84662	100
Diethyl sulfate	64675	10
Diethylamine	109897	10
Diethylarsine	692422	1
Diethyl-p-nitrophenyl phosphate	311455	10
Diethylstilbestrol	56531	1
Dihydrosafrole	94586	10
Diisopropylfluorophosphate	55914	10
Dimethoate	60515	10
dimethyl disulphide	624920	10
Dimethyl phthalate	131113	500
Dimethyl sulfate	77781	10

Dimethylamine	124403	100
Dimethylaminoazobenzene	60117	10
Dimethylcarbamyl chloride	79447	1
Dimethylformamide	68122	10
Dimetilan	644644	1
Dinitrobenzene (mixed isomers)	25154545	10
Dinitrophenol	25550587	10
Dinitrotoluene (mixed isomers)	25321146	10
Dinocap	39300453	1
Di-n-octyl phthalate	117840	500
Dinoseb	88857	100
Dioxathion	78342	1
diphenyl ether	101848	10
DIPHENYLHYDRAZINE		1
Diphosphoramidate, octamethyl-	152169	10
Dipropylamine	142847	500
Diquat	85007	100
Diquat	2764729	100
Disulfiram	97778	1
Disulfoton	298044	1
Diuron	330541	10
Dodecylbenzenesulfonic acid	27176870	100
Endosulfan	115297	1
ENDOSULFAN AND METABOLITES		1
Endosulfan sulfate	1031078	1
Endothall	145733	100
Endrin	72208	1
Endrin aldehyde	7421934	1
ENDRIN AND METABOLITES		1
Epichlorohydrin	106898	10
Epinephrine	51434	100
EPN	2104645	1
Ethanimidothioic acid, 2-(dimethylamino)-N-hydroxy-2-oxo-, methyl ester	30558431	1
Ethanimidothioic acid, N-[[methylamino)carbonyl]	16752775	10
Ethanol, 2,2'-oxybis-, dicarbamate	5952261	1
Ethion	563122	10
Ethyl acetate	141786	500
Ethyl acrylate	140885	100
Ethyl cyanide	107120	10
Ethyl dipropylthiocarbamate	759944	1
Ethyl ether	60297	10
Ethyl methacrylate	97632	100
Ethyl methanesulfonate	62500	1
Ethyl Ziram	14324551	1
Ethylbenzene	100414	100
Ethylene glycol	107211	500
Ethylene oxide	75218	10
Ethylene thiourea	96457	10

Ethylenebisdithiocarbamic acid, salts & esters	111546	500
Ethylenediamine	107153	500
Ethylenediamine-tetraacetic acid (EDTA)	60004	500
Ethyleneimine	151564	1
Famphur	52857	100
Fensulfothion	115902	1
Fenthion	55389	1
Ferric ammonium citrate	1185575	100
Ferric ammonium oxalate	2944674	100
Ferric ammonium oxalate	55488874	100
Ferric chloride	7705080	100
Ferric fluoride	7783508	10
Ferric nitrate	10421484	100
Ferric sulfate	10028225	100
Ferrous ammonium sulfate	10045893	100
Ferrous chloride	7758943	10
Ferrous sulfate	7720787	100
Ferrous sulfate	7782630	100
Fine mineral fibers		
Fluchloralin	33245395	1
Fluoranthene	206440	10
Fluorene	86737	500
Fluorine	7782414	10
Fluoroacetamide	640197	10
Formaldehyde	50000	10
Formetanate hydrochloride	23422539	1
Formic acid	64186	500
Formparanate	17702577	1
Fumaric acid	110178	500
Furan	110009	10
Furan, tetrahydro-	109999	100
Furathiazole	531828	1
Furfural	98011	500
Glycidylaldehyde	765344	10
GLYCOL ETHERS		1
Guanidine, N-methyl-N'-nitro-N-nitroso-	70257	10
Guthion	86500	1
HALOETHERS		1
HALOMETHANES		1
Heptachlor	76448	1
HEPTACHLOR AND METABOLITES		1
Heptachlor epoxide	1024573	1
Hexachlorobenzene	118741	10
Hexachlorobutadiene	87683	1
hexachlorocyclohexane (all isomers)	608731	1
Hexachlorocyclopentadiene	77474	10
Hexachloroethane	67721	10
Hexachlorophene	70304	10
Hexachloropropene	1888717	100

Hexaethyl tetraphosphate	757584	10
Hexamethylene-1,6-diisocyanate	822060	10
Hexamethylphosphoramide	680319	1
Hexane	110543	500
Hydrazine	302012	1
Hydrazine, 1,2-diethyl-	1615801	10
Hydrazine, 1,2-dimethyl-	540738	1
Hydrochloric acid	7647010	500
Hydrofluoric acid	7664393	10
Hydrogen cyanide	74908	10
Hydrogen sulfide	7783064	10
Hydroquinone	123319	10
Indeno(1,2,3-cd)pyrene	193395	10
iso-Amyl acetate	123922	500
iso-Butyl acetate	110190	500
Isobutyl alcohol	78831	500
iso-Butylamine	78819	100
iso-Butyric acid	79312	500
Isodrin	465736	1
isonicotinic acid hydrazine	54853	10
Isophorone	78591	500
Isoprene	78795	10
Isopropanolamine dodecylbenzene sulfonate	42504461	100
Isopropylmethylpyrazolyl dimethylcarbamate	119380	1
Isosafrole	120581	10
kanechlor C	59299513	10
Kepone	143500	1
Ketene	463514	1
Lactonitrile	78977	10
Lasiocarpine	303344	10
Lead	7439921	10
Lead acetate	301042	10
Lead arsenate	10102484	1
Lead arsenate	7784409	1
Lead arsenate	7645252	1
Lead chloride	7758954	10
LEAD COMPOUNDS		1
Lead fluoborate	13814965	10
Lead fluoride	7783462	10
Lead iodide	10101630	10
Lead nitrate	10099748	10
Lead phosphate	7446277	10
Lead stearate	56189094	10
Lead stearate	1072351	10
Lead stearate	7428480	10
Lead stearate	52652592	10
Lead subacetate	1335326	10
Lead sulfate	7446142	10
Lead sulfate	15739807	10



Lead sulfide	1314870	10
Lead thiocyanate	592870	10
Leptophos	21609905	1
Lindane	58899	1
Lithium and lithium salts		1
malachite green	569642	1
Malathion	121755	10
Maleic acid	110167	500
Maleic anhydride	108316	500
Maleic hydrazide	123331	500
Malononitrile	109773	100
MANGANESE COMPOUNDS		1
Manganese, bis(dimethylcarbamodithioato-S,S')-	15339363	1
m-Cresol	108394	10
m-Dinitrobenzene	99650	10
Melphalan	148823	1
Mercuric cyanide	592041	1
Mercuric nitrate	10045940	10
Mercuric sulfate	7783359	10
Mercuric thiocyanate	592858	10
Mercurous nitrate	10415755	10
Mercurous nitrate	7782867	10
Mercury	7439976	1
MERCURY COMPOUNDS		1
Mercury fulminate	628864	10
Mestranol	72333	10
Methacrylonitrile	126987	100
Methanol	67561	500
Methapyrilene	91805	500
Methiocarb	2032657	10
Methoxychlor	72435	1
Methyl ethyl ketone (MEK)	78933	500
Methyl ethyl ketone peroxide	1338234	10
Methyl hydrazine	60344	10
Methyl iodide	74884	10
Methyl isobutyl ketone	108101	500
Methyl isocyanate	624839	10
Methyl mercaptan	74931	10
Methyl methacrylate	80626	100
Methyl parathion	298000	10
Methyl tert-butyl ether	1634044	100
Methylene bromide	74953	100
Methylene chloride	75092	100
Methylenebis(phenylisocyanate)	101688	500
Methylthiouracil	56042	10
Metolcarb	1129415	1
Mevinphos	7786347	10
Mexacarbate	315184	100
Mirex	2385855	1

Mitomycin C	50077	10
m-Nitrophenol	554847	10
m-Nitrotoluene	99081	100
Monocrotaline	315220	10
Monocrotophos	6923224	1
Monoethylamine	75047	10
Monomethylamine	74895	10
mustard gas	505602	10
m-Xylene	108383	100
N-(2-hydroxyethyl)ethyleneimine	1072522	10
N,N-Diethylaniline	91667	100
N,N'-diethylthiourea	105555	10
N,N-Dimethylaniline	121697	10
Naled	300765	10
Naphthalene	91203	10
Naphthenic acid	1338245	10
n-Butyl alcohol	71363	500
n-Butyl phthalate	84742	10
neobietic acid	471772	1
Nickel	7440020	10
Nickel ammonium sulfate	15699180	10
Nickel carbonyl	13463393	10
Nickel chloride	37211055	10
Nickel chloride	7718549	10
NICKEL COMPOUNDS		1
Nickel cyanide	557197	10
Nickel hydroxide	12054487	10
Nickel nitrate	14216752	10
Nickel sulfate	7786814	10
Nicotine and salts	54115	10
Nicotine sulfate	65305	10
Nifurthiazole	3570750	10
Niridazole	61574	10
Nithiazide	139946	10
Nitric acid	7697372	100
Nitric oxide	10102439	10
Nitrobenzene	98953	100
Nitrofen	1836755	10
Nitrogen dioxide	10102440	10
Nitrogen dioxide	10544726	10
nitrogen mustard	51752	10
Nitroglycerin	55630	10
Nitrophenol (mixed isomers)	25154556	10
NITROPHENOLS		1
NITROSAMINES		1
Nitrotoluene	1321126	100
N-methyl formamide	123397	10
N-Nitrosodiethanolamine	1116547	1
N-Nitrosodiethylamine	55185	1

N-Nitrosodimethylamine	62759	10
N-Nitrosodi-n-butylamine	924163	10
N-Nitrosodi-n-propylamine	621647	10
N-Nitrosodiphenylamine	86306	10
N-Nitrosomethylvinylamine	4549400	10
N-Nitrosomorpholine	59892	1
N-nitrosomorpholine	59892	10
N-Nitroso-N-ethylurea	759739	1
N-Nitroso-N-methylurea	684935	1
N-Nitroso-N-methylurethane	615532	1
N-Nitrosopiperidine	100754	10
N-Nitrosopyrrolidine	930552	1
N-nitrososarcosine	13256229	10
n-Propylamine	107108	500
O,O-Diethyl O-pyrazinyl phosphorothioate	297972	10
O,O-Diethyl S-methyl dithiophosphate	3288582	500
o-aminoazotoluene	97563	10
o-Anisidine	90040	10
o-anisidine hydrochloride	134292	10
o-Cresol	95487	10
Octachlorostyrene	29082744	10
o-Dichlorobenzene	95501	10
o-Dinitrobenzene	528290	10
o-Nitrotoluene	88722	100
o-phenylphenol	90437	10
Osmium tetroxide	20816120	100
o-Toluidine	95534	10
o-Toluidine hydrochloride	636215	10
Oxamyl	23135220	1
Oxydemetonmethyl	301122	10
o-Xylene	95476	100
Paraformaldehyde	30525894	100
Paraldehyde	123637	100
Paraquat	1910425	10
Parathion	56382	10
p-Chloroaniline	106478	100
p-Chloro-m-cresol	59507	500
p-chlorophenol	106489	10
p-cresidine	120718	10
p-Cresol	106445	10
p-Dinitrobenzene	100254	10
Pentachlorobenzene	608935	10
Pentachloroethane	76017	10
Pentachloronitrobenzene	82688	10
Pentachlorophenol	87865	10
Pentachlorophenol (and salts)		10
Perchloromethyl mercaptan	594423	10
Phenacetin	62442	10
Phenanthrene	85018	500

phenazopyridine hydrochloride	136403	10
Phenesterin	3546109	10
Phenobarbitol	50066	10
Phenol	108952	100
Phenol, 2-(1-methylethoxy)-, methylcarbamate	114261	10
Phenol, 3-(1-methylethyl)-, methylcarbamate	64006	1
Phenylmercury acetate	62384	10
Phenylthiourea	103855	10
Phenytol	57410	10
phenytol sodium	630933	10
Phorate	298022	10
Phosazetim	4104147	1
Phosgene	75445	10
Phosmet	732116	10
Phosphamidon	13171216	1
Phosphine	7803512	10
Phosphoric acid	7664382	500
Phosphorous trichloride	7719122	100
Phosphorus	7723140	1
Phosphoryl chloride	10025873	100
PTHALATE ESTERS		1
Phthalic anhydride	85449	500
Physostigmine	57476	1
Physostigmine, salicylate (1:1)	57647	1
Piperidine, 1,1'-(tetrathiodicarbonothioyl)-bis-	120547	1
piperonyl sulfoxide	120627	10
p-Nitroaniline	100016	500
p-Nitrophenol	100027	10
p-nitrosodiphenylamine	156105	10
p-Nitrotoluene	99990	100
Polybrominated biphenyls		1
Polychlorinated biphenyls	1336363	1
POLYCYCLIC ORGANIC MATTER		1
POLYNUCLEAR AROMATIC HYDROCARBONS		1
Potassium arsenate	7784410	1
Potassium arsenite	10124502	1
Potassium bichromate	7778509	10
Potassium chromate	7789006	10
Potassium cyanide	151508	10
Potassium dimethyldithiocarbamate	128030	1
Potassium hydroxide	1310583	100
Potassium N-hydroxymethyl-N-methyldithiocarbamate	51026289	1
Potassium N-methyldithiocarbamate	137417	1
Potassium permanganate	7722647	10
Potassium silver cyanide	506616	1
p-Phenylenediamine	106503	500
Promecarb	2631370	1
Propane sultone	1120714	10
Propargite	2312358	10

Propargyl alcohol	107197	100
Propham	122429	1
Propionaldehyde	123386	100
Propionic acid	79094	500
Propionic anhydride	123626	500
Propylene oxide	75560	10
Propylthiouracil	51323	10
p-Toluidine	106490	10
p-Xylene	106423	10
Pyrene	129000	500
Pyrethrins	121299	1
Pyrethrins	121211	1
Pyrethrins	8003347	1
Pyridine	110861	100
Quinoline	91225	500
Quinone	106514	10
Reserpine	50555	500
Resorcinol	108463	500
Rotenone	83794	1
Saccharin and salts	81072	10
Safrole	94597	10
sec-Amyl acetate	626380	500
sec-Butyl acetate	105464	500
sec-Butylamine	513495	100
sec-Butylamine	13952846	100
Selenious acid	7783008	10
Selenious acid, dithallium(1+) salt	12039520	100
Selenium	7782492	10
SELENIUM COMPOUNDS		1
Selenium dioxide	7446084	10
Selenium sulfide	7488564	10
Selenium, tetrakis(dimethyldithiocarbamate)	144343	1
Selenourea	630104	100
Semicarbazide	57567	10
semicarbazide hydrochloride	563417	10
Silver	7440224	100
SILVER COMPOUNDS		1
Silver cyanide	506649	1
Silver nitrate	7761888	1
Silvex (2,4,5-TP)	93721	10
silvex, propylene glycol butyl ether ester	2317240	10
Sodium	7440235	10
Sodium arsenate	7631892	1
Sodium arsenite	7784465	1
Sodium azide (Na(N3))	26628228	100
Sodium bichromate	10588019	10
Sodium bifluoride	1333831	10
Sodium bisulfite	7631905	500
Sodium chromate	7775113	10
Sodium cyanide (Na(CN))	143339	10

Sodium dimethyldithiocarbamate	128041	1
Sodium dodecylbenzenesulfonate	25155300	100
Sodium fluoride	7681494	100
Sodium fluoroacetate	62748	10
sodium fluoroacetate	62748	1
Sodium hydrosulfide	16721805	500
Sodium hydroxide	1310732	100
Sodium hypochlorite	10022705	10
Sodium hypochlorite	7681529	10
Sodium methyrate	124414	100
Sodium methyldithiocarbamate	137428	1
Sodium nitrite	7632000	10
Sodium phosphate, dibasic	10039324	500
Sodium phosphate, dibasic	10140655	500
Sodium phosphate, dibasic	7558794	500
Sodium phosphate, tribasic	10361894	500
Sodium phosphate, tribasic	7785844	500
Sodium phosphate, tribasic	7601549	500
Sodium phosphate, tribasic	7758294	500
Sodium phosphate, tribasic	10101890	500
Sodium phosphate, tribasic	10124568	500
Sodium selenite	7782823	10
Sodium selenite	10102188	10
sodium-o-phenylphenol	132274	10
Streptozotocin	18883664	1
Strontium chromate	7789062	10
Strychnine, and salts	57249	10
Strychnine, sulfate	60413	10
Styrene	100425	100
Styrene oxide	96093	10
Sulfallate	95067	1
Sulfallate	95067	10
Sulfur monochloride	12771083	100
Sulfur phosphide	1314803	10
Sulfuric acid	7664939	100
Sulfuric acid (fuming)	8014957	100
Terbufos	13071799	1
tert-Amyl acetate	625161	500
tert-Butyl acetate	540885	500
tert-Butylamine	75649	100
Tetrabutylthiuram disulfide	1634022	1
Tetrachloroethylene	127184	10
Tetrachloroguaiacol	2539175	10
Tetrachlorvinphos	961115	10
Tetraethyl lead	78002	10
Tetraethyl pyrophosphate	107493	10
Tetraethyldithiopyrophosphate	3689245	10
Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione	533744	1
Tetranitromethane	509148	10

THALLIUM COMPOUNDS		1
Thallic oxide	1314325	10
Thallium	7440280	100
Thallium chloride TlCl	7791120	10
Thallium sulfate	10031591	10
Thallium(I) acetate	563688	10
Thallium(I) carbonate	6533739	10
Thallium(I) nitrate	10102451	10
Thallium(I) sulfate	7446186	10
Thioacetamide	62555	10
Thiodicarb	59669260	1
Thiofanox	39196184	10
Thiophanate-methyl	23564058	1
Thiosemicarbazide	79196	10
Thiourea	62566	10
Thiourea, (2-chlorophenyl)-	5344821	10
Thiourea, 1-naphthalenyl-	86884	10
Thiram	137268	10
Titanium chloride (TiCl <sub>4</sub> ) (T-4)-	7550450	100
Titanium tetrachloride	7550450	100
Toluene	108883	100
Toluene diisocyanate (unspecified isomer)	26471625	10
Toluene-2,6-diisocyanate	91087	10
Toluenediamine	25376458	10
Toxaphene	8001352	1
Triallate	2303175	1
Triaryl phosphate esters		10
Tributyltin (and salts and esters)		1
Trichlorfon	52686	10
Trichloroethylene	79016	10
Trichlorofluoromethane (CFC-11)	75694	500
Trichlorophenol	25167822	10
Triethanolamine dodecylbenzene sulfonate	27323417	100
Triethylamine	121448	500
Trimethylamine	75503	10
Trimethylphosphate	512561	1
Tris(2,3-dibromopropyl) phosphate	126727	10
Tris(dimethylcarbamodithioato-S,S')iron	14484641	1
Trypan blue	72571	10
Uracil mustard	66751	10
Uranyl acetate	541093	10
Uranyl nitrate	36478769	10
Uranyl nitrate	10102064	10
Urethane	51796	10
Vanadium pentoxide	1314621	100
Vanadyl sulfate	27774136	100
Vinyl acetate	108054	500
Vinyl bromide	593602	10
Vinyl chloride	75014	1

Warfarin sodium	129066	10
Warfarin, & salts, conc.>0.3%	81812	10
Xylene (mixed isomers)	1330207	10
Xylenol	1300716	100
Zinc	7440666	100
Zinc (fume or dust)	7440666	100
Zinc acetate	557346	100
Zinc ammonium chloride	14639986	100
Zinc ammonium chloride	14639975	100
Zinc ammonium chloride	52628258	100
Zinc borate	1332076	100
Zinc bromide	7699458	100
Zinc carbonate	3486359	100
Zinc chloride	7646857	100
ZINC COMPOUNDS		1
Zinc cyanide	557211	10
Zinc fluoride	7783495	100
Zinc formate	557415	100
Zinc hydrosulfite	7779864	100
Zinc nitrate	7779886	100
Zinc phenolsulfonate	127822	500
Zinc phosphide	1314847	10
Zinc phosphide (conc. <= 10%)	1314847	10
Zinc silicofluoride	16871719	500
Zinc sulfate	7733020	100
Ziram	137304	
Zirconium nitrate	13746899	500
Zirconium potassium fluoride	16923958	100
Zirconium sulfate	14644612	500
Zirconium tetrachloride	10026116	500

History: 2001 AACS.





**Storm Water Summary Table**  
**Bloomfield Hills Schools**  
SME Project No. 071888.00  
Page 1 of 1

Facility	Receiving Water Body	Latitude	Longitude	Notes
Bloomfield Hills HS	Road Commission of Oakland County (RCOC) sewers in Andover Road; receiving stream is unknown, flow is believed to be to the south toward an unnamed pond/lake	42° 34' 38.9" N	83° 17' 4.8" W	1
- Outfall 001 AHS		42° 34' 45.4" N	83° 17' 5.0" W	12
- Outfall 002 AHS				
Administration Offices and Youth Guidance				
- Outfall 001 BHSA	Several outfalls to RCOC sewers in Andover Road; receiving stream along Andover is unknown, flow is believed to be to the south toward an unnamed pond/lake; other outfall receiving streams are unknown; likely RCOC sewers that flow east toward Telegraph Road with eventual discharge to River Rouge	42° 34' 47.7" N	83° 17' 1.6" W	3
- Outfall 002 BHSA		42° 34' 45.6" N	83° 16' 58.5" W	3
- Outfall 003 BHSA		42° 34' 41.9" N	83° 17' 1.4" W	3
- Outfall 004 BHSA		42° 34' 43.5" N	83° 16' 58.4" W	3
Bloomfield Hills MS				
- Outfall 001 BHMS	Multiple outfalls to Road Commission of Oakland County (RCOC) along Wing Lake Road and Quarton Road; flow is to the east, to Telegraph Road, then south to Nicholls Drain to River Rouge	42° 33' 31.7" N	83° 17' 25.3" W	18
- Outfall 002 BHMS		42° 33' 31.7" N	83° 17' 28.6" W	21
- Outfall 003 BHMS		42° 33' 31.6" N	83° 17' 32.7" W	12
- Outfall 004 BHMS		42° 33' 31.6" N	83° 17' 36.6" W	2 & 15
Conant ES	School discharges to Quarton Road (RCOC); flow is to the east, to Telegraph Road, then south to Nicholls Drain to River Rouge	42° 33' 31.6" N	83° 17' 21.5" W	11
- Outfall 001 CES				
East Hills MS				
- Outfall 001 EHMS	School discharges to Kensington Road (RCOC) and/or Hamlin Drain (OCDC); flows southeast along Kensington Road/railroad to River Rouge	42° 35' 50.0" N	83° 14' 44.5" W	4
- Outfall 002 EHMS		42° 35' 50.0" N	83° 14' 43.1" W	1
Eastover ES				
( Former - Outfall 001 EES )	To be determined; possibly to on-site pond with no discharge	42° 35' 49.7" N	83° 12' 50.5" W	17
( Former - Outfall 002 EES )		42° 35' 49.9" N	83° 12' 46.5" W	17
Farm				
- Outfall 001 BHSP	Unnamed tributary to the Rouge River; tributary traverses property	42° 36' 31.8" N	83° 13' 8.0" W	6
Fox Hills ES (Model HS)				
- Outfall 001 FHE	Levinson Drain (OCDC) to Rouge River	42° 36' 58.8" N	83° 14' 15.1" W	7
- Outfall 002 FHE		42° 36' 58.9" N	83° 14' 15.2" W	8
- Outfall 003 FHE		42° 37' 1.0" N	83° 14' 15.9" W	9
International Academy	Sheet flow only; no conveyances or outfalls	NA	NA	
Lone Pine ES	Unnamed offsite pond with no discharge. One direct connection to Blue Heron Drain (OCDC) which traverses the property; then flows to Walnut Lake which appears to discharge via other lakes and streams to River Rouge	42° 34' 25.4" N	83° 20' 19.2" W	7
- Outfall 001 LPE		42° 34' 27.4" N	83° 20' 30.6" W	14
- Outfall 002 LPE				
Doyle Center (Booth, Information Services)				
- Outfall 001 MM	RCOC drain along Wing Lake Road to Nicholls Drain (OCDC) which flows east to River Rouge	42° 31' 57.2" N	83° 17' 38.6" W	18
- Outfall 002 MM		42° 32' 0.1" N	83° 17' 39.4" W	10
- Outfall 003 MM		42° 32' 0.6" N	83° 17' 39.9" W	19
Nature Center		NA	NA	
P.P.S. Shop				
- Outfall 001 PPS		42° 36' 19" N	83° 17' 15" W	
Transportation Center				
- Outfall 003 EHMS		42° 35' 58.6" N	83° 14' 33.7" W	5
Way ES				
- Outfall 001 WES	RCOC in Long Lake Road; receiving stream is unknown via Long Lake Road	42° 34' 52.4" N	83° 16' 31.4" W	5
West Hills MS				
- Outfall 001 WHMS	Unnamed swales and drains which discharge directly to Walnut Lake	42° 34' 6.3" N	83° 20' 13.9" W	20
- Outfall 002 WHMS		42° 34' 53.5" N	83° 19' 58.8" W	2
Wing Lake Dev. Cntr.				
- Outfall 001 WLDC	RCOC in Wing Lake Road and ditch along Prestwick; receiving stream is unknown	42° 32' 44.7" N	83° 17' 47.5" W	13
- Outfall 002 WLDC				10

Notes:

1. Outfall sources consisted of athletic fields, yards, drives, and buildings.
2. Outfall sources consisted of athletic fields, yards, parking lots, drives, and buildings.
3. Outfall sources consisted of parking lots and drives.
4. Outfall sources consisted of athletic fields, yards, and parking lots.
5. Outfall sources consisted of parking lots and buildings.
6. Outfall sources consisted of fields and buildings.
7. Outfall source was an athletic field.
8. Outfall source was drives.
9. Outfall sources consisted of yards and building.
10. Outfall source was building.
11. Outfall sources consisted of yards, drives, and building.
12. Outfall sources consisted of yards and drives.
13. Outfall sources consisted of parking lots and possible other sources.
14. Outfall sources consisted of yards, drives, parking lots, and building.
15. Possible cross connection between sanitary and storm on south side of school in circle drive area.
16. Water filled vertical cylinder and untraced SW lines in northwest portion of the site.
17. During 2006 3rd Quarter Screening, outfalls were determined to belong to RCOC and no outfalls were the responsibility of Bloomfield Schools.
18. Outfall sources consisted of wet wooded areas, yards, and athletic fields.
19. Outfall source consisted of parking lots and yards.
20. Outfall sources consisted of athletic fields, yards, and drives.
21. Outfall source is unknown.

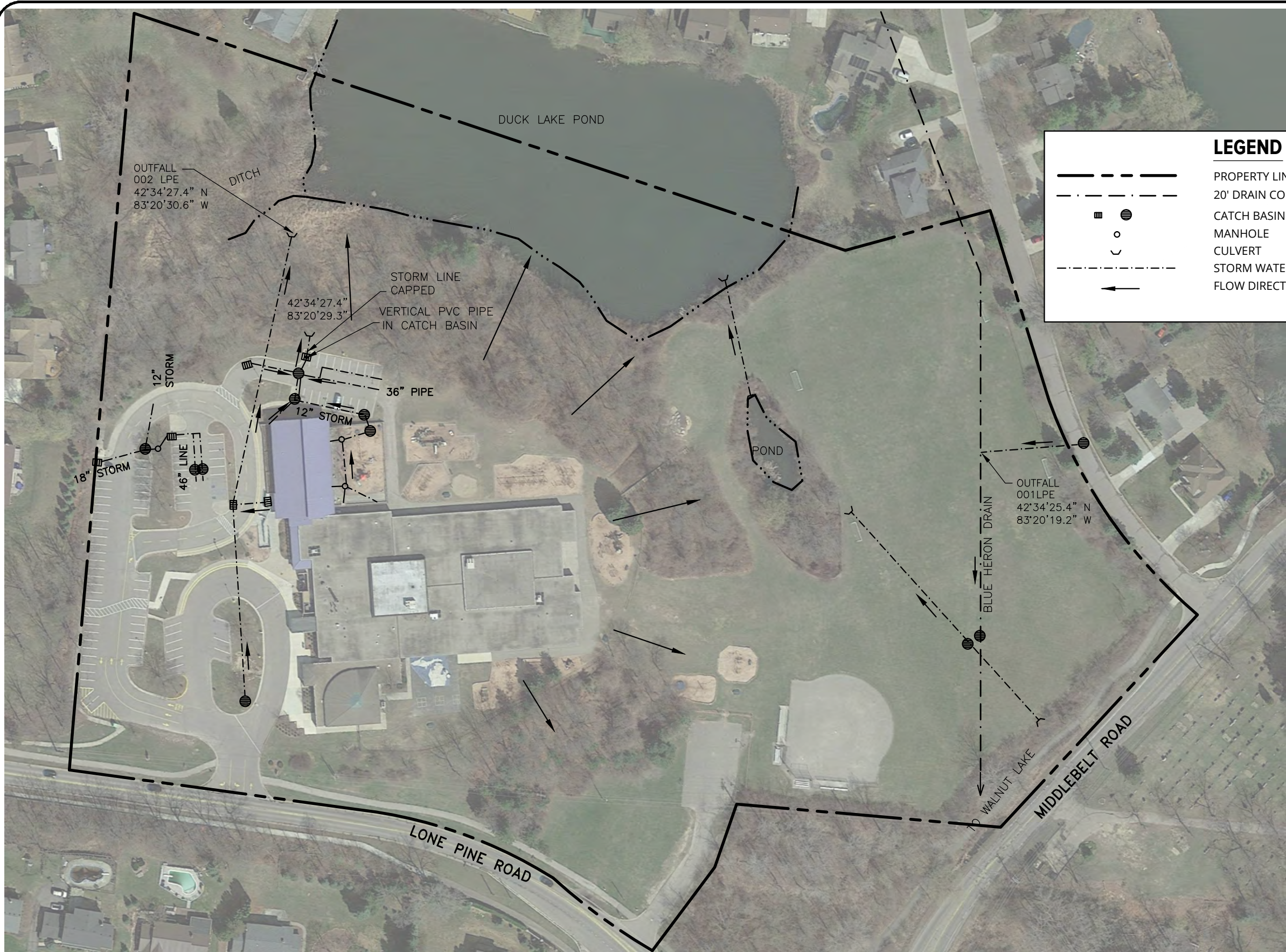
Flow noted from outfall at time of dry weather screening.

Site not visited due to planned demolition and removal of the storm system within a month.



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PLOT DATE:



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### LEGEND

- PROPERTY LINE
- 20' DRAIN COMMISSION EASEMENT
- CATCH BASIN
- MANHOLE
- CULVERT
- STORM WATER LINE
- FLOW DIRECTION

### STORM WATER MANAGEMENT PLAN BLOOMFIELD HILLS SCHOOLS

Project Location  
**LONE PINE  
ELEMENTARY  
SCHOOL  
WEST BLOOMFIELD  
TOWNSHIP,  
MICHIGAN**

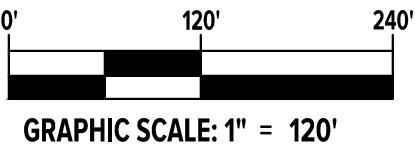
Sheet Name  
**STORM WATER  
DRAINAGE SYSTEM**

No.	Revision Date

Date	12-29-16
CADD	GM
Designer	PAG
Scale	1" = 120'
Project	071888.00

Figure No.	1
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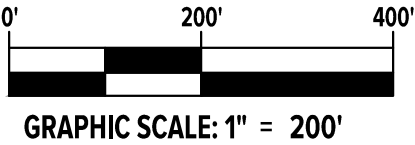
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PLOT DATE:



### LEGEND

- PROPERTY LINE
- FENCE LINE
- DITCH
- CULVERT
- STORM WATER SEWER LINE
- CATCH BASIN
- STORM MANHOLE
- FLOW DIRECTION
- CAN NOT FIND
- (RED MARKINGS) TO BE CONFIRMED IN 2017



Project

## STORM WATER MANAGEMENT PLAN BLOOMFIELD HILLS SCHOOLS

Project Location

## BLOOMFIELD HILLS HIGH SCHOOL BLOOMFIELD HILLS, MICHIGAN

Sheet Name

## STORM WATER DRAINAGE SYSTEM

No.	Revision Date

Date **12-29-16**

CADD **GM**

Designer **PAG**

Scale **1" = 200'**

Project **071888.00**

Figure No. **2**

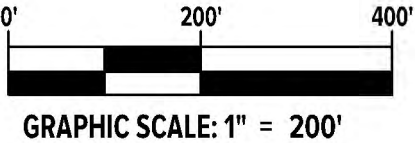
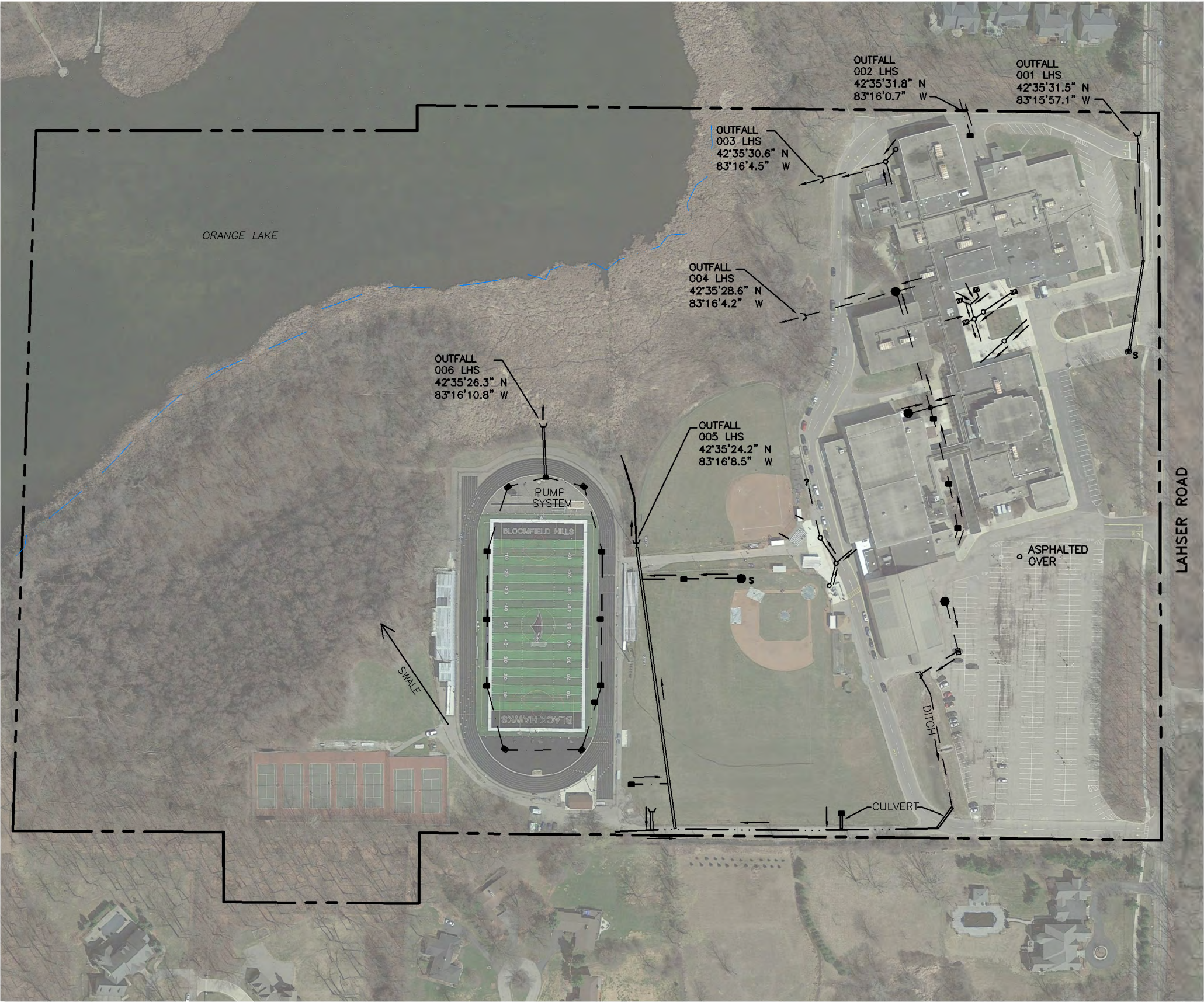
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### LEGEND

	PROPERTY LINE
	STORM WATER SEWER LINE
	DITCH
	CATCH BASIN
	STORM MANHOLE
	APPROX. LOCATION OF STORM SEWER
	CULVERT
	FLOW DIRECTION SEDIMENT FILLED



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#### Project

## STORM WATER MANAGEMENT PLAN BLOOMFIELD HILLS SCHOOLS

#### Project Location

## LASHER HIGH SCHOOL BLOOMFIELD HILLS, MICHIGAN

#### Sheet Name

## STORM WATER DRAINAGE SYSTEM

No.	Revision Date

Date	12-29-16
CADD	GM
Designer	PAG
Scale	1" = 200'
Project	071888.00

Figure No.	3
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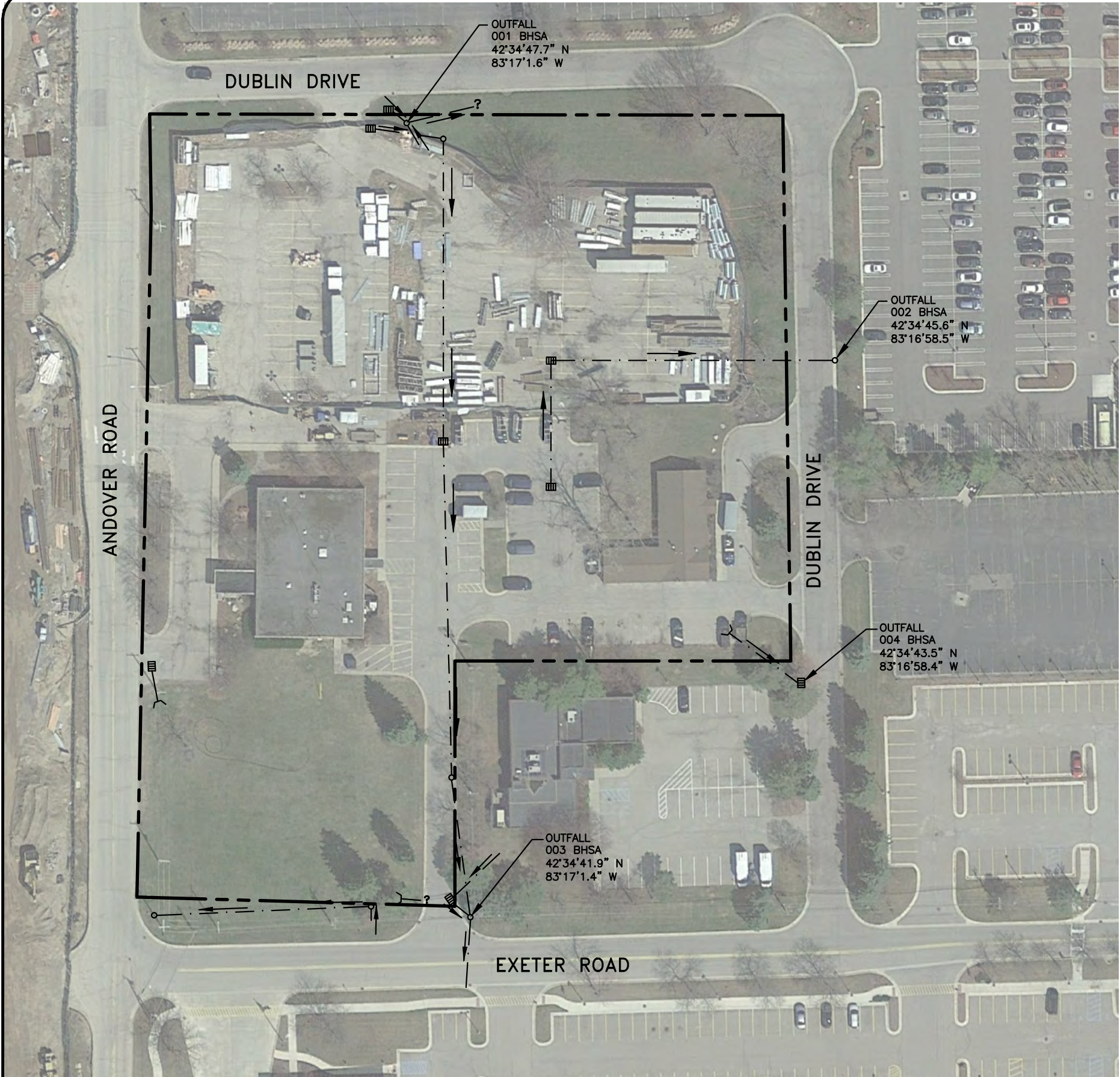
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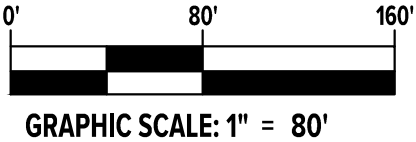


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NOTES:

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GRAPHIC SCALE: 1" = 80'



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Project

**STORM WATER  
MANAGEMENT  
PLAN  
BLOOMFIELD HILLS  
SCHOOLS**

Project Location

**PPS AND YOUTH  
GUIDANCE CENTER  
WEST BLOOMFIELD  
TOWNSHIP,  
MICHIGAN**

Sheet Name

**STORM WATER  
DRAINAGE SYSTEM**

No.	Revision Date

Date **12-29-16**

CADD **GM**

Designer **PAG**

Scale **1" = 80'**

Project **071888.00**

Figure No. **4**

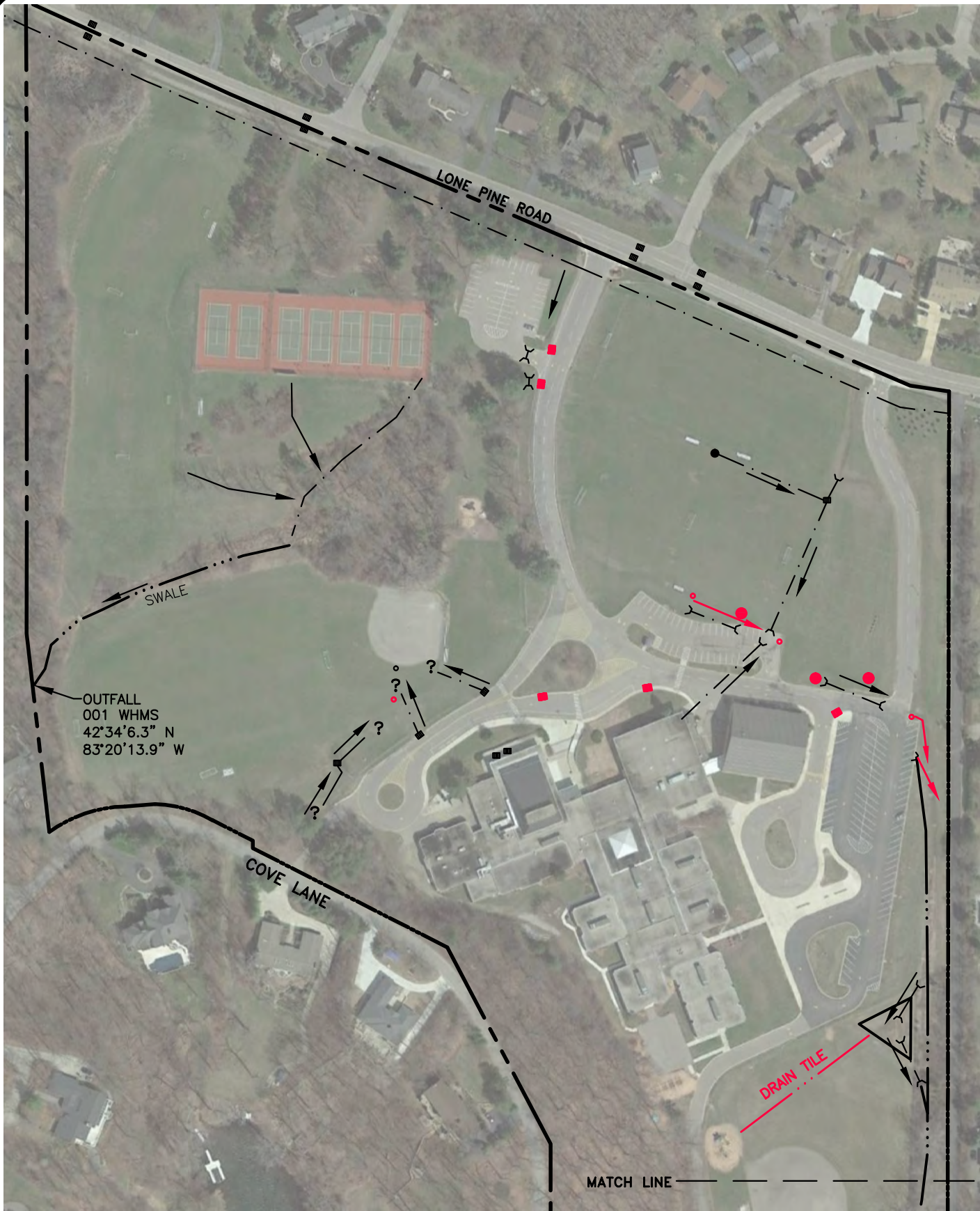
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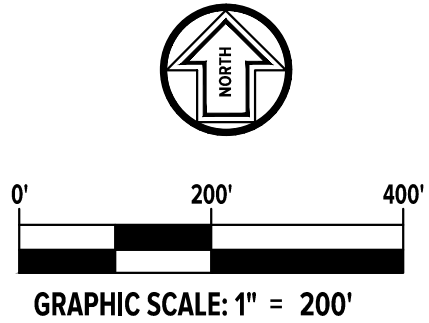
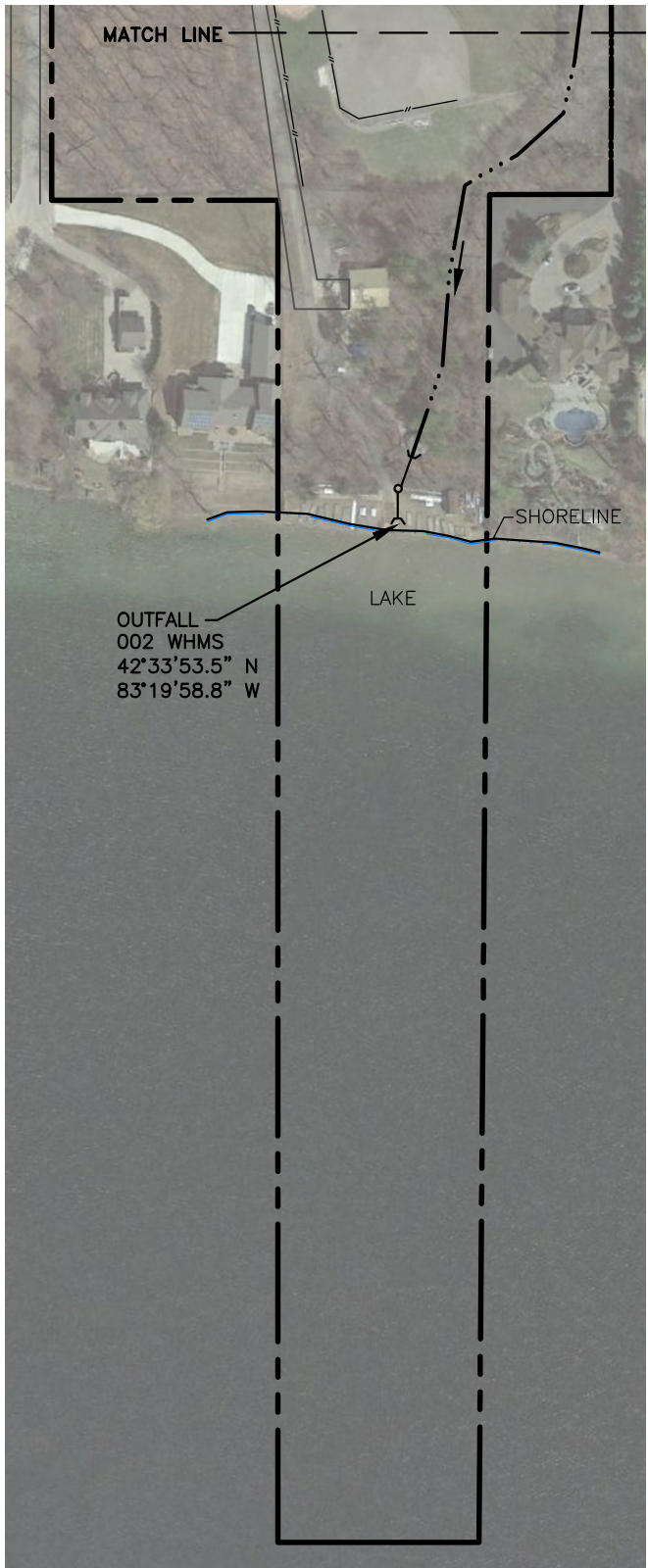


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PLOT DATE:



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  2. PROPERTY FEATURES ARE APPROXIMATE.



LEGEND	
	PROPERTY LINE
	STORM WATER SEWER LINE
	CULVERT
	CATCH BASIN
	STORM MANHOLE
	FLOW DIRECTION
	(RED MARKINGS) TO BE CONFIRMED IN 2017



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Project  
**STORM WATER MANAGEMENT PLAN  
BLOOMFIELD HILLS SCHOOLS**

Project Location  
**WEST HILLS MIDDLE SCHOOL  
WEST BLOOMFIELD TOWNSHIP,  
MICHIGAN**

Sheet Name  
**STORM WATER DRAINAGE SYSTEM**

No.	Revision Date

Date  
**12-29-16**

CADD  
**GM**

Designer  
**PAG**

Scale  
**1" = 200'**

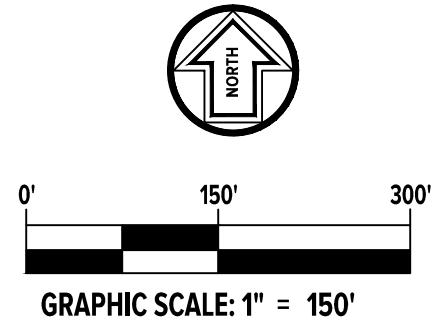
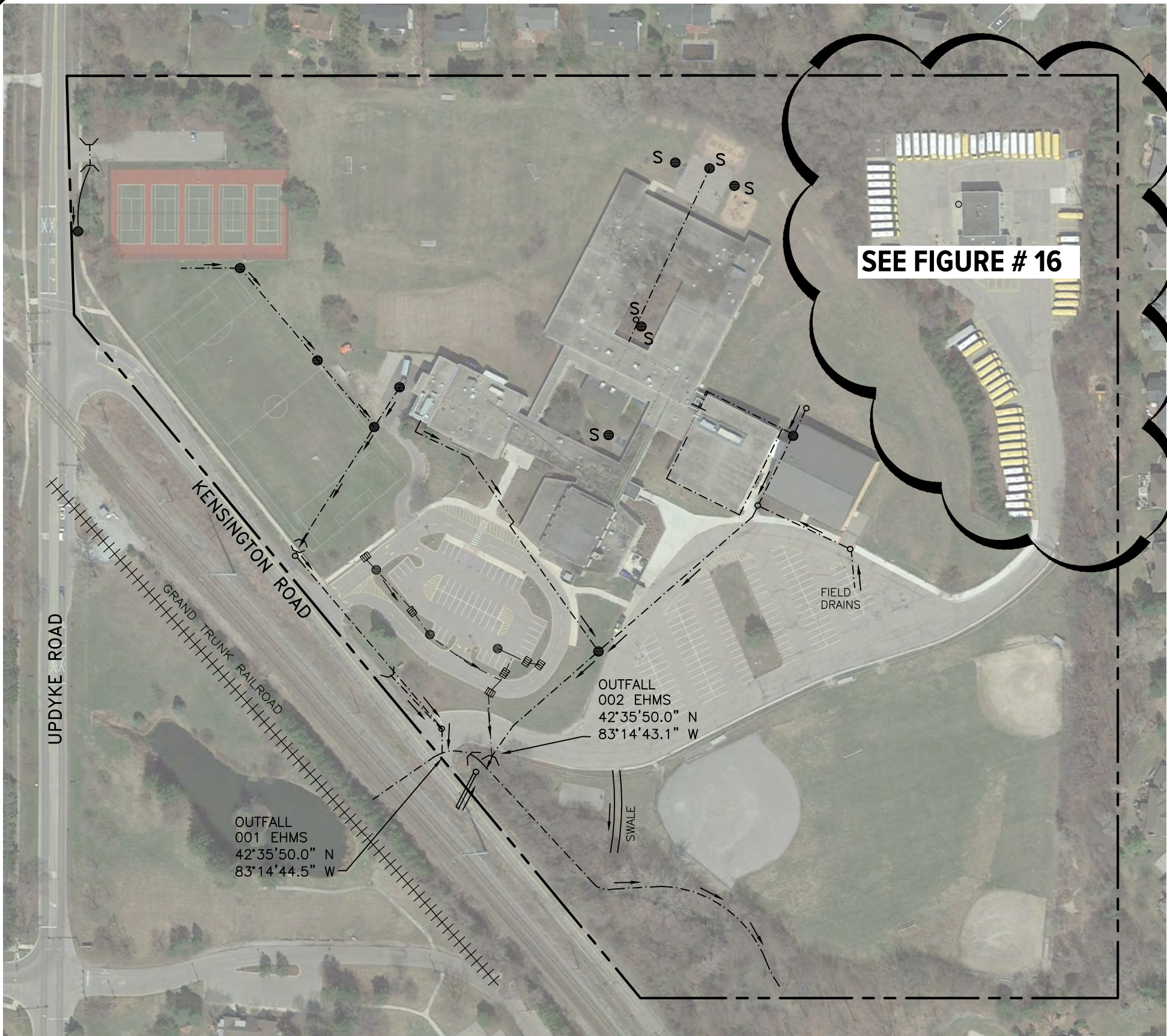
Project  
**071888.00**

Figure No.  
**5**

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**LEGEND**

	PROPERTY LINE
	STORM WATER SEWER LINE
	CULVERT
	CATCH BASIN
	STORM MANHOLE
	FLOW DIRECTION
	SEDIMENT FILLED
	(RED MARKINGS) TO BE CONFIRMED IN 2017



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Project  
**STORM WATER  
MANAGEMENT  
PLAN  
BLOOMFIELD HILLS  
SCHOOLS**

Project Location  
**EAST HILLS  
MIDDLE SCHOOL  
BLOOMFIELD HILLS,  
MICHIGAN**

Sheet Name  
**STORM WATER  
DRAINAGE SYSTEM**

No.	Revision Date

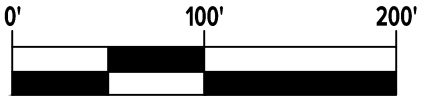
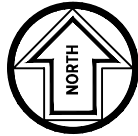
Date	12-29-16
CADD	GM
Designer	PAG
Scale	1" = 150'
Project	071888.00
Figure No.	6

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GRAPHIC SCALE: 1" = 100'

### LEGEND

---	PROPERTY LINE
...	EDGE OF WET AREA
●	CATCH BASIN
○	STORM MANHOLE
- - -	APPROX. LOCATION OF STORM SEWER CULVERT
→	FLOW DIRECTION
*	DID NOT LOCATE



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#### Project

### STORM WATER MANAGEMENT PLAN BLOOMFIELD HILLS SCHOOLS

#### Project Location

### CONANT ELEMENTARY SCHOOL BLOOMFIELD TOWNSHIP, MICHIGAN

#### Sheet Name

### STORM WATER DRAINAGE SYSTEM

No.	Revision Date

Date **12-29-16**

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Designer **PAG**

Scale **1" = 100'**

Project **071888.00**

Figure No. **7**

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- NOTE:
- DRAWING WAS BASED ON TOPOGRAPHIC SURVEY PREPARED BY HUBBELL, ROTH & CLARK, INC, DATED SEPTEMBER 2000, AND SITE UTILITY PLAN PREPARED BY WOLF WINEMAN, DATED APRIL 11, 2001.
  - PROPERTY FEATURES ARE APPROXIMATE.



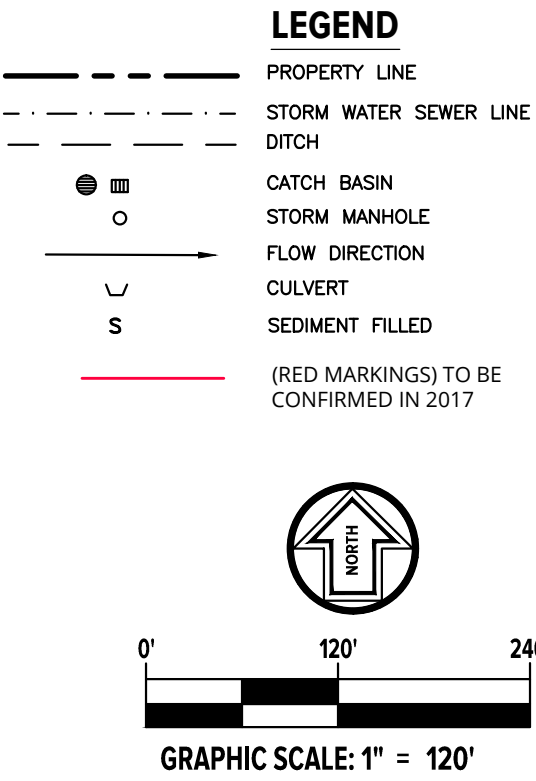




PLOT DATE: Dec 29, 2016 - 4:03pm - MANDRILLA FILE LOCATION: \\sme-inc\pz\WIP\071888.00\CADD\DWGS\rev\071888.00-11.dwg



- NOTES:
1. PROPERTY FEATURES ARE BASED ON A SITE PLAN PREPARED BY HUBBELL, ROTH & CLARK, INC. DATED MAY 8, 1989 AND A 2015 AERIAL PHOTOGRAPH.
  2. PROPERTY FEATURES ARE APPROXIMATE.



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Project

**STORM WATER  
MANAGEMENT  
PLAN  
BLOOMFIELD HILLS  
SCHOOLS**

Project Location

**EASTOVER  
ELEMENTARY  
SCHOOL  
BLOOMFIELD  
TOWNSHIP,  
MICHIGAN**

Sheet Name

**STORM WATER  
DRAINAGE SYSTEM**

No.	Revision Date

Date **12-29-16**

CADD **GM**

Designer **PAG**

Scale **1" = 120'**

Project **071888.00**

Figure No. **9**

DRAWING NOTE: SCALE DEPICTED IS MEANT FOR 11" X 17" AND WILL SCALE INCORRECTLY IF PRINTED ON ANY OTHER SIZE MEDIA  
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PLOT DATE:



NOTES:

1. PROPERTY FEATURES ARE BASED ON A SITE PLAN PREPARED BY HUBBELL, ROTH & CLARK, INC. DATED MAY 8, 1989 AND A 2015 AERIAL PHOTOGRAPH.
2. PROPERTY FEATURES ARE APPROXIMATE.



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Project

**STORM WATER  
MANAGEMENT  
PLAN  
BLOOMFIELD HILLS  
SCHOOLS**

Project Location

**DOYLE CENTER  
BLOOMFIELD HILLS,  
MICHIGAN**

Sheet Name

**STORM WATER  
DRAINAGE SYSTEM**

**LEGEND**

- PROPERTY LINE
- ... STORM WATER SEWER LINE
- - - DITCH
- ☐ CATCH BASIN
- ○ STORM MANHOLE
- FLOW DIRECTION
- ∨ CULVERT



GRAPHIC SCALE: 1" = 120'

No.	Revision Date

Date **12-29-16**

CADD **GM**

Designer **PAG**

Scale **1" = 120'**

Project **071888.00**

Figure No. **10**

DRAWING NOTE: SCALE DEPICTED IS MEANT FOR 11" X 17" AND WILL SCALE INCORRECTLY IF PRINTED ON ANY OTHER SIZE MEDIA

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NOTES:

1. PROPERTY FEATURES ARE BASED ON A SITE PLAN PREPARED BY HUBBELL, ROTH & CLARK, INC. DATED OCTOBER 31, 1997 AND A 2002 AERIAL PHOTOGRAPH.
2. PROPERTY FEATURES ARE APPROXIMATE.

**LEGEND**

---	PROPERTY LINE
- - - - -	STORM WATER SEWER LINE
---	DITCH
▤	CATCH BASIN
● ○	STORM MANHOLE
→	FLOW DIRECTION

**GRAPHIC SCALE: 1" = 120'**

0' 120' 240'

**NORTH**



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Project  
**STORM WATER  
MANAGEMENT  
PLAN  
BLOOMFIELD HILLS  
SCHOOLS**

Project Location  
**BLOOMFIELD HILLS  
MIDDLE SCHOOL  
BLOOMFIELD HILLS,  
MICHIGAN**

Sheet Name  
**STORM WATER  
DRAINAGE SYSTEM**

No.	Revision Date

Date	12-29-16
CADD	GM
Designer	PAG
Scale	1" = 120'
Project	071888.00

Figure No.  
**11**

DRAWING NOTE: SCALE DEPICTED IS MEANT FOR 11" X 17" AND WILL SCALE INCORRECTLY IF PRINTED ON ANY OTHER SIZE MEDIA  
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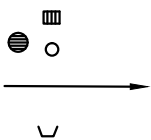


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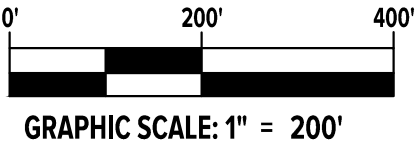


**LEGEND**

- PROPERTY LINE
- STORM WATER SEWER LINE
- DITCH



- CATCH BASIN
- STORM MANHOLE
- FLOW DIRECTION
- CULVERT



GRAPHIC SCALE: 1" = 200'



- NOTES:
1. DIAGRAM WAS BASED ON AN UNDATED TOPOGRAPHIC SURVEY PREPARED BY MAIN & FOX, INC.
  2. DIAGRAM WAS BASED ON A SITE SURVEY PREPARED BY HUBBELL, ROTH & CLARK, INC. DATED JULY 9 1993.
  3. PROPERTY FEATURES ARE APPROXIMATE.



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Project

**STORM WATER  
MANAGEMENT  
PLAN  
BLOOMFIELD HILLS  
SCHOOLS**

Project Location

**BLOOMFIELD HILLS  
FARM SITE  
BLOOMFIELD HILLS,  
MICHIGAN**

Sheet Name

**STORM WATER  
DRAINAGE SYSTEM**

No.	Revision Date

Date **12-29-16**

CADD **GM**

Designer **PAG**

Scale **1" = 200'**

Project **071888.00**

Figure No. **12**

DRAWING NOTE: SCALE DEPICTED IS MEANT FOR 11" X 17"  
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- NOTES:
1. DIAGRAM WAS BASED ON SITE PLAN & DETAILS PREPARED BY BEGROW & BROWN, ARCHITECTS, INC. DATED JUNE 21, 1967.
  2. PROPERTY FEATURES ARE APPROXIMATE.



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Project

# STORM WATER MANAGEMENT PLAN BLOOMFIELD HILLS SCHOOLS

Project Location

FOX HILLS  
ELEMENTARY  
SCHOOL  
BLOOMFIELD HILLS,  
MICHIGAN

Sheet Name

## STORM WATER DRAINAGE SYSTEM

No.	Revision Date

Date 12-29-16

CADD GM

Designer PAG

Scale 1" = 150'

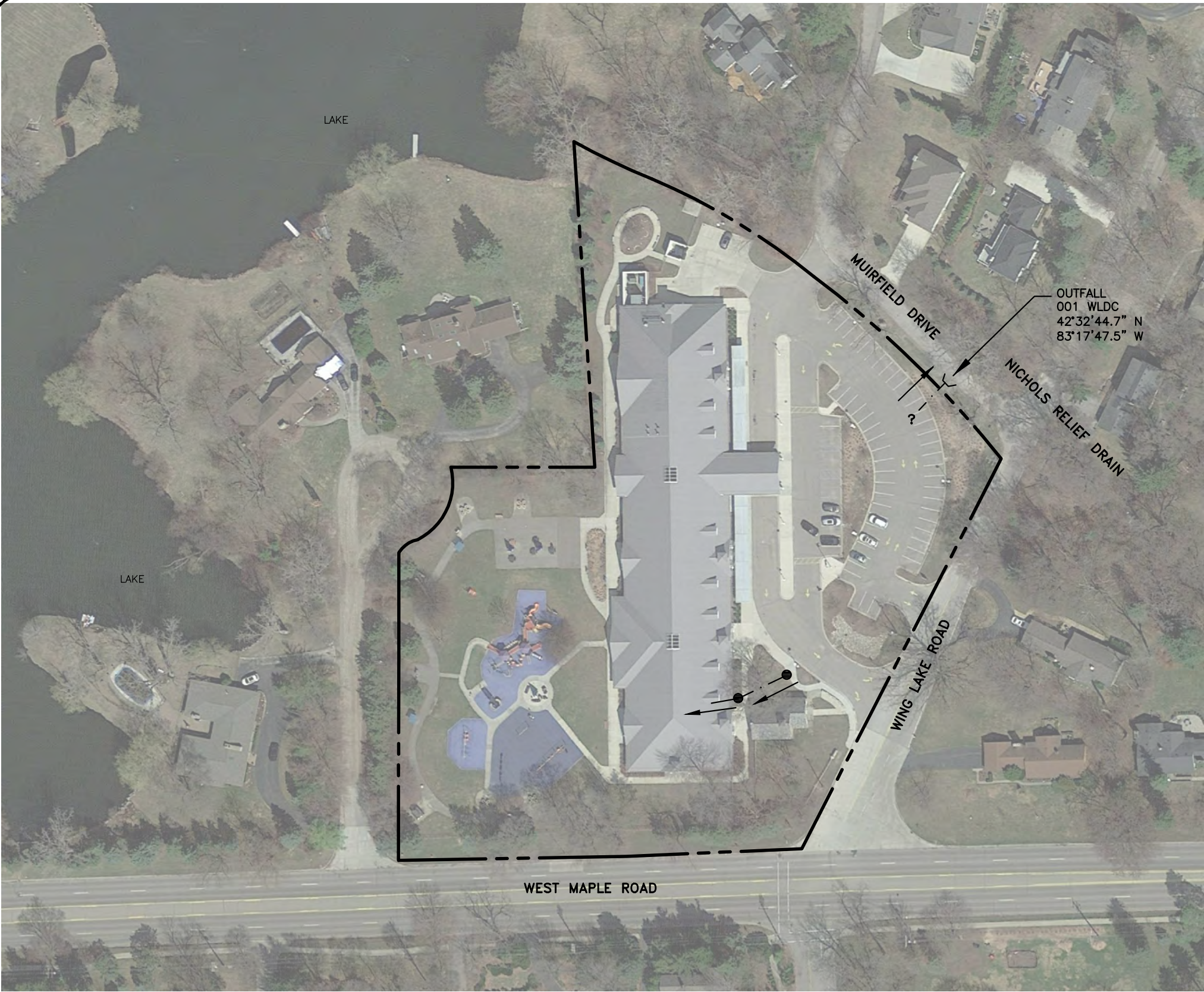
Project 071888.00

Figure No. 13

DRAWING NOTE: SCALE DEPICTED IS MEANT FOR 11" X 17" AND WILL SCALE INCORRECTLY IF PRINTED ON ANY OTHER SIZE MEDIA  
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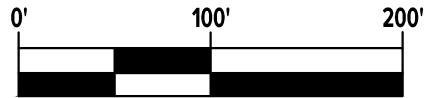


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NOTES:

1. DIAGRAM WAS BASED ON AN OAKLAND COUNTY AERIAL PHOTOGRAPH DATED 2002 AND GOOGLE EARTH PRO AERIAL IMAGE DATED 2015.
2. PROPERTY FEATURES ARE APPROXIMATE.



GRAPHIC SCALE: 1" = 100'



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Project

**STORM WATER  
MANAGEMENT  
SYSTEM  
BLOOMFIELD HILLS  
SCHOOLS**

Project Location

**WING LAKE  
DEVELOPMENT  
CENTER AND MODEL  
HIGH SCHOOL  
BLOOMFIELD HILLS,  
MICHIGAN**

Sheet Name

**STORM WATER  
DRAINAGE SYSTEM**

No.	Revision Date

Date **12-29-16**

CADD **GM**

Designer **PAG**

Scale **1" = 100'**

Project **071888.00**

Figure No. **14**

DRAWING NOTE: SCALE DEPICTED IS MEANT FOR 11" X 17"  
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NOTES:

1. DIAGRAM WAS BASED ON A GOOGLE EARTH PRO AERIAL IMAGE DATED 2015.
2. PROPERTY FEATURES ARE APPROXIMATE.

**LEGEND**

— — — — — PROPERTY LINE

- - - - - STORM WATER SEWER LINE

⊙ CATCH BASIN

→ FLOW DIRECTION

∨ CULVERT

0' 40' 80'

**GRAPHIC SCALE: 1" = 40'**



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Project

**STORM WATER  
MANAGEMENT  
SYSTEM  
BLOOMFIELD HILLS  
SCHOOLS**

Project Location

**PPS / SHOP  
2258 FRANKLIN  
ROAD  
BLOOMFIELD HILLS,  
MICHIGAN**

Sheet Name

**STORM WATER  
DRAINAGE SYSTEM**

No.	Revision Date

Date **12-29-16**

CADD **GM**

Designer **PAG**

Scale **1" = 40'**

Project **071888.00**

Figure No.  
**15**

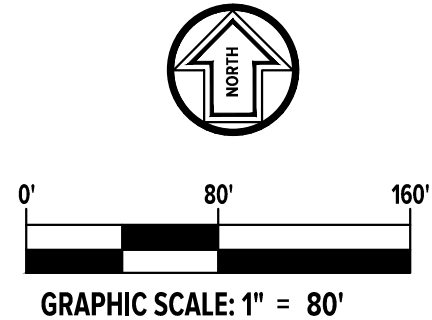
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- NOTES:
1. DIAGRAM WAS BASED ON A TOPOGRAPHIC SURVEY PREPARED BY HUBBELL, ROTH & CLARK, INC. DATED OCTOBER 14, 1988.
  2. PROPERTY FEATURES ARE APPROXIMATE.



LEGEND	
	PROPERTY LINE
	STORM WATER SEWER LINE
	CULVERT
	CATCH BASIN
	STORM MANHOLE
	FLOW DIRECTION
	SEDIMENT FILLED



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Project

**STORM WATER  
MANAGEMENT  
PLAN  
BLOOMFIELD HILLS  
SCHOOLS**

Project Location

**TRANSPORTATION  
CENTER  
BLOOMFIELD HILLS,  
MICHIGAN**

Sheet Name

**STORM WATER  
SURVEY**

No.	Revision Date

Date **12-29-16**

CADD **GM**

Designer **PAG**

Scale **1" = 80'**

Project **071888.00**

Figure No.  
**16**

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