



505 West Vienna Street • Clio, Michigan 48420

(810) 686-5850, Hearing or Speech Impaired Services Available by Dialing 711.

October 24, 2019

Re: *National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Application Form (Reissuance)*

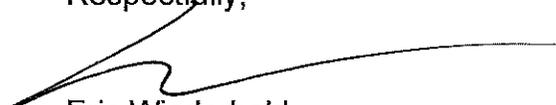
Dear Reader:

Attached is a copy of the City of Clio's *National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Application Form (Reissuance)* with referenced attachments. This document is also known as the City's [Storm] Water Management Plan (SWMP). The referenced attachments are presented in order of appearance.

Hyperlinked information is also included, as practicable, in order of appearance.

The public is welcome to make or submit comment on this document to the Clio City Clerk, 505 West Vienna Street, Clio, Michigan 48420.

Respectfully,



Eric Wiederhold
City Administrator

In accordance with Federal law and U.S. Department of Agriculture policy, this institution is prohibited from discriminating on the basis of race, color, national origin, age, disability, religion, sex and familial status. (Not all prohibited bases apply to all programs). To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-5964 (TDD).

National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Application Form (Reissuance)

version 1.6

(Submission #: 2KB-QJEC-Y3CA, version 2)

Details

Form Alias	National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Application Form (Reissuance)
Submission #	2KB-QJEC-Y3CA
Submission Reason	Renewal
Status	Submitted

Form Input

Existing Permit Details

Existing Permit ID (Read Only)

NONE PROVIDED

Existing Permit Number (Read Only)

NONE PROVIDED

Section 1. Applicant Information

Applicant Information**Contact****Prefix**

Mr.

First Name

Eric

Last Name

Wiederhold

Title

City Administrator

Organization Name

City of Clio

Phone Type

NONE PROVIDED

Number

810-686-5850

Extension**Email**

clio.ericwiederhold@gmail.com

Fax

810-686-0627

Address

505 West Vienna Street

Clio, MI 48420

USA

Section 2. MS4 Location Information**Municipal Entity Name (e.g., City of Lansing)**

City of Clio

Identify the Primary Municipal Facility or the Mailing Address Location

A site needs to be identified as part of the application. Identify the physical address for the municipal entity, such as the primary municipal facility (e.g., City Hall).

Facility Location

43.1768862,-83.74023010000002

NONE PROVIDED

Section 3. MS4 Contacts (1 of 3)**CONTACTS**

A contact must be provided for each of the roles listed below. You may assign more than one role to a single contact by holding down the 'Ctrl' key while selecting each role. Use the "+" (repeat section) button to add an additional contact.

Contact

Application Contact

Contact**Contact****Prefix***Mr.***First Name**

Eric

Last Name*Wiederhold***Title***City Administrator***Organization Name***City of Clio***Phone Type**

NONE PROVIDED

Number

810-686-5850

Extension**Email**

clio.ericwiederhold@gmail.com

Fax

810-686-0627

Address

505 West Vienna Street

Clio, MI 48420

USA

Section 3. MS4 Contacts (2 of 3)**CONTACTS**

A contact must be provided for each of the roles listed below. You may assign more than one role to a single contact by holding down the 'Ctrl' key while selecting each role. Use the "+" (repeat section) button to add an additional contact.

Contact

Storm Water Billing Contact

Contact**Contact****Prefix***Mr.***First Name**

Don

Last Name*Dowell***Title***City Treasurer***Organization Name***City of Clio***Phone Type**

NONE PROVIDED

Number

810-686-5850

Extension**Email**

cliotreasurer@yahoo.com

Fax

810-686-0627

Address

505 West Vienna Street

505

Clio, MI 48420

USA

Section 3. MS4 Contacts (3 of 3)**CONTACTS**

A contact must be provided for each of the roles listed below. You may assign more than one role to a single contact by holding down the 'Ctrl' key while selecting each role. Use the "+" (repeat section) button to add an additional contact.

Contact

Storm Water Program Manager

Contact**Contact****Prefix**

Mr.

First Name

Arnold

Last Name

Brown

Title

Department of Public Service Superintendent

Organization Name

City of Clio

Phone Type

NONE PROVIDED

Number

810-686-5850

Extension**Email**

clioldps@gmail.com

Fax

810-686-0627

Address

505 West Vienna Street

Clio, MI 48420

USA

Section 4: Regulated Area, Outfalls/Points of Discharge, and Nested Jurisdictions (1 of 1)**Regulated Area**

Identify the urbanized area within the applicant's jurisdictional boundary as defined by the 2010 Census. The regulated MS4 means an MS4 owned or operated by a city, village, township, county, district, association, or other public body created by or pursuant to state law and the nested MS4 identified below that is located in an urbanized area and discharges storm water into surface waters of the state. The 2010 Census maps are located at the Urbanized Area Link below.

[Urbanized Area Link](#)

Select an Urbanized Area

Flint

Outfall and Point of Discharge Information

Provide the following information for each of the applicant's MS4 outfalls and points of discharge within the regulated area: identification number, description of whether the discharge is from an outfall or point of discharge, and the surface water of the state that receives the discharge.

An outfall means a discharge point from an MS4 directly to surface waters of the state.

A point of discharge means a discharge from an MS4 to an MS4 owned or operated by another public body. In the case of a point of discharge, the surface water of the state is the ultimate receiving water from the final outfall.

Please note that an MS4 is not a surface water of the state. For example, an open county drain that is a surface water of the state is not an MS4.

An example table is available at the link below.

[Outfall and Point of Discharge example table link](#)

OUTFALL AND POINT OF DISCHARGE INFORMATION

[Attachment 1 - Section IV Map - Section V Table 1.pdf - 10/15/2016 10:26 PM](#)

[Outfall and Point of Discharge Information, City of Clio.pdf - 05/17/2017 05:20 PM](#)

Comment

NONE PROVIDED

Nested Jurisdictions

Submit the name and general description of each nested MS4 for which a cooperative agreement has been reached to carry out the terms and conditions of the permit for the nested jurisdiction. The applicant shall be responsible for assuring compliance with the permit for those nested jurisdictions with which they have entered into an agreement and listed as part of the Application. If the primary jurisdiction and the nested jurisdiction agree to cooperate so that the terms and conditions of the permit are met for the nested MS4, the nested jurisdiction does not need to apply for a separate permit. A city, village, or township shall not be a nested jurisdiction.

Use the "+" (repeat section) button to add an additional Jurisdiction contact.

Nested Jurisdiction

Contact

Prefix

NONE PROVIDED

First Name

NONE PROVIDED

Last Name

NONE PROVIDED

Title

NONE PROVIDED

Organization Name

NONE PROVIDED

Phone Type

NONE PROVIDED

Number

Extension

Email

NONE PROVIDED

Fax

NONE PROVIDED

Address

[NO STREET ADDRESS SPECIFIED]

[NO CITY SPECIFIED], MI [NO ZIP CODE SPECIFIED]

USA

Section 5: General SWMP, Enforcement Response Procedure, and Public Participation/Involvement Program

STORM WATER MANAGEMENT PROGRAM (SWMP)

This Application requires a description of the Best Management Practices (BMPs) the applicant will implement for each minimum control measure and the applicable water quality requirements during this permit cycle. The applicant shall incorporate the BMPs to develop a SWMP as part of the Application. The SWMP shall be developed, implemented, and enforced to reduce the discharge of pollutants from the MS4 to the Maximum Extent Practicable and protect water quality in accordance with the appropriate water quality requirements of the NREPA 451, Public Acts of 1994, Part 31, and the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et seq.). The Maximum Extent Practicable may be met by implementing the BMPs identified in the SWMP and demonstrating the effectiveness of the BMPs. The applicant shall attach any appropriate and necessary documentation to demonstrate compliance with the six minimum control measures and applicable water quality requirements as part of the Application.

The applicant shall complete this Application to the best of its knowledge and ensure that it is true, accurate, and meets the minimum requirements for a SWMP to the Maximum Extent Practicable.

Several minimum control measures include a statement requesting the applicant to indicate in the response if you are, or will be, working collaboratively with watershed or regional partners on any or all activities to meet the minimum control measure requirements. If the applicant chooses to work collaboratively with watershed or regional partners to implement parts of the SWMP, each applicant will be responsible for complying with the minimum permit requirements.

For purposes of this Application, a procedure means a written process, policy or other mechanism describing how the applicant will implement minimum requirements.

When answering the questions in this section of the Application, the applicant's MS4 encompasses what the applicant identified in Sections 4. The applicant shall include a measurable goal for each BMP. Each measurable goal shall include, as appropriate, a schedule for BMP implementation (months and years), including interim milestones and the frequency of the action. Each measurable goal shall have a measure of assessment to measure progress towards achieving the measurable goal. A United States Environmental Protection Agency (USEPA) guidance document on measurable goals is available at the link below.

[USEPA measurable goals guidance document link](#)

Enforcement Response Procedure (ERP)

The applicant shall describe the current and proposed enforcement responses to address violations of the applicant's ordinances and regulatory mechanisms identified in the SWMP. The following question represents the minimum requirement for the ERP. Please complete the question below.

ERP

[Individual Permittee ERP 20170520.pdf - 05/20/2017 10:22 PM](#)

[Table 2 BMP 20170521.pdf - 05/21/2017 10:22 PM](#)

[Attachment 2 - IDEP Plan 20170520 \(marked revised 20190206\).docx - 02/06/2019 04:03 PM](#)

[Attachment 3 - PPP Plan 20170520 \(revised 20190206\).docx - 02/06/2019 04:09 PM](#)

Comment

NONE PROVIDED

Public Participation/Involvement Program (PPP)

The applicant shall describe the current and proposed BMPs to meet the minimum control measure requirements for the PPP to the maximum extent practicable, which shall be incorporated into the SWMP. Please indicate in your response if you are, or will be, working collaboratively with watershed or regional partners on any or all activities in the PPP during the permit cycle (i.e., identify collaborative efforts in the procedures). The following questions represent the minimum control measure requirements for the PPP. Please complete all the questions below. A measurable goal with a measure of assessment shall be included for each BMP, and, as appropriate, a schedule for implementation (months and years), including interim milestones and the frequency of the BMP. The responses shall reflect the nested MS4s identified in Section 4.

Proposing to work collaboratively on any or all activities in the PPP during the permit cycle?

Yes

PPP Procedures

[Attachment 3 - PPP Plan 20170520 \(revised 20180309\).pdf - 04/06/2018 10:12 AM](#)

Comment

NONE PROVIDED

2. Provide the reference to the procedure submitted above for making the SWMP available for public inspection and comment. The procedure shall include a process for notifying the public when and where the SWMP is available and of opportunities to provide comment. The procedure shall also include a process for complying with local public notice requirements, as appropriate. (page and paragraph of attachments): e.g., Attachment A, Page 3, Section b. See Attachment 3 - PPP plan 20170520 (revised 20180309).

3. Provide the reference to the procedure submitted above for inviting public involvement and participation in the implementation and periodic review of the SWMP. (page and paragraph of attachments):

Meetings of the Clio City Commission are noticed pursuant to the Open Meetings Act, 267 of 1976. Otherwise notice will be posted on the City of Clio's website clio.govoffice.com inviting public inspection and comment.

Section 6. Public Education Program

Proposing to work collaboratively on any or all activities in the PEP during the permit cycle?

Yes

PEP Procedures

[Storm Water Discharge and Connection Ordinance \(20180407\).pdf - 04/08/2018 08:50 PM](#)

[Attachement 4 - PEP 2017020 \(revised 20190206\).docx - 02/06/2019 04:05 PM](#)

Comment

Also see "Table 2 BMP 20170521.pdf" submitted in Section 5.

4. PEP activities may be prioritized based on the assessment of high priority, community-wide issues and targeted issues to reduce pollutants in storm water runoff. If prioritizing PEP activities, provide the reference to the procedure submitted above with the assessment and list of the priority issues (e.g., Attachment A, Section 1).
See pages 1 and 2 of "Attachment 4 - PEP 20170520.pdf" and "Table 2 BMP 20170521.pdf."

5. Provide the reference to the procedure submitted above identifying applicable PEP topics and the activities to be implemented during the permit cycle. If prioritizing, prioritize each applicable PEP topics as high, medium, or low based on the assessment in Question 4.

For each applicable PEP topic below, identify in the procedure the target audience; key message; delivery mechanism; year and frequency the BMP will be implemented; and the responsible party. If a PEP topic is determined to be not applicable or a priority issue, provide an explanation.

An example PEP table is available at the link below.

[PEP table example link](#)

A. Promote public responsibility and stewardship in the applicant's watershed(s). Provide the reference to the procedure submitted above or explanation as to why the topic is not applicable.
see "Table 2 BMP 20170521.pdf" submitted in Section 5.

B. 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. Provide the reference to the procedure submitted above or explanation as to why the topic is not applicable.
see "Table 2 BMP 20170521.pdf" submitted in Section 5.

C. Educate the public on illicit discharges and promote public reporting of illicit discharges and improper disposal of materials into the MS4. Provide the reference to the procedure submitted above or explanation as to why the topic is not applicable.
see "Table 2 BMP 20170521.pdf" submitted in Section 5.

D. Promote preferred cleaning materials and procedures for car, pavement, and power washing. Provide the reference to the procedure submitted above or explanation as to why the topic is not applicable.
see "Table 2 BMP 20170521.pdf" submitted in Section 5.

E. Inform and educate the public on proper application and disposal of pesticides, herbicides, and fertilizers. Provide the reference to the procedure submitted above or explanation as to why the topic is not applicable.
see "Table 2 BMP 20170521.pdf" submitted in Section 5.

F. Promote proper disposal practices for grass clippings, leaf litter, and animal wastes that may enter into the MS4. Provide the reference to the procedure submitted above or explanation as to why the topic is not applicable.
see "Table 2 BMP 20170521.pdf" submitted in Section 5.

G. 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. Provide the reference to the procedure submitted above or explanation as to why the topic is not applicable.
see "Table 2 BMP 20170521.pdf" submitted in Section 5.

H. Inform and educate the public on proper septic system care and maintenance, and how to recognize system failure. Provide the reference to the procedure submitted above or explanation as to why the topic is not applicable.
Not applicable.

I. Educate the public on, and promote the benefits of, green infrastructure and low impact development. Provide the reference to the procedure submitted above or explanation as to why the topic is not applicable.
see "Table 2 BMP 20170521.pdf" submitted in Section 5.

J. Identify and educate commercial, industrial, and institutional entities likely to contribute pollutants to storm water runoff. Provide the reference to the procedure submitted above or explanation as to why the topic is not applicable. see "Table 2 BMP 20170521.pdf" submitted in Section 5.

6. Provide the reference to the procedure submitted above for evaluating and determining the effectiveness of the overall PEP. The procedure shall include a method for assessing changes in public awareness and behavior resulting from the implementation of the PEP and the process for modifying the PEP to address ineffective implementation. e.g., Attachment A, Page 3, Section b.

See "Storm Water Discharge and Illicit Connection Ordinance (20180407).pdf," Section 63.146 to be presented for consideration by the City Commission and pages 3 and 4 of "Attachment 4 - PEP 20170520.pdf" and "Table 2 BMP 20170521.pdf."

Section 7. Illicit Discharge Elimination Program

>>[Click here to access the MDEQ IDEP Compliance Assistance Document](#)

>>[Click here to access the Center for Watershed Protection guide](#)

Proposing to work collaboratively on any or all BMPs in the IDEP during the permit cycle?

Yes

Illicit Discharge Elimination Program Procedures

[IDEP Protocol Manual Update 2014 20170521.pdf - 05/21/2017 10:49 PM](#)

[City of Clio Ordinance Number 475.pdf - 05/22/2017 12:32 PM](#)

[Genesee County Storm Water and Flood Control Design Standard Requirements 20170522.pdf - 05/22/2017 02:46 PM](#)

[Storm Water Discharge and Connection Ordinance.docx - 02/06/2019 11:43 AM](#)

Comment

NONE PROVIDED

Storm Sewer System Map

7. Provide the location where an up-to-date storm sewer system map(s) is available. The map(s) shall identify the following: the storm sewer system, the location of all outfalls and points of discharge, and the names and location of the surface waters of the state that receive discharges from the permittee's MS4 (for both outfalls and points of discharge). A separate storm sewer system includes: roads, catch basins, curbs, gutters, parking lots, ditches, conduits, pumping devices, and man-made channels. A storm sewer system map(s) may include available diagrams, such as certification maps, road maps showing rights-of-way, as-built drawings, or other hard copy or digital representation of the storm sewer system. (e.g., The Department of Public Works office)

Clio City Hall, 505 West Vienna Street Clio, Michigan and City of Clio Department of Public Service Garage, 109 Center Street, Clio, Michigan

Illicit Discharge Identification and Investigation

8. The MS4 may be prioritized for detecting non-storm water discharges during the permit cycle. The goal of the prioritization process is to target areas with high illicit discharge potential. If prioritizing, provide the reference to the procedure submitted above with the process for selecting each priority area using the list below. (e.g., Attachment A, page 3, Section b.)

- Areas with older infrastructure
- Industrial, commercial, or mixed use areas
- Areas with a history of past illicit discharges
- Areas with a history of illegal dumping
- Areas with septic systems
- Areas with older sewer lines or with a history of sewer overflows or cross-connections
- Areas with sewer conversions or historic combined sewer systems
- Areas with poor dry-weather water quality
- Areas with water quality impacts, including waterbodies identified in a Total Maximum Daily Load
- Priority areas applicable to the applicant not identified above

Provide the reference to the procedure submitted above (page and paragraph of attachments): e.g., Attachment A, Section b.

See pages 4 and 5 and Attachment "F" of "Attachment 2 - IDEP Plan 20170520 (marked revised 20190206).pdf" submitted in Section 5.

9. If prioritizing dry-weather screening, provide the reference to the document submitted above with the geographical location of each prioritized area using either a narrative description or map and identify the prioritized areas that will be targeted during the permit cycle.

See "City of Clio Ordinance Number 475.pdf," Section 65.501.

10. Provide the procedure for performing field observations at all outfalls and points of discharge in the priority areas as identified in the procedure above or for the entire MS4 during dry-weather at least once during the permit cycle. The procedure shall include a schedule for completing the field observations during the permit cycle or more expeditiously if the applicant becomes aware of a non-storm water discharge.

As part of the procedure, the applicant may submit an interagency agreement with the owner or operator of the downstream MS4 identifying responsibilities for ensuring an illicit discharge is eliminated if originating from the applicant's point(s) of discharge. The interagency agreement would eliminate the requirement for performing a field observation at that point(s) of discharge. Areas not covered by the interagency agreement shall be identified with a schedule for performing field observations included in the procedure.

The focus of the field observation shall be to observe the following:

- Presence/absence of flow
- Water clarity
- Deposits/stains on the discharge structure or bank
- Color
- Vegetation condition
- Odor
- Structural condition
- Floatable materials
- Biology, such as bacterial sheens, algae, and slimes

Provide the reference to the procedure submitted above (page and paragraph of attachments): e.g., Attachment A, Section b.

See pages 6 and 7 of "Attachment 2 - IDEP Plan 20170520 (marked revised 20180319).pdf" submitted in Section 5 and pages 4-13 of "IDEP Protocol Manual Update 2014 20170521.pdf."

11. Provide the reference to the procedure submitted above for performing field screening if flow is observed at an outfall or point of discharge and the source of an illicit discharge is not identified during the field observation. Field screening shall include analyzing the discharge for indicator parameters (e.g., ammonia, fluoride, detergents, and pH). The procedure shall include a schedule for performing field screening.

See pages 6 and 9 of "Attachment 2 - IDEP Plan 20170520 (marked revised 20190206) .pdf" submitted in Section 5 and pages 13-25 of "IDEP Protocol Manual Update 2014 20170521.pdf."

12. Provide the reference to the procedure submitted above for performing a source investigation if the source of an illicit discharge is not identified by field screening. The procedure shall include a schedule for performing a source investigation.

Complaints will be immediately investigated consistent with page 10 of "Attachment 2 - IDEP Plan 20170520 (marked revised 20190206) .pdf" submitted in Section 5 and "City of Clio Ordinance 475.pdf", Section 62.501. See also Memo "D."

13. Provide the reference to the procedure submitted above for responding to illegal dumping/spills. The procedure shall include a schedule for responding to complaints, performing field observations, and follow-up field screening and source investigations as appropriate.

Complaints will be immediately investigated consistent with pages 7 and 8 of "Attachment 2 - IDEP Plan 20170520 (marked revised 20190206).pdf," "Individual Permittee ERP 20170520.pdf" submitted in Section 5, and "City of Clio Ordinance 475.pdf", Section 62.501.

14. If prioritizing, provide the reference to the procedure submitted above for responding to illicit discharges upon becoming aware of such a discharge outside of the priority areas. The procedure shall include a schedule for performing field observations, and follow-up field screening and source investigation as appropriate. If not prioritizing, enter "Not Applicable."

Not applicable.

15. Provide the reference to the procedure submitted above which includes a requirement to immediately report any release of any polluting materials from the MS4 to the surface waters or groundwaters of the state, unless a determination is made that the release is not in excess of the threshold reporting quantities in the Part 5 Rules, by calling the appropriate MDEQ District Office, or if the notice is provided after regular working hours call the MDEQ's 24-Hour Pollution Emergency Alerting System telephone number: 800-292-4706. (Example threshold reporting quantities: a release of 50 pounds of salt in solid form or 50 gallons in liquid form to waters of the state unless authorized by the MDEQ for deicing or dust suppressant.)

See "Attachment 2 - IDEP Plan 20170520.pdf" and "Individual Permittee ERP 20170520.pdf" submitted in Section 5

16. If the procedures requested in Questions 8 through 14 do not accurately reflect the applicant's procedure(s), provide the reference to the procedure(s) submitted above describing the alternative approach to meet the minimum requirements.

Not applicable.

17. Provide the reference to the procedure submitted above for responding to illicit discharges once the source is identified. The procedure shall include a schedule to eliminate the illicit discharge and pursue enforcement actions. The procedure shall also address illegal spills/dumping.

Elimination of illicit discharges and enforcement action will be immediate pursuant to "Storm Water Discharge and Illicit Connection Ordinance (20180407).pdf" and consistent with pages 10 and 11 of "Attachment 2 - IDEP Plan 20170520 (marked revised 201902069).pdf" submitted in Section 5.

IDEP Training and Evaluation

18. Provide the reference to the program submitted above to train staff employed by the applicant, who, as part of their normal job responsibilities, may come into contact with or otherwise observe an illicit discharge to the regulated MS4, on the following topics. The program shall include a training schedule for this permit cycle. It is recommended that staff be trained more than once per permit cycle.

- Techniques for identifying an illicit discharge or connection, including field observation, field screening, and source investigation.

- Procedures for reporting, responding to, and eliminating an illicit discharge or connection and the proper enforcement response.

- The schedule and requirement for training at least once during the term of this permit cycle for existing staff and within the first year of hire for new staff.

Provide the reference to the program submitted above (page and paragraph of attachments): e.g., Attachment A, Section b.

See page 13 of "Attachment 2 - IDEP Plan 20170520.pdf" submitted in Section 5

19. Provide the reference to the procedure submitted above for evaluating and determining the overall effectiveness of the IDEP. The procedure shall include a schedule for implementation. Examples of evaluating overall effectiveness include, but are not limited to, the following: evaluate the prioritization process to determine if efforts are being maximized in areas with high illicit discharge potential; evaluate the effectiveness of using different detection methods; evaluate the number of discharges and/or quantity of discharges eliminated using different enforcement methods; and evaluate program efficiency and staff training frequency.

See page 14 of "Attachment 2 - IDEP Plan 20170520.pdf" and "Individual Permittee ERP 20170520.pdf" submitted in Section 5

Illicit Discharge Ordinance or Other Regulatory Mechanism

20. Provide the reference to the in effect ordinance or regulatory mechanism submitted above that prohibits non-storm water discharges into the applicant's MS4 (except the non-storm water discharges addressed in Questions 21 and 22).

see Ordinance Number 497 "Storm Water Discharge and Illicit Connection Ordinance (20180407).pdf" adopted by the City Commission on May 21, 2018.

21. Provide the reference to the ordinance or other regulatory mechanism submitted above that excludes prohibiting the discharges or flows from firefighting activities to the applicant's MS4 and requires that these discharges or flows only be addressed if they are identified as significant sources of pollutants to waters of the State. The ordinance shall not authorize illicit discharges; however, the applicant may choose to exclude prohibiting the discharges and flows from firefighting activities if they are identified as not being significant sources of pollutants to waters of the state. see Ordinance Number 497 "Storm Water Discharge and Illicit Connection Ordinance (20180407).pdf" adopted by the City Commission on May 21, 2018.

22. Provide the reference to the ordinance or other regulatory mechanism submitted above that excludes prohibiting the following categories of non-storm water discharges or flows if identified as significant contributors to violations of Water Quality Standards. The ordinance shall not authorize illicit discharges; however, the applicant may choose to exclude prohibiting the following discharges or flows if they are identified as not being a significant contributor to violations of Water Quality Standards.

- a. Water line flushing and discharges from potable water sources
- b. Landscape irrigation runoff, lawn watering runoff, and irrigation waters
- c. Diverted stream flows and flows from riparian habitats and wetlands
- d. Rising groundwaters and springs
- e. Uncontaminated groundwater infiltration and seepage
- f. Uncontaminated pumped groundwater, except for groundwater cleanups specifically authorized by NPDES permits
- g. Foundation drains, water from crawl space pumps, footing drains, and basement sump pumps
- h. Air conditioning condensation
- i. Waters from noncommercial car washing
- j. Street wash water
- k. Dechlorinated swimming pool water from single, two, or three family residences. (A swimming pool operated by the permittee shall not be discharged to a separate storm sewer or to surface waters of the state without NPDES permit authorization from the MDEQ.)

Provide the reference to the procedure submitted above (page and paragraph of attachments): e.g., Attachment A, Section b.

see Ordinance Number 497 "Storm Water Discharge and Illicit Connection Ordinance (20180407).pdf" adopted by the City Commission on May 21, 2018.

23. Provide the reference to the ordinance or regulatory mechanism submitted above that regulates the contribution of pollutants to the applicant's MS4 in the attachment above.

see Ordinance Number 497 "Storm Water Discharge and Illicit Connection Ordinance (20180407).pdf" adopted by the City Commission on May 21, 2018.

24. Provide the reference to the ordinance or regulatory mechanism submitted above that prohibits illicit discharges, including illicit connections and the direct dumping or disposal of materials into the applicant's MS4 in the attachment above.

see Ordinance Number 497 "Storm Water Discharge and Illicit Connection Ordinance (20180407).pdf" adopted by the City Commission on May 21, 2018.

25. Provide the reference to the ordinance or regulatory mechanism submitted above with the authority established to inspect, investigate, and monitor suspected illicit discharges into the applicant's MS4 in the attachment above.

see Ordinance Number 497 "Storm Water Discharge and Illicit Connection Ordinance (20180407).pdf" adopted by the City Commission on May 21, 2018.

26. Provide the reference to the ordinance or regulatory mechanism submitted above that requires and enforces elimination of illicit discharges into the applicant's MS4, including providing the applicant the authority to eliminate the illicit discharge in the attachment above.

see Ordinance Number 497 "Storm Water Discharge and Illicit Connection Ordinance (20180407).pdf" adopted by the City Commission on May 21, 2018.

Section 8. Construction Storm Water Runoff Control Program

Proposing to work collaboratively on any or all requirements of the Construction Storm Water Runoff Control Program during the permit cycle?

Yes

Qualifying Local Soil Erosion and Sedimentation Control Programs

[Click here to access the list of approved Part 91 Agencies](#)

27. Is the applicant a Part 91 Agency?

No

If yes, choose type

NONE PROVIDED

No the applicant relies on the following Qualifying Local Soil Erosion and Sedimentation Control Program (Part 91 Agency)

Genesee County Drain Commissioner's Office - Water and Waste Services

Construction Storm Water Runoff Control

Construction Storm Water Runoff Control Program Procedure Attachment

[Attachment 5 MDEQ Stormwater Discharge Permit Application 20170522.pdf - 05/22/2017 02:16 PM](#)

Comment

The City will track the number of construction permit applications, submitted and approved, by location. Complaints will be tracked utilizing Attachment "E" "Attachment 2 - IDEP Plan 20170520 (marked revised 20180319).pdf" submitted in Section 5.

28. Provide the reference to the procedure submitted above with the process for notifying the Part 91 Agency or appropriate staff when soil or sediment is discharged to the applicant's MS4 from a construction activity, including the notification timeframe. The procedure shall allow for the receipt and consideration of complaints or other information submitted by the public or identified internally as it relates to construction storm water runoff control. For non-Part 91 agencies, consideration of complaints may include referring the complaint to the qualifying local Soil Erosion and Sedimentation Control Program as appropriate. Construction activity is defined pursuant to Part 21, Wastewater Discharge Permits, Rule 323.2102 (K). The applicant may consider as part of their procedure when and under what circumstances the Part 91 Agency or appropriate staff will be contacted.

See "Attachment 5 - MDEQ Stormwater Discharge Permit Application 20170522.pdf."

29. Provide the reference to the procedure submitted above with the requirement to notify the MDEQ when soil, sediment, or other pollutants are discharged to the applicant's MS4 from a construction activity, including the notification timeframe. Other pollutants include pesticides, petroleum derivatives, construction chemicals, and solid wastes that may become mobilized when land surfaces are disturbed. The applicant may consider as part of their procedure when and under what circumstances the MDEQ will be contacted.

See "Attachment 5 - MDEQ Stormwater Discharge Permit Application 20170522.pdf."

30. Provide the reference to the procedure submitted above for ensuring that construction activity one acre or greater in total earth disturbance with the potential to discharge to the applicant's MS4 obtains a Part 91 permit, or is conducted by an approved Authorized Public Agency as appropriate. Note: For applicants that conduct site plan review, the procedure must be triggered at the site plan review stage.

See "Attachment 5 - MDEQ Stormwater Discharge Permit Application 20170522.pdf." Also see Article II Storm Water permits of "City of Clio Ordinance Number 475.pdf" with referenced "Genesee County Storm Water and Flood Control Design Standard Requirements 20170522.pdf" submitted in Section 7.

31. Provide the reference to the procedure submitted above to advise the landowner or recorded easement holder of the property where the construction activity will occur of the State of Michigan Permit by Rule (Rule 323.2190).

See "Attachment 5 - MDEQ Stormwater Discharge Permit Application 20170522.pdf."

Section 9. Post-Construction Storm Water Runoff Program

>>[Click here to access the Low Impact Development Manual for Michigan. Chapter 9 of the manual provides a methodology for addressing post-construction storm water runoff.](#)

The MDEQ has the following resources available to assist with development of a Post-Construction Storm Water Runoff Program.

>>[Click here to access the Post-Construction Storm Water Runoff Program Compliance Assistance Document](#)

Post-Construction Storm Water Runoff Program Procedures, Ordinances, and Regulatory Mechanisms

[Attachment 6 - Procedure for Post Construction 20170522.pdf - 05/23/2017 07:49 AM](#)

[City of Clio Ordinance Number 475 Amendment.pdf - 04/08/2018 10:27 PM](#)

Comment

The City will track the number of construction permit applications, post construction, by location and date. Operations and Management agreements will also be recorded and tracked by location and date. The City will conduct required inspections. Complaints will be tracked utilizing Attachment "E" "Attachment 2 - IDEP Plan 20170520 (marked revised 20180319).pdf" submitted in Section 5. "City of Clio Ordinance Number 475 Amendment.pdf" will be presented for consideration by the City Commission.

Ordinance or Other Regulatory Mechanism

32. Provide the reference to the in-effect ordinance or regulatory mechanism submitted above to address post-construction storm water runoff from new development and redevelopment projects, including preventing or minimizing water quality impacts. The ordinance or other regulatory mechanism shall apply to private, commercial, and public projects, including projects where the applicant is the developer. This requirement may be met using a single ordinance or regulatory mechanism or a combination of ordinances and regulatory mechanisms. If not available at this time, provide the date the ordinance or regulatory mechanism will be available.
See "City of Clio Ordinance Number 475.pdf" and pages 1-19 of the "Genesee County Storm Water and Flood Control Design Standard Requirements 20170522.pdf" submitted in Section 7.

33. Provide the reference to the ordinance or other regulatory mechanism submitted above that applies to projects that disturb at least one or more acres, including projects less than an acre that are part of a larger common plan of development or sale and discharge into the applicant's MS4. If not available at this time, provide the date the ordinance or regulatory mechanism will be available.
See "City of Clio Ordinance Number 475.pdf" and pages 1-19 of the "Genesee County Storm Water and Flood Control Design Standard Requirements 20170522.pdf" submitted in Section 2.

Federal Facilities

Federal facilities are subject to the Energy Independence and Security Act of 2007. Section 438 of this legislation establishes post-construction storm water runoff requirements for federal development and redevelopment projects.

34. Is the applicant the owner or operator of a federal facility with a storm water discharge
No, skip to Question 36

35. Provide the reference to the regulatory mechanism submitted above with the requirement to implement the post-construction storm water runoff control requirements in Section 438 of the Energy Independence and Security Act. If not available at this time, provide the date the regulatory mechanism will be available.

The United States Environmental Protection Agency (USEPA) has a technical guidance available at the following link.
[USEPA Technical Guidance on Implementing the Stormwater Runoff Requirements](#)

Provide the reference to the regulatory mechanism submitted above (page and paragraph of attachments): e.g., Attachment A, Section b.
NONE PROVIDED

Water Quality Treatment Performance Standard

36. Does the ordinance or other regulatory mechanism include one or more of the following water quality treatment standards?

Treat the first one inch of runoff from the entire project site. Provide the ordinance or regulatory mechanism reference in the attachment above (page and paragraph of attachments): e.g., Attachment A, Pages 1-15
Yes, see "City of Clio Ordinance Number 475.pdf" and page 8 of the "Genesee County Storm Water and Flood Control Design Standard Requirements 20170522.pdf" submitted in Section 2.

Treat the runoff generated from 90 percent of all runoff-producing storms for the project site. Provide the ordinance or regulatory mechanism reference in the attachment above (page and paragraph of attachments): e.g., Attachment A, Pages 1-15
Yes, see "City of Clio Ordinance Number 475.pdf" and page 8 of the "Genesee County Storm Water and Flood Control Design Standard Requirements 20170522.pdf" submitted in Section 2.

If no, provide the date the ordinance or regulatory mechanism will be submitted.

NONE PROVIDED

37. If the applicant has chosen the water quality treatment standard of requiring treatment of the runoff generated from 90 percent of all runoff-producing storms, what is the source of the rainfall data?

The MDEQ memo included in the sources below is available at the following link.

[March 24, 2006 MDEQ memo providing the 90 percent annual non-exceedance storm statistics](#)

Sources

The MDEQ's memo dated March 24, 2006 providing the 90 percent annual non-exceedance storm statistics.

Other rainfall data source (page and paragraph of attachments)

NONE PROVIDED

38. **Provide the reference to the ordinance or regulatory mechanism submitted above with the requirement that BMPs be designed on a site-specific basis to reduce post-development total suspended solids loadings by 80 percent or achieve a discharge concentration of total suspended solids not to exceed 80 milligrams per liter. If not available at this time, provide the date the ordinance or regulatory mechanism will be available.**

See "City of Clio Ordinance Number 475.pdf" and page 8, Requirement A, of the "Genesee County Storm Water and Flood Control Design Standard Requirements 20170522.pdf" submitted in Section 2. Otherwise, also see "Attachment 6 - Procedure for Post Construction 20170522.pdf."

Channel Protection Performance Standard

39. Provide the reference to the ordinance or regulatory mechanism submitted above with the requirement that the post-construction runoff rate and volume of discharges not exceed the pre-development rate and volume for all storms up to the two-year, 24-hour storm at the project site. At a minimum, pre-development is the last land use prior to the planned new development or redevelopment. If not available at this time, provide the date the ordinance or regulatory mechanism will be available.

A MDEQ spreadsheet is available to assist with these calculations at the following link.

[Calculations for Storm Water Runoff Volume Control Spreadsheet](#)

Provide the reference to the ordinance or regulatory mechanism submitted above.

See "City of Clio Ordinance Number 475.pdf" and page 9, Requirement B, of the "Genesee County Storm Water and Flood Control Design Standard Requirements 20170522.pdf" submitted in Section 2. Otherwise, also see "Attachment 6 - Procedure for Post Construction 20170522.pdf."

If pursuing an alternative approach, provide the reference to the ordinance or other regulatory mechanism submitted above describing the alternative to meet the minimum requirements, including an explanation as to how the channel protection standard will prevent or minimize water quality impacts.

NONE PROVIDED

40. **The channel protection performance standard is not required for the following waterbodies: the Great Lakes or connecting channels of the Great Lakes; Rouge River downstream of the Turning Basin; Saginaw River; Mona Lake and Muskegon Lake (Muskegon County); and Lake Macatawa and Spring Lake (Ottawa County). If applicable, provide the reference to the ordinance or regulatory mechanism submitted above that excludes any waterbodies from the channel protection performance standard. If not available at this time, provide the date the ordinance or regulatory mechanism will be available.**

Not applicable.

Site-Specific Requirements

41. **Provide the reference to the procedure submitted above for reviewing the use of infiltration BMPs to meet the water quality treatment and channel protection standards for new development or redevelopment projects in areas of soil or groundwater contamination in a manner that does not exacerbate existing conditions. The procedure shall include the process for coordinating with MDEQ staff as appropriate.**

See "Attachment 6 - Procedure for Post Construction 20170522.pdf."

42. Provide the reference to the ordinance or regulatory mechanism submitted above that requires BMPs to address the associated pollutants in potential hot spots as part of meeting the water quality treatment and channel protection standards for new development or redevelopment projects. Hot spots include areas with the potential for significant pollutant loading such as gas stations, commercial vehicle maintenance and repair, auto recyclers, recycling centers, and scrap yards. Hot spots also include areas with the potential for contaminating public water supply intakes. If not available at this time, provide the date the ordinance or regulatory mechanism will be available.
Yes, see "Attachment 6 - Procedure for Post Construction 20170522.pdf."

Off-Site Mitigation and Payment in Lieu Programs

43. An applicant may choose to allow for the approval of off-site mitigation for redevelopment projects that cannot meet 100 percent of the performance standards on-site after maximizing storm water retention. Off-site mitigation refers to BMPs implemented at another location within the same jurisdiction and watershed/sewershed as the original project. A watershed is the geographic area included in a 10-digit Hydrologic Unit Code and a sewershed is the area where storm water is conveyed by the applicant's MS4 to a common outfall or point of discharge. If proposing to allow for off-site mitigation, provide the reference to the ordinance or regulatory mechanism submitted above with the off-site mitigation requirements. If not available at this time, provide the date the ordinance or regulatory mechanism will be available.
No, not pursuing this option.

44. An applicant may choose to allow for the approval of payment in lieu for projects that cannot meet 100 percent of the performance standards on-site after maximizing storm water retention. A payment in lieu program refers to a developer paying a fee to the applicant that is applied to a public storm water management project within the same jurisdiction and watershed/sewershed as the original project in lieu of installing the required BMPs onsite. The storm water management project may be either a new BMP or a retrofit to an existing BMP and shall be developed in accordance with the applicant's performance standards. A watershed is the geographic area included in a 10-digit Hydrologic Unit Code and a sewershed is the area where storm water is conveyed by the applicant's MS4 to a common outfall or point of discharge. If proposing to allow for payment in lieu, provide the reference to the ordinance or regulatory mechanism submitted above with the payment in lieu requirements. If not available at this time, provide the date the ordinance or regulatory mechanism will be available. If not pursuing the options available in Questions 43 and 44, skip to Question 52.
No, not pursuing this option.

45. Provide the reference the the ordinance or regulatory mechanism submitted above that establishes criteria for determining the conditions under which off-site mitigation and/or payment in lieu are available and require technical justification as to the infeasibility of on-site management. The determination that performance standards cannot be met on-site shall not be based solely on the difficulty or cost of implementing, but shall be based on multiple criteria related to the physical constraints of the project site, such as: too small of a lot outside of the building footprint to create the necessary infiltrative capacity even with amended soils; soil instability as documented by a thorough geotechnical analysis; a site use that is inconsistent with the capture and reuse of storm water; too much shade or other physical conditions that preclude adequate use of plants. The criteria shall also include consideration of the stream order and location within the watershed/sewershed as it relates to the water quality impacts from the original project site (e.g., the water quality impact from a project site with a discharge to a small-sized stream would be greater than a project site on a large river and an offset downstream of the project site may provide less water quality benefit.) The highest preference for off-site mitigation and in lieu projects shall be given to locations that yield benefits to the same receiving water that received runoff from the original project site. If not available at this time, provide the date the ordinance or regulatory mechanism will be available.
NONE PROVIDED

46. Provide the reference to the ordinance or regulatory mechanism submitted above that establishes a minimum amount of storm water to be managed on-site as a first tier for off-site mitigation or payment in lieu. A higher offset ratio is required if off-site mitigation or payment in lieu is requested for the amount of storm water identified as the first tier. For example, a minimum of 0.4 inches of storm water runoff shall be managed on-site as a first tier. If not available at this time, provide the date the ordinance or regulatory mechanism will be available.
NONE PROVIDED

47. Provide the reference to the ordinance or regulatory mechanism submitted above that requires an offset ratio of 1:1.5 for the amount of storm water above the first tier (identified in Question 46) not managed on-site to the amount of storm water required to be mitigated at another site or for which in-lieu payments shall be made. If not available at this time, provide the date the ordinance or regulatory mechanism will be available.
NONE PROVIDED

48. Provide the reference to the ordinance or regulatory mechanism submitted above requiring that if demonstrated by the developer to the applicant that it is completely infeasible to manage the first tier of storm water identified in Question 47 on-site, the offset ratio for the unmanaged portion is 1:2. If not available at this time, provide the date the ordinance or regulatory mechanism will be available.

NONE PROVIDED

49. Provide the reference to the ordinance or regulatory mechanism submitted above that requires a schedule for completing off-site mitigation and in-lieu projects. Off-site mitigation and in-lieu projects should be completed within 24 months after the start of the original project site construction. If not available at this time, provide the date the ordinance or regulatory mechanism will be available.

NONE PROVIDED

50. Provide the reference to the ordinance or regulatory mechanism submitted above that requires that offsets and in-lieu projects be preserved and maintained in perpetuity, such as deed restrictions and long-term operation and maintenance. If not available at this time, provide the date the ordinance or regulatory mechanism will be available.

NONE PROVIDED

51. Describe the tracking system implemented, or to be implemented, to track off-site mitigation and/or in-lieu projects.

NONE PROVIDED

52. If there are any other exceptions to the performance standards (other than off-site mitigation and payment in lieu) being implemented or to be implemented during the permit cycle, provide the reference to the document submitted above describing the exception(s). The applicant shall demonstrate how the exception provides an equivalent or greater level of protection as the performance standards.

No, not pursuing any other exemptions to the performance standards.

Site Plan Review

53. Provide the reference to the ordinance or regulatory mechanism submitted above that includes a requirement to submit a site plan for review and approval of post-construction storm water runoff BMPs. If not available at this time, provide the date the ordinance or regulatory mechanism will be available.

Yes, see "Attachment 6 - Procedure for Post Construction 20170522.pdf."

54. Provide the reference to the procedure submitted above for site plan review and approval. If not available at this time, provide the date the procedure will be available.

See "Attachment 6 - Procedure for Post Construction 20170522.pdf."

55. Provide the reference to the site plan review and approval procedure submitted above describing the process for determining how the developer meets the performance standards and ensures long-term operation and maintenance of BMPs in the attachment above. If not available at this time, provide the date the procedure will be available.

See "Attachment 6 - Procedure for Post Construction 20170522.pdf."

Long-Term Operation and Maintenance of BMPs

56. Provide the reference to the ordinance or regulatory mechanism submitted above that requires the long-term operation and maintenance of all structural and vegetative BMPs installed and implemented to meet the performance standards in perpetuity. If not available at this time, provide the date the procedure will be available.

Yes, see "Attachment 6 - Procedure for Post Construction 20170522.pdf."

57. Provide the reference to the ordinance or regulatory mechanism submitted above that requires a maintenance agreement between the applicant and owners or operators responsible for the long-term operation and maintenance of structural and vegetative BMPs installed and implemented to meet the performance standards. If not available at this time, provide the date the procedure will be available.

Yes, see "Attachment 6 - Procedure for Post Construction 20170522.pdf."

58. Does the maintenance agreement or other legal mechanism allow the applicant to complete the following? (Check if yes)

Perform the necessary maintenance or corrective actions neglected by the BMP owner or operator
 Inspect the structural or vegetative BMP
 Track the transfer of operation and maintenance responsibility of the BMP (e.g., deed restrictions)

If any of the boxes above were not checked, provide a response explaining how the maintenance agreement or other legal mechanism allows the applicant to verify and ensure maintenance of the BMP.

NONE PROVIDED

59. Provide the reference to the procedure submitted above for tracking compliance with a maintenance agreement or other legal mechanism to ensure the performance standards are met in perpetuity in the attachment above.

See Ordinance 475.

Section 10. Pollution Prevention and Good Housekeeping Program**Pollution Prevention and Good Housekeeping Program Procedures**

[Pollution Prevention and Good Housekeeping for Municipal Operations.pdf - 05/23/2017 02:46 PM](#)

[Stormwater Sytem Map 20170523.pdf - 05/23/2017 09:33 PM](#)

[Stormwater Catch Basin Guidance 20170523.pdf - 05/23/2017 09:44 PM](#)

[Table 3 Inventory of City of Clio Owned or Operated Facilities 20170523 \(Amended 04082018\).pdf - 04/08/2018 11:05 PM](#)

[Attachment 7 City of Clio Pollution Prevention Procedure 20170523 \(revised 20190206\).docx - 02/06/2019 04:12 PM](#)

[Cold weather BMP 20190206.pdf - 02/06/2019 04:12 PM](#)

Comment

The City will track 1) employee training attendance by class, name and date; 2) maintenance activity by general description, date and location; and 3) inspections (if any) by date and location with a record of results. The Spill Notification form will be utilized to documents spills. Pollutants removed from street sweeping and storm water catch basins will be recorded. The type and amount of pesticides and herbicides used will recorded. The type and amount of deicing product will be recorded.

Municipal Facility and Structural Storm Water Control Inventory**60. Provide the reference to the up-to-date inventory submitted above identifying applicant-owned or operated facilities and storm water structural controls with a discharge of storm water to surface waters of the state. The inventory shall include the location of each facility. Provide an estimate of the number of structural storm water controls throughout the entire MS4 for each applicable category below (e.g., 100 catch basins and 7 detention basins). For example, Attachment A, Page 3, Section B.**

Clio City Hall, 505 West Vienna Street Clio (one catch basin); City of Clio Department of Public Service Garage, 109 Center Street, Clio, Michigan; Clio City Park, 402 North Mill Street; and its north and its south downtown parking lots. City street with approximately 200 catch basins mapped.

Facilities that may have the high potential to discharge pollutants:

Other: Public Works building (109 Center Street and 210 Railway Street)

Check all applicant-owned or operated facilities with a discharge of storm water to surface waters of the state:

Parks

Administration buildings and libraries

Vacant land and open space

Other: Public Works building (109 Center Street and 210 Railway Street)

Check all applicant-owned or operated structural storm water controls with a discharge of storm water to surface waters of the state:

Catch basins

Other structural storm water controls – Provide a description below:

Other: Drain tole and [directly connected] roof downspout

61. Provide the location where an up-to-date map (or maps) is available with the location of the facilities and structural storm water controls identified in Question 60. The location of the facilities and structural storm water controls may be included on the storm sewer system map maintained for the IDEP. The map (or maps) is available at the following location: (e.g., The Department of Public Works office)

Clio City Hall, 505 West Vienna Street Clio, Michigan and City of Clio Department of Public Service Garage, 109 Center Street, Clio, Michigan.

62. Provide the reference to the procedure submitted above for updating and revising the inventory in Question 60 and map (or maps) identified in Question 61 as facilities and structural storm water controls are added, removed, or no longer owned or operated by the applicant in the attachment above. A suggested timeframe for updating/revising the inventory and map(s) is 30 days following adding/removing a facility or structural storm water control.

See "Attachment 7 City of Clio Pollution Prevention Procedure 20170523.pdf."

Facility-Specific Storm Water Management

63. Provide the reference to the procedure submitted above for assessing each facility identified in Question 60 for the potential to discharge pollutants to surface waters of the state. The procedure shall include a process for updating and revising the assessment. A recommended timeframe for updating/revising the assessment is 30 days prior to discharging storm water from a new facility and within 30 days of determining a need to update/revise the facility assessment.

The applicant should consider the following factors when assessing each facility:

- Amount of urban pollutants stored at the site (e.g., sediment, nutrients, metals, hydrocarbons, pesticides, fertilizers, herbicides, chlorides, trash, bacteria, or other site-specific pollutants)
- Identification of improperly stored materials
- The potential for polluting activities to be conducted outside (e.g., vehicle washing)
- Proximity to waterbodies
- Poor housekeeping practices
- Discharge of pollutants of concern to impaired waters

If the applicant does not own a facility that discharges storm water to surface waters of the state in the urbanized area, skip to Question 71.

Provide the reference to the procedure submitted above (page and paragraph of attachments): e.g., Attachment A, Section b.

See "Attachment 7 City of Clio Pollution Prevention Procedure 20170523.pdf."

If not applicable

NONE PROVIDED

64. Provide the reference to the list of prioritized facilities submitted above using the assessment in Question 63. Each facility shall be prioritized based on having the high, medium, or low potential to discharge pollutants to surface waters of the state. Facilities with the high potential for pollutant runoff shall include, but are not limited to, the applicant's fleet maintenance and storage yards. The applicant may choose to demonstrate how a fleet maintenance/storage yard has the low potential to discharge pollutants to surface waters of the state. If demonstrating a low potential, provide the reference to the demonstration submitted above for the fleet maintenance and/or storage yard.

See "Table 3 Inventory of City of Clio Owned and Operated Facilities 20170523.pdf."

65. Is a site-specific standard operating procedure (SOP) available identifying the structural and non-structural storm water controls implemented and maintained to prevent or reduce pollutant runoff at each facility with the high potential for pollutant runoff? The SOP shall be available at each facility with the high potential for pollutant runoff and upon request from the MDEQ. The SOP shall identify the person responsible for oversight of the facility. The MDEQ may request the submission of the SOP during the application review process.

Yes, a site-specific SOP is available at each facility with the high potential for pollutant runoff

66. Provide the reference in the SOP, for each facility with the high potential for pollutant runoff, to the following: the list of significant materials stored on-site that could pollute storm water; the description of the handling and storage requirements for each significant material; and the potential to discharge the significant material. (SOP Reference Example: DPW Yard SOP – Section 2)

SWPPP .

67. Provide the reference in the SOP, for each facility with the high potential for pollutant runoff, identifying the good housekeeping practices implemented at the site. Good housekeeping practices include keeping the facility neat and orderly, properly storing and covering materials, and minimizing pollutant sources to prevent or reduce pollutant runoff. (SOP Reference Example: DPW Yard SOP – Section 2)

SWPPP .

68. Provide the reference in the SOP, for each facility with the high potential for pollutant runoff, to the description and schedule for conducting routine maintenance and inspections of storm water management and control devices to ensure materials and equipment are clean and orderly and to prevent or reduce pollutant runoff. A biweekly schedule is recommended for routine inspections. (SOP Reference Example: DPW Yard SOP – Section 2)

SWPPP .

69. Provide the reference in the SOP, for each facility with the high potential for pollutant runoff, to the description and schedule for conducting a comprehensive site inspection at least once every six months. The comprehensive inspection shall include an inspection of all structural storm water controls and a review of non-structural storm water controls to prevent or reduce pollutant runoff. (SOP Reference Example: DPW Yard SOP – Section 2)

SWPPP .

70. Provide the reference to the procedure submitted above identifying the BMPs currently implemented or to be implemented during the permit cycle to prevent or reduce pollutant runoff at each facility with the medium and lower potential for the discharge of pollutants to surface waters of the state using the assessment and prioritized list in Questions 63 and 64.

SWPPP .

Structural Storm Water Control Operation and Maintenance Activities

71. Provide the reference to the procedure submitted above for prioritizing each catch basin for routine inspection, maintenance, and cleaning based on preventing or reducing pollutant runoff. The procedure shall include assigning a priority level for each catch basin and the associated inspection, maintenance and cleaning schedule based on preventing or reducing pollutant runoff. The procedure shall include a process for updating/revising the priority level for a catch basin giving consideration to inspection findings and citizen complaints. A recommended timeframe for updating/revising the procedure is 30 days following the construction of a catch basin or a change in priority level. If the applicant does not own or operate catch basins skip to Question 75.

The City does not prioritize one catch basin over another catch basin, but inspects, maintains, and cleans catch basins on an annual basis and otherwise as needed based on complaint or observation so that no catch basin exceed 30% capacity.

72. Provide the reference to the narrative description or map submitted above with the geographic location of the catch basins in each priority level.

See "Stormwater System Map 20170523.pdf."

73. Provide the reference to the procedure submitted above for inspecting, cleaning, and maintaining catch basins to ensure proper performance. Proper cleaning methods include ensuring accumulated pollutants are not discharged during cleaning and are removed prior to discharging to surface waters of the state. An MDEQ Catch Basin Cleaning Activities guidance document is available at the following link.

[Catch Basin Cleaning Activities Guidance Document](#)

Provide the reference to the procedure submitted above (page and paragraph of attachments): e.g., Attachment A, Section b.

See "Pollution Prevention and Good Housekeeping for Municipal Operations.pdf" and "Stormwater Catch Basin Guidance 20170523.pdf."

74. Provide the reference to the procedure submitted above for dewatering, storage, and disposal of materials extracted from catch basins. An MDEQ Catch Basin Cleaning Activities guidance document is available at the following link.

[Catch Basin Cleaning Activities Guidance Document](#)

Provide the reference to the procedure submitted above (page and paragraph of attachments): e.g., Attachment A, Section b.

See "Pollution Prevention and Good Housekeeping for Municipal Operations.pdf" and "Stormwater Catch Basin Guidance 20170523.pdf." Materials go to landfill.

75. If the applicant owns or operates structural storm water controls identified in Question 60, excluding the structural storm water controls included in an SOP as part of Question 65 and catch basins, provide the reference to the procedure submitted above for inspecting and maintaining the structural storm water controls. The procedure shall include a description and schedule for inspecting and maintaining each structural storm water control and the process for disposing of maintenance waste materials. The procedure shall require that controls be maintained to reduce to the maximum extent practicable the contribution of pollutants to storm water. The procedure shall include a process for updating/revising the procedure to ensure a maintenance and inspection program for each structural storm water control. A recommended timeframe for updating/revising the procedure is 30 days following the implementation of a new structural storm water control.

The City will follow the "Pollution Prevention and Good Housekeeping for Municipal Operations.pdf." Procedure will be updated within 30 days of new structural storm water controls.

76. Provide the reference to the procedure submitted above requiring new applicant-owned or operated facilities or new structural storm water controls for water quantity be designed and implemented in accordance with the post-construction storm water runoff control performance standards and long-term operation and maintenance requirements.

See "City of Clio Ordinance Number 475.pdf" submitted in Section 7 and Genesee County Storm Water and Flood Control Design Standard Requirements 20170522.pdf" also submitted in Section 7.

Municipal Operations and Maintenance Activities

77. Provide the reference to the procedure(s) submitted above with the assessment of the following operation and maintenance activities, if applicable, for the potential to discharge pollutants to surface waters of the state. The assessment shall identify all pollutants that could be discharged from each applicable operation and maintenance activity and the BMPs being implemented or to be implemented to prevent or reduce pollutant runoff. The procedure shall include a process for updating and revising the assessment. A suggested timeframe for updating/revising the assessment is 30 days following adding/removing BMPs to address new and existing operation and maintenance activities.

At a minimum, the procedure shall include assessing the following municipal operation and maintenance activities if applicable (check all that apply):

Right-of-way maintenance

Road, parking lot, and sidewalk maintenance (e.g., pothole, sidewalk, and curb and gutter repair)

Bridge maintenance

Cold weather operations (e.g., plowing, sanding, application of deicing agents, and snow pile disposal)

Vehicle washing and maintenance of applicant-owned vehicles (e.g., police, fire, school bus, public works)

Provide the reference to the procedure submitted above (page and paragraph of attachments): e.g., Attachment A, Section b.

See "Attachment 7 City of Clio Pollution Prevention Procedure 20170523.pdf." and Cold Weather BMP 20190206.

78. Provide the reference to the procedure submitted above for prioritizing applicant-owned or operated streets, parking lots, and other impervious infrastructure for street sweeping based on the potential to discharge pollutants to surface waters of the state. The procedure shall include assigning a priority level for each parking lot and street and the associated cleaning schedule (i.e., sweeping frequency and timing) based on preventing or reducing pollutant runoff. The procedure shall include a process for updating/revising the priority level giving consideration to street sweeping findings and citizen complaints. A recommended timeframe for updating/revising the prioritization is 30 days following the construction of a new street, parking lot, or other applicant-owned or operated impervious surface or within 30 days of identifying a need to revise a priority level. If the applicant does not own or operate any streets, parking lots, or other impervious infrastructure, skip to Question 82.

See "Attachment 7 City of Clio Pollution Prevention Procedure 20170523.pdf." Procedure will be updated within 30 days of new impervious surface construction.

79. Provide the reference to the narrative description or map submitted above with the geographic location of the streets, parking lots, and other impervious surfaces in each priority level.

See "Attachment 7 City of Clio Pollution Prevention Procedure 20170523.pdf."

80. Provide the reference to the procedure submitted above identifying the sweeping methods based on the applicant's sweeping equipment and use of additional resources in sweeping seasonal leaves or pick-up of other materials. Proper sweeping methods include operating sweeping equipment according to the manufacturers' operating instructions and to protect water quality.

See "Pollution Prevention and Good Housekeeping for Municipal Operations.pdf" and "Stormwater Catch Basin Guidance 20170523.pdf" as well as the manufacturers' operating instructions to the City's Elgin Pelican street sweeper.

81. Provide the reference to the procedure submitted above for dewatering, storage, and disposal of street sweeper waste material. An MDEQ Catch Basin Cleaning Activities guidance document is available at the following link and includes information on street sweeping requirements.

[Catch Basin Cleaning Activities Guidance Document](#)

Provide the reference to the procedure submitted above (page and paragraph of attachments): e.g., Attachment A, Section b.

See "Pollution Prevention and Good Housekeeping for Municipal Operations.pdf" and "Stormwater Catch Basin Guidance 20170523.pdf."

Managing Vegetated Properties

82. If the applicant's pesticide applicator does not exclusively use ready-to-use products from the original container, provide the reference to the procedure submitted above requiring the applicant's pesticide applicator to be certified by the State of Michigan as an applicator in the applicable category, to prevent or reduce pollutant runoff from vegetated land. A description of the certified applicator categories is available at the following link. If the applicant only applies ready-to-use products from the original container, enter "Not Applicable."

[Commercial Pesticide Application Certification Categories](#)

Provide the reference to the procedure submitted above (page and paragraph of attachments): e.g., Attachment A, Section b.

Not applicable.

Contractor Requirements and Oversight

83. Provide the reference to the procedure submitted above requiring contractors hired by the applicant to perform municipal operation and maintenance activities comply with all pollution prevention and good housekeeping BMPs as appropriate. The procedure shall include the process implemented for providing oversight of contractor activities to ensure compliance.

All contractors will be required to follow the City's pollution prevention and good housekeeping BMPs, as appropriate. Subject to the nature of the work or contract, the City's engineer or responsible department head will exercise oversight.

Employee Training

84. Provide the reference to the employee training program submitted above to train employees involved in implementing or overseeing the pollution prevention and good housekeeping program. The program shall include the training schedule. At a minimum, existing staff shall be trained once during the permit cycle and within the first year of hire for new staff.

See "Attachment 7 City of Clio Pollution Prevention Procedure 20170523.pdf."

Section 11. Total Maximum Daily Load Implementation Plan

The USEPA has a document to assist with developing a TMDL Implementation Plan available at the following link.
[Understanding Impaired Waters and Total Maximum Daily Load \(TMDL\) Requirements for Municipal Stormwater Programs](#)

Total Maximum Daily Load Implementation Plan

NONE PROVIDED

Comment

NONE PROVIDED

Proposing to work collaboratively on any or all activities in the TMDL Implementation Plan during the permit cycle.
NONE PROVIDED

85. If a TMDL(s) was included in the applicant's application notice, provide the name(s) below. If no TMDL was identified, skip to the next section.
NONE PROVIDED

86. Provide the reference to the procedure submitted above describing the process for identifying and prioritizing BMPs currently being implemented or to be implemented during the permit cycle to make progress toward achieving the pollutant load reduction requirement in each TMDL identified in Question 85. The procedure shall include a process for reviewing, updating, and revising BMPs implemented or to be implemented to ensure progress in achieving the TMDL pollutant load reduction.
NONE PROVIDED

87. Provide the reference to the TMDL BMP Priority List submitted above with prioritized BMPs currently being implemented or to be implemented during the permit cycle to make progress toward achieving the pollutant load reduction requirement in each TMDL identified in Question 85. Each BMP shall include a reference to the targeted TMDL pollutant.
NONE PROVIDED

88. Provide the reference to the TMDL Monitoring Plan submitted above for assessing the effectiveness of the BMPs currently being implemented, or to be implemented, in making progress toward achieving the TMDL pollutant load reduction requirement, including a schedule for completing the monitoring. Monitoring shall be specifically for the pollutant identified in the TMDL. Monitoring may include, but is not limited to, outfall monitoring, in-stream monitoring, or modeling. At a minimum, monitoring shall be conducted two times during the permit cycle or at a frequency sufficient to determine if the BMPs are adequate in making progress toward achieving the TMDL pollutant load reduction. Existing monitoring data may be submitted for review as part of the plan to meet part of the monitoring requirement.
NONE PROVIDED

Section 12. Phase I only – Industrial Facility Inspection Program

Industrial Facility Inspection Program Procedures

NONE PROVIDED

Comment

NONE PROVIDED

89. Provide the reference to the procedure submitted above describing the process for identifying existing industrial facilities, as defined below, within the applicant's jurisdiction that discharge stormwater to the applicant's MS4.

Industrial facilities include, but are not limited to, the following:

- Industrial facilities that the applicant determines are contributing a substantial pollutant loading to the MS4
- Industrial facilities subject to the Superfund Amendments and Reauthorization Act (SARA)
- Hazardous waste treatment, disposal, storage, and recovery facilities

Provide the reference to the procedure submitted above (page and paragraph of attachments): e.g., Attachment A, Section b.

NONE PROVIDED

90. Provide the reference to the inventory of industrial facilities submitted above using the procedure in Question No. 89.

NONE PROVIDED

91. Provide the reference to the procedure submitted above for prioritizing the industrial facilities identified in Question No. 90 for inspection. Each industrial facility shall be evaluated and prioritized based on having a high, medium or low potential to discharge pollutants to the applicant's MS4. The procedure shall include a process for updating and revising the prioritization, including modifying the priority level based on contribution of significant pollutant loading to the MS4, inspection findings, and the potential to discharge pollutants.

The applicant should consider the following factors when prioritizing an industrial facility:

- Pollutant sources stored on site

- Pollutants of concern
- Proximity to impaired surface waters of the state
- The applicant's violation or complaint history with the facility

Provide the reference to the procedure submitted above (page and paragraph of attachments): e.g., Attachment A, Section b.

NONE PROVIDED

92. Provide the reference to the list of the prioritized industrial facilities for inspection submitted above.

NONE PROVIDED

93. Provide the reference to the procedure submitted above for inspecting industrial facilities based on the prioritized list in Question No. 92 to evaluate pollutant source controls. The number or percentage of facilities to be inspected (e.g., 20% annually) or the inspection frequency for the different priority levels (e.g., high priority facilities inspected annually) shall be identified with the highest priority facilities receiving more frequent inspections. The procedure shall include a process for inspecting facilities based on complaints concerning pollutants discharged to the applicant's MS4.

At a minimum, inspections shall include an evaluation of BMPs implemented and maintained to control pollutant sources at the industrial facility and for evidence of unauthorized discharges, illicit connections, and potential discharges of pollutants to the applicant's MS4.

The procedure shall include notifying the applicable Water Resources Division District Office if an industrial facility appears to be in violation of the NPDES industrial stormwater program.

Provide the reference to the procedure submitted above (page and paragraph of attachments): e.g., Attachment A, Section b.

NONE PROVIDED

94. Provide the reference to the employee training program submitted above to train employees whose primary job duties are to implement the industrial facility inspection program. The program shall include the training schedule. At a minimum, existing staff shall be trained once during the permit cycle and new hires within the first year of their hire date. The training shall cover facility inspection procedures.

[Click here to access the State of Michigan Industrial Stormwater program page](#)

Provide the reference to the program submitted above (page and paragraph of attachments): e.g., Attachment A, Page 3, Section b.

NONE PROVIDED

Section 13. Certify and Submit

Comments (As needed)

NONE PROVIDED

Additional Documents (As needed)

NONE PROVIDED

Comment

NONE PROVIDED

Status History

	User	Processing Status
2/6/2019 4:16:14 PM	Eric Wiederhold	Submitted

Revisions

Revision	Revision Date	Revision By
Revision 1	10/15/2016 9:59 PM	Eric Wiederhold
Revision 2	3/9/2018 1:31 PM	Eric Wiederhold

MS4 Permits - 2010 Census Urbanized Area Maps

The MS4 program requires a permit to discharge from an MS4 located in an urbanized area with a qualifying population. The Census Bureau updated the urbanized area boundaries to reflect the 2010 Census. The Department completed maps delineating each urbanized area in Michigan. These maps are used to assist with identifying which MS4s are located in an urbanized area and may require coverage by an MS4 permit. In Michigan, MS4 permittees may include cities, townships, villages, county agencies, universities, and school districts. Most permittees are covered under a general permit based on their storm water management approach, either jurisdictionally-based or watershed-based.

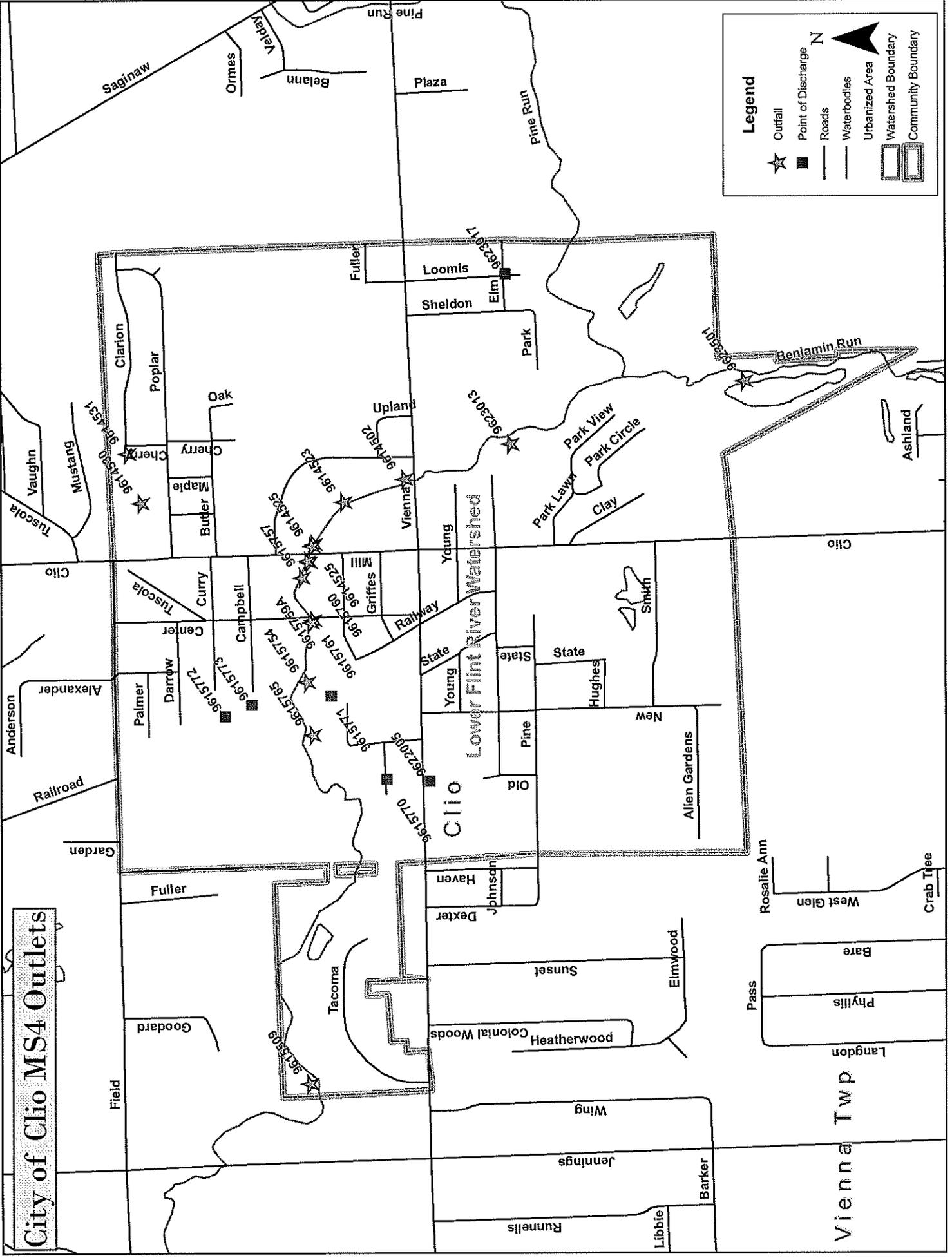
- Ann Arbor
- Battle Creek
- Bay City
- Benton Harbor - St. Joseph
- Detroit
- Elkhart Indiana - Michigan
- Flint
- Grand Rapids
- Holland
- Jackson
- Kalamazoo
- Lansing
- Michigan City Indiana - Michigan
- Monroe
- Midland
- Muskegon
- Port Huron
- Saginaw
- South Lyon - Howell - Brighton
- South Bend, Indiana, Michigan
- Toledo Ohio - Michigan

Attachment 1

To MDEQ Stormwater Discharge Permit Application

(Section IV map)

(Section V Table 1)



City of Clio

Outfall/Point of Discharge ID No	Structure Type	Receiving Water	Latitude	Longitude
9614502	Outfall	Pine Run	43.177679	-83.732308
9614523	Outfall	Pine Run	43.179143	-83.732992
9614524	Outfall	Pine Run	43.179881	-83.734319
9614525	Outfall	Pine Run	43.179928	-83.734392
9614530	Outfall	Pine Run	43.183934	-83.732840
9614531	Outfall	Pine Run	43.184223	-83.731223
"9615509"	Outfall	Pine Run	43.180333	-83.751739
9615754	Outfall	Pine Run	43.180130	-83.738770
9615757	Outfall	Pine Run	43.180010	-83.734909
9615758	Outfall	Pine Run	43.180043	-83.734863
9615759	Outfall	Pine Run	43.180006	-83.736856
9615760	Outfall	Pine Run	43.180185	-83.735400
9615761	Outfall	Pine Run	43.179944	-83.736778
9615765	Outfall	Brent Run	43.180063	-83.740515
9615770	Point of Discharge	Pine Run	43.178291	-83.741967
9615771	Point of Discharge	Pine Run	43.179560	-83.739219
"9615772"	Point of Discharge	Pine Run	43.18208	-83.739791
"9615773"	Point of Discharge	Pine Run	43.18144	-83.739447
9622005	Point of Discharge	Pine Run	43.177279	-83.742071
9623013	Outfall	Tributary of Pine Run	43.175142	-83.731251
9623016	Outfall	Tributary of Pine Run	43.175142	-83.731274
9623017	Point of Discharge	Pine Run	43.175132	-83.725753
9623501	Outfall	Pine Run	43.169557	-83.729444

"Not verified in field"

Attachment 1

To MDEQ Stormwater Discharge Permit Application

(Section IV map)

(Section V Table 1)

City of Clio

Outfall/Point of Discharge ID No	Structure Type	Receiving Water	Latitude	Longitude
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9615758	Outfall	Pine Run	43.180043	-83.734863
9615759	Outfall	Pine Run	43.180006	-83.736856
9615760	Outfall	Pine Run	43.180185	-83.735400
9615761	Outfall	Pine Run	43.179944	-83.736778
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"9615772"	Point of Discharge	Pine Run	43.18208	-83.739791
"9615773"	Point of Discharge	Pine Run	43.18144	-83.739447
9622005	Point of Discharge	Pine Run	43.177279	-83.742071
9623013	Outfall	Tributary of Pine Run	43.175142	-83.731251
9623016	Outfall	Tributary of Pine Run	43.175142	-83.731274
9623017	Point of Discharge	Pine Run	43.175132	-83.725753
9623501	Outfall	Pine Run	43.169557	-83.729444

"Not verified in field"

Attachment 2 to MDEQ Storm Water Discharge Permit Application, Individual Enforcement Response Procedures (ERP)

AUTHORITY

As a permittee, the City of Clio adopted *City of Clio Ordinance Number 475, An Ordinance to amend the Code of Ordinances for the City of Clio, Michigan, by adding a new Chapter 62: Storm Water, to Regulate Storm Water Control; to Provide for Storm Water Permits and for Payment of Reimbursement of Costs Incurred by the City due to Storm Water Permits; and to Provide Penalties for Violations* on May 4, 2015.

RESPONSE

The City's response to violations will follow the decision-making protocol identified in *Attachment 2, City of Clio* with the City Administrator responding to any emergency spill (see pages 7, 8, 9, and 10).

As provided in Chapter 62, "the city may investigate, inspect and/or obtain monitor any discharge" and "upon request, the discharger shall allow the city's properly identified representative to enter upon premises of the discharger at all hours necessary for the purposes of such inspection or sampling" with reasonable advance notice (Section 65.501).

The City may also issue a "Stop Work Order" (Section 62.602), complete work at the owner's expense, if necessary (Section 62.603), undertake emergency measures at the owner's expense, if necessary (Section 62.604), recover costs damages (Section 62.605), pursuant to Chapter 62.

Violations of this ordinance are classified as a civil infraction except that anyone who violates a "Stop Work Order" shall be subject to a misdemeanor.

RECORD KEEPING

A Spill Notification Complaint Reporting Form, Illicit Discharge Elimination Program, Genesee County will be completed to record each complaint (see Attachment 2, Attachment E, Spill Notification, pages 31 and 32).

All documents, notices, records and orders generated as a result of this process will be filed in the City Administrator's office.

Michigan Department of Environmental Quality – Water Resources Division
STORMWATER DISCHARGE PERMIT APPLICATION

Table 2: Public Education Program Best Management Practices (BMPs)

Delivery Mechanism / Activity	Public Education Topics	Target Audience(s)	Key Message	Standard of Effectiveness (recommended)	Mechanism Specific Audience (recommended)	Mechanism Specific Message(s) (recommended)	Milestone(s) (recommended)	Timetable / Timeline		Responsible Party	Cost (recommended)	Evaluation
								Development	Implementation			
Road/stream crossing and watershed signs	A B	Public, Residents, Visitors	Educate on specific watershed. Watershed boundaries the public can affect.	Get 50% of people to know the stream names and that they are in a watershed	Drivers and passengers, visitors going by specific sign	Entering a watershed; specific watershed website	Increase in number of people recognizing the watershed and live in or passing by. Awareness leads to stewardship	Signs have been installed beginning in 2008	Will continue to install until reached 200 sites, approx. 400 to 600 signs, then maintain existing signs. Proposed plan to expand with signs in Parks	SWM/ Road Commission	\$3,000/yr.	Measure the number of residents that went to the website based on the information on the sign; social survey response
Watershed Maps	A B C D E F	School Children, Teachers	Definition of a watershed - Educate on Specific watershed the public can affect, purpose for protecting the watershed. Effects of human activities on waterways, illicit discharge, what is it? Promoting illicit discharge reporting.	Get 50% of students to know what a watershed is and which one they live in.	Teachers/classrooms	What is a watershed; specific watershed website	Have maps posted in as many classrooms as possible and discussed in class. Also designed to be used as handouts	Printed 2014	Distribute to appropriate teachers for class use. Reprint and send out upon request as needed. Available on website for download and printing	SWM	Development - \$780.00 Printing - \$3,000 Promotion - \$910.00/yr Distribution/workshop - \$5,200.00/per session	Number of teachers incorporated into lessons curriculum.
Benthic Monitoring Program	A B	Residents, School Children	Ways that individuals can affect the watershed through their activities. What is the actual condition of our waters?	Maintain current level of sites monitored or expand that number. Currently 18	Interested volunteers. Produce results for public on website. (general health of Our Water)	Your efforts help us to better understand the watershed.	Consistent trends begin to paint a clearer picture of different reaches.	Program has been running in Flint River Watershed since 1999. Shiawassee Watershed added in 2008	Twice a year	SWM/FRWC to administer program	\$5,150/yr	No. of volunteers and sites surveyed. Use information to aid decision-making.
Project Green WQ monitoring Program	A B C D E F G	School Children, Teachers, Groups	Ways that individuals can affect the watershed through their activities. What is the actual condition of our waters? How pollution occurs	Maintain current level of participation or increase number of classrooms.	School children, teachers	Our actions have impacts on local waterways; how to act to better protect adjacent waterbodies.	Increase demand for the program	Program has been running since 1991. Since 2005 it has been under the FRWC administration.	Yearly	SWM/FRWC to administer program	\$7,500/yr for sampling + private funds Up to \$5,000 for analysis	#participating schools/sites survey. Information to aid decision-making. Increased public awareness - social survey.

A. Promote public responsibility and stewardship in the applicant's watershed(s). B. Inform and educate the public about the connection of the MSA to area waterbodies and the potential impacts discharges could have on surface waters of the state.
 C. Educate the public on illicit discharges and promote public reporting of illicit discharges and improper disposal of materials into the MSA. D. Promote preferred cleaning materials and procedures for car, pavement, and power washing.
 E. Inform and educate the public on proper application and disposal of pesticides, herbicides, and fertilizers. F. Promote proper disposal practices for grass clippings, leaf litter, and animal wastes that may enter into the MSA.
 G. Identify and promote the availability, location, and requirements of facilities for collection or disposal of household hazardous wastes, travel trailer sanitary wastes, chemicals, and motor vehicle fluids.
 H. Inform and educate the public on proper septic system care and maintenance, and how to recognize system failure. I. Educate the public on, and promote the benefits of, green infrastructure and Low Impact Development.
 J. Promote methods for managing riparian lands to protect water quality. K. Identify and educate commercial, industrial, and institutional entities likely to contribute pollutants to stormwater runoff.

Michigan Department of Environmental Quality – Water Resources Division
STORMWATER DISCHARGE PERMIT APPLICATION

Delivery Mechanism / Activity	Public Education Topics	Target Audience(s)	Key Message	Standard of Effectiveness (recommended)	Mechanism Specific Audience (recommended)	Mechanism Specific Message(s) (recommended)	Milestone(s) (recommended)	Timetable / Timeline		Responsible Party	Cost (recommended)	Evaluation
								Development	Implementation			
Display Booth for events	A B C D E F G H J	Public, public employees	Definition of a watershed - Ways those individuals can affect the watershed through their activities.	Residents adopt the recommended behavior changes.	Home owners, various associations and businesses	Same as "Seven Simple Steps"	Display at 6-functions a year	Developed	Ongoing training of volunteers to man booth. attendance of booth at several events throughout year # of people spoken to	SWM/Cons Dist	\$9,500/yr	social survey Number of public spoken to. Number of events attended
Website: http://cleargene.seewater.org/	A, B, C D, E, F G, H, I J, K	Public	Have messages on most topics.	Residents adopt the recommended behavior changes.	Permittees, home owners, associations, businesses	Same as key message	Number of hits per year stay the same or increase.	Developed	Expand site as new material becomes available. Update as needed	SWM	100 hrs a year. Plus periodic costs for updates.	Number of hits on the site Number of times brochure is downloaded.
Conservation District presentation to school districts with Enviroscapes	A, B, C, D (Depending on who does the training, the following topics can be covered E, F, G, I)	School Children, Teachers	What is a watershed - Importance of a riparian corridor, effects of human activities on waterways and wetlands.	Make presentation 5000 students/ teachers per year	School children	Our actions have impacts on local waterways; how to act to better protect adjacent waterbodies.	Number of presentations per year.	Developed	Schedule presentations annually to reach at least 5000 students/year	SWM/ Conservation District	\$16,000/yr	- Number of presentations - Answer questions on social survey - Improvement in other metrics
Catch basin stenciling program that includes door to door delivery of brochures	A B	Residents, schools, owners and employees of local businesses and industries, boy/girl scouts, volunteers groups	- Storm drains discharge to water bodies - Storm water discharged from separate storm sewer systems does not receive treatment prior to discharge - Impacts of storm water pollutants in the watershed - Knowledge of separate storm water drainage system in your front ditch and that it flows to a river.	Get 10% of the people in the watershed where the catch basins were labeled to understand where storm water goes and what the impacts are.	Homeowners; parties distributing brochures and stenciling	Same as key message	Stencil 1000 catch basins/yr - with residents receiving a brochure when stenciling is in neighborhood	Program began in 2005; materials have been developed	Continue to deliver program plan training and brochure. Repurchase supplies, brochure as needed. Evaluate and modify message as needed when reprinting doorhangers	FRW/CID & SWM maintenance dept.	\$5,300/yr.	Phone or mail survey of residents' awareness of the watershed; number of residents that volunteer to stencil storm drains.

A. Promote public responsibility and stewardship in the applicant's watershed(s). B. 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.
C. Educate the public on illicit discharges and promote public reporting of illicit discharges and improper disposal of materials into the MS4. D. Promote preferred cleaning materials and procedures for car, pavement, and power washing.
E. Inform and educate the public on proper application and disposal of pesticides, herbicides, and fertilizers. F. Promote proper disposal practices for grass clippings, leaf litter, and animal wastes that may enter into the MS4.
G. Identify and promote the availability, location, and requirements of facilities for collection or disposal of household hazardous wastes, travel trailer, sanitary wastes, chemicals, and motor vehicle fluids.
H. Inform and educate the public on proper septic system care and maintenance, and how to recognize system failure. I. Educate the public on, and promote the benefits of, green infrastructure and Low Impact Development.
J. Promote methods for managing riparian lands to protect water quality. K. Identify and educate commercial, industrial, and institutional entities likely to contribute pollutants to stormwater runoff.

Michigan Department of Environmental Quality – Water Resources Division
STORMWATER DISCHARGE PERMIT APPLICATION

Delivery Mechanism / Activity	Public Education Topics	Target Audience(s)	Key Message	Standard of Effectiveness (recommended)	Mechanism Specific Audience (recommended)	Mechanism Specific Message(s) (recommended)	Milestone(s) (recommended)	Timetable / Timeline		Responsible Party	Cost (recommended)	Evaluation
								Development	Implementation			
Distribute brochures promoting the "seven simple steps"	A B C D E F G	Public and employees	Actions everyone can take to improve water quality. Effects of residential waste on our waterbodies.	Residents adopt the recommended behavior changes.	All residents	Specific to each of the seven steps: Car Care, proper fertilizing, pet waste, water conservation, HHW, storm drains, earth friendly landscaping	Distribute 2500+ /yr	"Seven Simple Steps" brochure has been developed.	Continue to distribute "seven simple steps" through permittees/ events. Evaluate message, amend as needed, reprint as needed	SWM/ Permittees	Reprinting costs	- social survey - Other # of brochures distributed to public
Speakers	B (Depending on who does the training, the following topics can be covered A, C, D, E, F, G, H, I, J)	Home owner associations, non-profit groups, rotary clubs...	What is a watershed - Actions everyone can take to improve water quality, effects of residential waste on our waterbodies; and other specific messages (7 simple steps). The talk is broken into segments by topic so each talk can be customized	Residents adopt the recommended behavior changes.	Home owners, various associations and businesses	Same as "Seven Simple Steps"	Address 10+ groups a year	Developed	Train new volunteers to give presentations as needed	FRWC	\$2,040/yr	- social survey - Other presentation given, number of attendees.
Articles on seven measures/ Newsletters on Ph II program	A B C D E F G	Public, non-profit groups, public employees	What is a watershed - Actions everyone can take to improve water quality, effects of residential waste on our waterbodies. The Ph II program. Implementation efforts	Residents adopt the recommended behavior changes. Ph I permittees educated on program	Homeowners, industries, Ph II permittees, Non Ph II Municipalities.	Same as key message	Increase sense of community stewardship and actions taken to protect waterways.	Some have been developed; new articles will be to address timely issues.	Submit articles to group, newsletters & newspaper for print	SWM	None	-Articles get published - Responses to the pending social survey
Advertise and distribute flyers about the Household Hazardous Waste Collection Day	G	Public, public employees, businesses	Identification of HHW (household hazardous waste), disposal locations and availability	Increase the number of residents dropping off HHW at events by 10%	Homeowners, businesses (painters, landscapers, etc.)	How and where to dispose of oil-based paint, pesticides, herbicides, etc.	Increase awareness of household hazardous waste and where and when it can be disposed	Develop advertisements/flyers for distribution twice a year	Distribution twice a year of advertisements /flyers developed by HHW group	All Permittees/ HHW Committee	Cost of advertisement / flyers, staff time, and hazardous waste disposal costs	Track the number of published residents and the amount of waste collected during HHW Collection.

A. Promote public responsibility and stewardship in the applicant's watershed(s). B. 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.
C. Educate the public on illicit discharges and promote public reporting of illicit discharges and improper disposal of materials into the MS4. D. Promote preferred cleaning materials and procedures for car, pavement, and power washing.
E. Inform and educate the public on proper application and disposal of pesticides, herbicides, and fertilizers. F. Promote proper disposal practices for grass clippings, leaf litter, and animal wastes that may enter into the MS4.
G. Identify and promote the availability, location, and requirements of facilities for collection or disposal of household hazardous wastes, travel trailer sanitary wastes, chemicals, and motor vehicle fluids.
H. Inform and educate the public on proper septic system care and maintenance, and how to recognize system failure. I. Educate the public on, and promote the benefits of, green infrastructure and Low Impact Development.
J. Promote methods for managing riparian lands to protect water quality. K. Identify and educate commercial, industrial, and institutional entities likely to contribute pollutants to stormwater runoff.

Michigan Department of Environmental Quality -- Water Resources Division
STORMWATER DISCHARGE PERMIT APPLICATION

Delivery Mechanism / Activity	Public Education Topics	Target Audience(s)	Key Message	Standard of Effectiveness (recommended)	Mechanism Specific Audience (recommended)	Mechanism Specific Message(s) (recommended)	Milestone(s) (recommended)	Timetable / Timeline		Responsible Party	Cost (recommended)	Evaluation
								Development	Implementation			
Educational materials for Homeowners With Septic Systems to be Given at "Time of Sale". Main Topic: Septic System Maintenance.	C G H	Homeowners, public employees, realtors, haulers, inspectors	Proper septic system care and maintenance, how to recognize a system failure, impact of failure, where to go for assistance.	Educate septic system owners on proper care and maintenance, recognizing a failure and correcting	Septic system owners	How to properly maintain your septic system	Educate septic system owners on the proper care and maintenance of their systems and how to recognize failing systems.	Information has been developed. Delivery mechanism is being worked out.	Printing materials beginning in 2009 and distribute through communities & real estate agents.	SWM and TBD	300 - 500 hours "printing - \$3000.00 Maintenance - \$1500.00 (estimated until 2013)	Social survey
Canoe trips	A B J	Public, landowners	Purpose for protecting the watershed, ways those individuals can affect the watershed through their activities, improving water quality and habitat and benefits to all.	Realize an increase in the use of the riparian corridor and a corresponding increase of volunteering/stewardship of the waterbodies	Any resident	People that use the waterbodies for recreation are going to want to protect the waterbodies	Increase in volunteerism	Already ongoing	Schedule events annually 4-+/year.	SWM/FRWC	\$4,000/yr.	- The number on new people participating in each event. Participant comment
Presentation information about proper disposal of medications and personal care products on website	G	Public	Proper disposal of HHW, specifically medications and personal care products	Get 20% of those educated to utilize HHW program to properly dispose of in landfill	Public	Proper disposal of HHW, specifically medications and personal care products	Educate 10% public on program. Increase use of HHW program	Done	Information on WWS website	Water and Waste Services (WWS)	Staff time	Attendance and website hits
Information to riparian landowners on landscape improvements to protect waterways.	A B I J	Riparian landowners,	- Importance of riparian corridors - BMPs for riparian lands - Landscaping for water quality - Shoreline stabilization techniques - Native vegetation alternative	residential riparian landowners to learn how to better manage the land.	Lake and stream associations, riparian land owners	How to properly manage and dispose of grass, leaf and animal wastes; how to improve your property to better protect adjacent waterbodies.	Educate the number of riparian land owners in the knowledge of how to protect banks from erosion and water quality. Educate 25% by 2012 and All watersheds by 2014	Mailers and workshop literature developed and printed for distribution 2009	Information is passed out to public at events and available on website	SWM	Printing	Number of information packets given out.

A. Promote public responsibility and stewardship in the applicant's watershed(s). B. 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.
C. Educate the public on illicit discharges and promote public reporting of illicit discharges and improper disposal of materials into the MS4. D. Promote preferred cleaning materials and procedures for car, pavement, and power washing.
E. Inform and educate the public on proper application and disposal of pesticides, herbicides, and fertilizers. F. Promote proper disposal practices for grass clippings, leaf litter, and animal wastes that may enter into the MS4.
G. Identify and promote the availability, location, and requirements of facilities for collection or disposal of household hazardous wastes, travel trailer sanitary wastes, chemicals, and motor vehicle fluids.
H. Inform and educate the public on proper septic system care and maintenance, and how to recognize system failure. I. Educate the public on, and promote the benefits of, green infrastructure and Low Impact Development.
J. Promote methods for managing riparian lands to protect water quality. K. Identify and educate commercial, industrial, and institutional entities likely to contribute pollutants to stormwater runoff.

Michigan Department of Environmental Quality – Water Resources Division
STORMWATER DISCHARGE PERMIT APPLICATION

Delivery Mechanism / Activity	Public Education Topics	Target Audience(s)	Key Message	Standard of Effectiveness (recommended)	Mechanism Specific Audience (recommended)	Mechanism Specific Message(s) (recommended)	Milestone(s) (recommended)	Timetable / Timeline		Responsible Party	Cost (recommended)	Evaluation
								Development	Implementation			
Pub ed workshop on proper disposal of restaurant waste	K	Business owners	Proper disposal of kitchen waste	Get restaurant owners that have had attended workshop to properly dispose of restaurant waste	Business owners	Proper disposal of kitchen waste	Educate 20% restaurants on program	Program developed by WWS. Will add stormwater component to their program	Have workshops in permit cycle or distribute information brochure.	WWS	Staff time and TBD workshop costs	Attendance to workshop
What is Green Infrastructure workshop	I	Engineers, Developers	What is Green Infrastructure?, Why should we develop with Green Infrastructure?, how to design Green Infrastructure?	Get Developers to support GI	Engineers, Developers	Get Engineers educated on how to design for GI, Get Developers, to buy into green Infrastructure	Educate 75% Engineers, 25% Developers	2015	1 workshop before 2016	SWM	Cost of development/printing/workshop	Attendance to workshop, voluntary compliance to GI
Operation and maintenance 1/2 day workshop for municipalities, entities and their contractors (Good House Keeping)	B C D E F K	Public employees, contractors	Good housekeeping practices and their impact on water quality.	Adoption and recording of good housekeeping practices	PowerPt and manual	How to properly manage and maintain public infrastructure and related activities	Educate 50% by 2011 and 90% by 2015; Have maintenance crews adopt maintenance protocols on property by 2014	Training is developed	Complete. Schedule training as-needed.	SWM/Tetra Tech	\$6,000/ first yr. up to \$6000/ year	Pass MDEQ inspections
Good House Keeping training video	B C D E F K	Public employees, contractors	Good housekeeping practices and their impact on water quality.	Adoption and recording of good housekeeping practices	Attendance of training by video/ internet	How to properly manage and maintain public infrastructure and related activities	Have maintenance crews/ B&G staff trained within 1 st year of hire or within permit cycle.	Training is developed. Transferring information to a video or internet format is in development	Produce Video/ Internet training. Schedule training as-needed.	SWM/Tetra Tech	\$6,000/ first yr. up to \$6000/ year	Pass MDEQ inspections

A. Promote public responsibility and stewardship in the applicant's watershed(s). B. Inform and educate the public about the connection of the MSA to area waterbodies and the potential impacts discharges could have on surface waters of the state.
C. Educate the public on illicit discharges and promote public reporting of illicit discharges and improper disposal of materials into the MSA. D. Promote preferred cleaning materials and procedures for car, pavement, and power washing.
E. Inform and educate the public on proper application and disposal of pesticides, herbicides, and fertilizers. F. Promote proper disposal practices for grass clippings, leaf litter, and animal wastes that may enter into the MSA.
G. Identify and promote the availability, location, and requirements of facilities for collection or disposal of household hazardous wastes, travel trailer sanitary wastes, chemicals, and motor vehicle fluids.
H. Inform and educate the public on proper septic system care and maintenance, and how to recognize system failure. I. Educate the public on, and promote the benefits of, green infrastructure and Low Impact Development.
J. Promote methods for managing riparian lands to protect water quality. K. Identify and educate commercial, industrial, and institutional entities likely to contribute pollutants to stormwater runoff.

Michigan Department of Environmental Quality – Water Resources Division
STORMWATER DISCHARGE PERMIT APPLICATION

Education efforts by individual Permittee

Delivery Mechanism / Activity	Public Education Topics	Target Audience(s)	Key Message	Standard of Effectiveness (recommended)	Mechanism Specific Audience (recommended)	Mechanism Specific Message(s) (recommended)	Milestone(s) (recommended)	Timetable / Timeline		Responsible Party	Cost (recommended)	Evaluation
								Development	Implementation			
Provide a link on the City of Clio's website to cleargeneseewater.org/	A, B, C, D, E, F, G, H, I, J, K	Public	Action everyone can take to improve water quality. Effects of residential waste on waterbodies.	Residents and businesses adopt the recommended behavior changes.	All residents and businesses.	Same as "Key Message."	Number hits equal to or greater than previous year.	October 2014	June 1, 2017	City of Clio	Staff costs.	Number of hits.
Provide literature at Clio City Hall: 505 West Vienna Street, Clio, Michigan. "What are the Signs of an Illicit Discharge?" and "How to Spot Illicit Discharges" and other information	A, B, C, D, E, F, G, H, I, J	Public	Spot an illicit discharge. awareness, action everyone can take, etc.	Residents and businesses adopt the recommended behavior changes.	All residents and businesses.	Same as "Key Message."	Distribution of handouts equal to or greater than previous year.	October 2014	October 2014	City of Clio	Staff costs and printing costs.	Number of handouts distributed.
Creation of an illicit discharge reporting mechanism (See IDEP plan- Attachment C & E for more information.)	C	Public	What is an illicit discharge? How to report illicit discharge.	Eliminate known illicit discharges to storm drains and waterways	Public	Recognize and Report illicit discharges or improper disposal of materials that threaten the water supply	Reporting mechanism for IDEP is being used by the communities.	Attachment E has been created and is in place. Attachment C is based on Rouge Rivers and has to be customized	Printing can be done as-needed. Placed on Website, Place on Counter for Public	City of Clio	Staff costs and printing costs.	Is the illicit discharge reporting mechanism being used.

Many of the Public Education actions are performed by other Permittees or non-Permittee partners. Each Permittee is responsible to execute the permitted Public education efforts regardless of who is actually doing the work. All work identified in the PEP is being done on a Countywide basis. They have not been ranked by priority.

A. Promote public responsibility and stewardship in the applicant's watershed(s). B. Inform and educate the public about the connection of the MSA to area waterbodies and the potential impacts discharges could have on surface waters of the state.
 C. Educate the public on illicit discharges and promote public reporting of illicit discharges and improper disposal of materials into the MSA. D. Promote preferred cleaning materials and procedures for car, pavement, and power washing.
 E. Inform and educate the public on proper application and disposal of pesticides, herbicides, and fertilizers. F. Promote proper disposal practices for grass clippings, leaf litter, and animal wastes that may enter into the MSA.
 G. Identify and promote the availability, location, and requirements of facilities for collection or disposal of household hazardous wastes, travel trailer sanitary wastes, chemicals, and motor vehicle fluids.
 H. Inform and educate the public on proper septic system care and maintenance, and how to recognize system failure. I. Educate the public on, and promote the benefits of, green infrastructure and Low Impact Development.
 J. Promote methods for managing riparian lands to protect water quality. K. Identify and educate commercial, industrial, and institutional entities likely to contribute pollutants to stormwater runoff.

Attachment 2, City of Clio
To MDEQ Stormwater Discharge Permit Application
(IDEP Plan)
(IDEP Protocol Manual)
(Individual Community Enforcement Authority)
(Illicit Discharge Ordinance/ Regulatory Mechanism)
(IDEP Ordinance Schedule)

ILLICIT DISCHARGE ELIMINATION PLAN (IDEP) 2014 Application

Submitted in partial fulfillment of the State of Michigan National Pollutant Discharge Elimination System Permit Application for Coverage of Storm Water Discharges by:

GENESEE COUNTY PHASE II PARTICIPANTS

Phase II Permittees:

Burton; Clio; Davison; Davison Township; Fenton; Fenton Township; Flint Township; Flushing; Genesee Township; Grand Blanc; Linden; Mount Morris; Mount Morris Township; Swartz Creek; Vienna Township; Genesee County.

Nested Jurisdictions under Genesee County Permit:

Atherton Community Schools	Fenton Area School	Lake Fenton Schools
Beecher Community Schools	Flint Board of Educations	Linden Community School
Bendle Public Schools	Flushing Community Schools	Mt. Morris Consolidated Schools
Bentley Community Schools	Genesee Schools District	Swartz Creek Community Schools
Carman Ainsworth Community Schools	Genesee Intermediate School District	Westwood Heights Schools
Clio Area Schools	Grand Blanc Community Schools	
Davison Community Schools	Kearsley Community Schools	Bishop Airport*

The Bishop Airport property is nested under Genesee County’s permit for their storm water runoff only. They also have an industrial discharge permit for their other activities.

The Municipal Separate Storm Water Discharge Permit requires that all MS4s develop an illicit discharge elimination plan (IDEP). The above communities have entered into a 342 agreement with the Genesee County Drain Commissioner’s office (GCDC) to assist them with their stormwater needs. As part of the contracted agreement the GCDC will be conducting the IDEP activities required by the permit on behalf of the communities and nested jurisdictions. This plan is submitted on behalf of all of the above communities and nested jurisdictions. It outlines the approach to be used to meet their IDEP obligations. The major components of the Genesee County IDEP plan include field verification of outfall locations, reviewing and eliminating illicit discharges, reviewing the legal authority, minimizing seepage from septic systems and sanitary sewers, and the coordination of activities.

Reviewing the Legal Authority

Legal authority for the management & elimination of illicit connections and discharges stems from two state authorities. The first is the Michigan National Pollutant Discharge Elimination System (NPDES) permit (MIG60000) which enables local communities to grant themselves the authority to regulate, prohibit, investigate, monitor and enforce illicit connects and discharges. The 342 permitted communities have been provided with an ordinance template that addresses each of these requirements that they can tailor to their own situation and then adopt it into their local code. Individual permittee legal authority is under a **separate document**.

The second legal authority stems from the Michigan Drain Code of 1956, Section 280.423, which grants the Genesee County Drain Commissioner (GCDC) the authority to prohibit illicit discharges. ~~This authority applies to all legally established county drains. The relevant section from the Michigan Drain Code is attached~~ Section 280.421, which grants removals of obstructions in County Drains. And Section 280.424, which provides for the state commissioner of health to petition the Drain Commissioner's office. These authorities apply to all legally established county drains. The relevant sections from the Michigan Drain Code is Attachment A.

The third legal authority is the Genesee County Health Department (GCHD), which governs septic systems only.

The fourth legal authority stems from PA 283 of 1909, section 19b. which requires a person, partnership, association, corporation or governmental entity to acquire a Permit for work within a county road from its Road Commission. Work would include connecting storm water outlets within the Road ROW. The relevant section is attached.

The GCDC together with local community representatives has reviewed the current legal authority and enforcement procedures. The County storm water ordinance template will provide local municipalities with the authority (once adopted) to prohibit illicit discharges and manage outfalls for all municipal drainage systems. Attachment "C" is the section out of the template ordinance that covers legal authority to prohibit illicit discharges.

The BMP subcommittee has been working on developing the Stormwater Ordinance, which includes the authority to detect and eliminate illicit connections and discharges to the permittee's MS4. Pursuant the COCs, the Stormwater Ordinance Template was submitted to the MDEQ for review under the revoked 2008 permit. ~~The following schedule will be followed~~ Outline of events for adoption of the ordinance:

Aug 11, 2010: Meet with MDEQ, to go over comments and concerns.

October 11, 2010: make necessary changes and submit copy to MDEQ.

March 8, 2011: MDEQ withdrew 2008 permit

2014[±] Permit application required communities to adopt ordinance; townships may do so as a resolution.

Field Verification of Outfall Locations

The outfall map section of this plan is based on field investigation conducted in the previous permit cycle together with permittee records. Although a majority of the collection systems was surveyed in the first permit cycle not all outfalls have been field verified. The IDEP plan approved under the previous permit used a different approach to locate and field verify outfalls. The IDEP crews walked the waters of the state within Genesee County and located all outfalls whether they were MS4's or private. With the 2008-2013 permit cycle, only MS4's are being identified. The outfalls that are being identified and screened are all MS4s where they are going from permittee jurisdiction into the waters of the state and discharge points between two permittee MS4 jurisdictions. **Note: Genesee County's permit covers several agencies and nested jurisdictions. A single outfall identified under the County's permit may contain multiple discharge points between agencies or nested jurisdictions covered under the same permit.** An important part of this cycles IDEP work will be to continue to field verify the location of mapped outfalls. Additionally, ownership (municipal MS4 or private) will be determined for each outfall. Maps are being continually updated, but are available in a shapefile version (GIS). Electronic copies are available and were provided to the MDEQ upon request in 2010 and an updated version November 2011. Yearly outfall updates are prepared and submitted within the progress report.

All known outfalls and discharge points for each community (except Burton and Genesee County) have been identified. Genesee County's agencies and nested jurisdictions combined have more than 1,500 categorical discharges that are being identified. City of Burton took over the roads from the Genesee County Road Commission in the last 10-years. This has provided a significant larger number of outfalls under the City of Burton's jurisdiction than originally anticipated. Identification of the outfalls for Burton Roads has been complicated by not all roads having maps.

All outfalls identified as of April 1, 2014 are located in attachment 1. If all outfalls are not identified a plan is included on how they will be identified prior to Oct 1, 2014. A shape file of the outfalls and storm systems are available. As outfalls are added/ removed, specific location(s) for additional outfall(s) will be reported as needed. Changes will be reflected in an updated map to be included in the progress reports.

Prioritizing Areas for Dry Weather Flow

Areas to be dry weather flow tested first are prioritized based on the permit application (page 5) and other criteria listed below. Before Oct 1, 2014 all known outfalls will be evaluated based on the criteria below be ranked as high, medium or low priority and the basis for that ranking. Dry weather testing will be done based on the schedule below and geography to maximize resources and to reduce travel time, proximity of outfalls to one another will be taken into consideration. Copies of the updated outfalls with the priorities will be available to the State upon request.

NOTE: Individual Permittees that opt to follow an alternative procedure for dry weather testing will need to provide to the State their procedure that would supersede this one.

High Priority	Areas with older infrastructure Industrial, commercial, or mixed use areas Areas with a history of past illicit discharges Areas with a history of illegal dumping Areas with onsite sewage disposal systems Areas with older sewer lines or with a history of sewer overflows or cross-connections Areas with poor dry-weather water quality *Areas with water quality impacts, including waterbodies identified in a Total Maximum Daily Load Verification of Categorical Outfalls (previously unmapped ?& never tested) Discharge complaints and reports
Medium priority	Other potential pollutant generating sites Type of commercial activity Areas with sewer conversions or historic combined sewer systems
Low priority	Undeveloped area Subdivisions less than 30 years old with no know history of illicit discharge Confirmed illicit discharge that has been removed Upstream Discharge points that are already being sampled at the outfall regardless of jurisdiction unless a suspected illicit discharge is found
No priority	Non-urbanized outfalls that were included under past permits.

*The only TMDL in Genesee County is for ecoli. The outfall would only be considered high priority under this choice if it had the potential of discharging ecoli.

Outfalls include points of discharge.

Schedule: outfalls to be dry weather tested

2015	High priority outfalls for Municipalities 60% complete, Genesee Co 10% complete
2016	High priority outfalls for Municipalities 95% complete, Genesee Co 25% complete
2017	High priority outfalls for Municipalities 100% complete, Genesee Co 50% complete Medium priority outfalls for Municipalities 50% complete, Genesee Co. 10% comp
2018	High priority outfalls for Genesee Co 75% complete Medium priority outfalls for Municipalities 100%, Genesee Co. 60%
2019	High priority outfalls for Genesee Co 100% complete Medium priority outfalls for Genesee Co. 100%

Low priority outfalls will be done in 2020-2025 permit cycle

Although ok the outfalls will be completed at the end of the 5-year IDEP cycle the year-to-year schedule is subject to adjustments due to weather, financial considerations and staff availability.

*Prior to October 1, 2014 a list showing the priority level of each outfall will be provided to the State.

Performing Dry-weather Screening

As mentioned above, one of the primary actions under the IDEP program is to identify and remove all illicit discharges and connections from the municipal storm sewer system. The outfall maps presented in Attachment 1 of the 2014 application is in ArcView GIS and this information will be updated and added to for guiding the screening of outfalls for dry weather flow.

To achieve IDEP requirements, each outfall that is prioritized High or Medium will be screened for signs of illicit discharges. Where illicit discharges are suspected, systematic investigation upstream of the outfall will be conducted to trace the discharge to the source where practicable.

*Genesee County outfalls include all County agency and nested jurisdiction outfalls. A single outfall identified under the County's permit may contain multiple discharge points between agencies or nested jurisdictions covered under the same permit. Only the County agency/ nested jurisdiction at the point of outlet will be indicated on the outfall table. The PA 342 Contract acts as an interagency agreement.

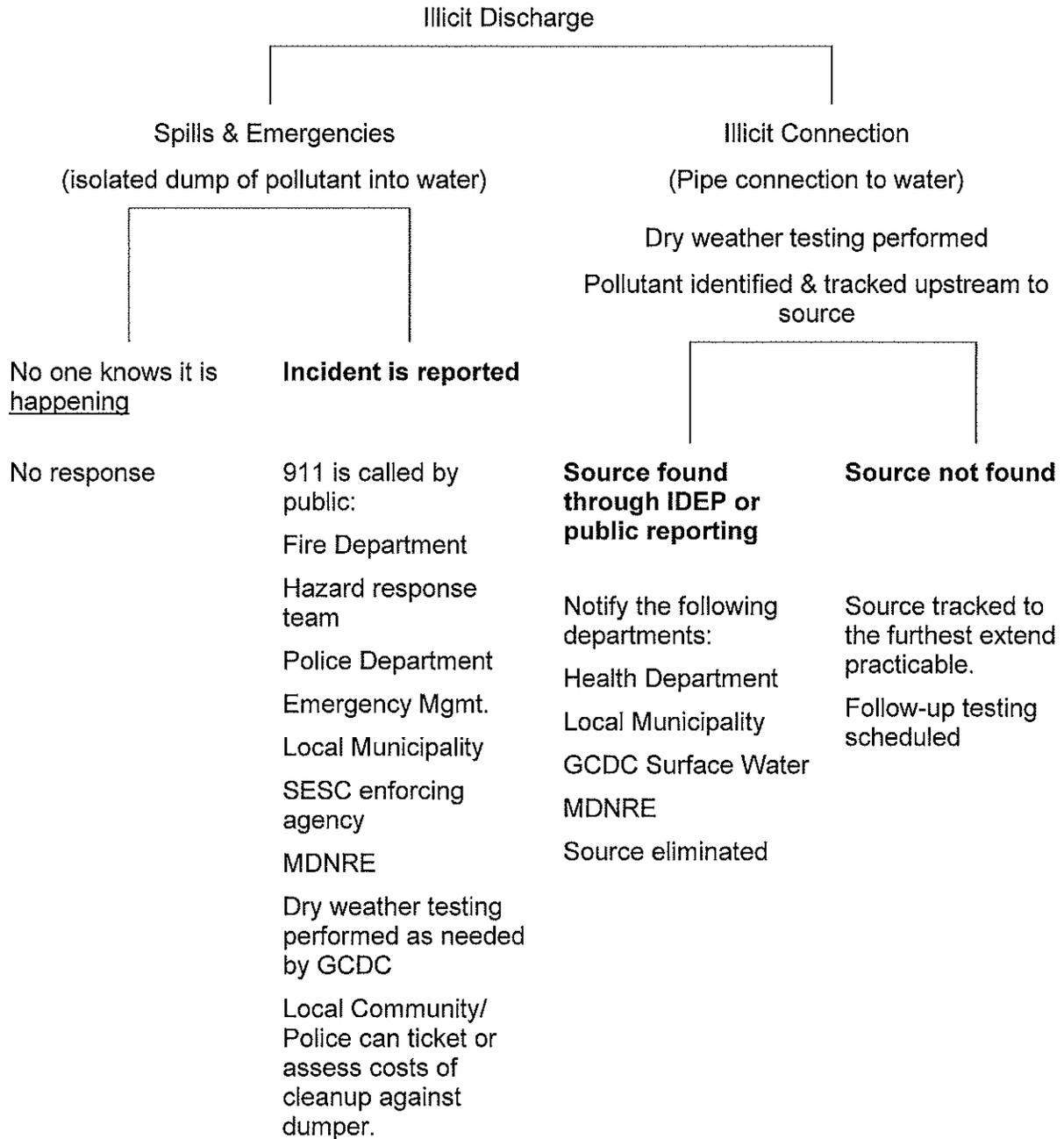
The process of locating and removing illicit connections is illustrated in an attached Work Plan Flow Chart. The flow chart is discussed in detail below. Forms for recording field inventory information and observations if dry weather flow is observed are also included at the end of this section. The dry weather screening form could be used multiple times at a single site if a suspected connection or discharge requires follow-up site visits.

The High or Medium outfall will be observed in the field during dry weather conditions, 72 hours with less than 0.10 inches of rainfall, and the sites will be checked for intermittent flows if suspected. If flow is present, it will be visually observed, checked for odors, and tested for representative tracer parameters such as pH, temperature, E. coli, fecal coliform, detergents, ammonia, and total organic carbon. The thresholds for the above parameters that trigger activity to determine the sources of illicit connections are listed below. All of these tests, except for pH and temperature, will be performed by a professional contract laboratory. Test results and observations will be used to identify areas that require follow-up investigations.

Parameter	Threshold
Ammonia (NH3)	1 mg/l
Surfactant	.2 mg/l
E.coli.	2000 Col. Per 100 ml
Ph	7 - 9

Decision Making

Depending upon the type of illicit discharge there are various responses that can occur. The following chart outlines the appropriate responses to an illicit discharge based upon whether they are spills and emergencies or illicit connection.



Depending on the type and location of an illicit discharge, the responsible party can change. In a spill or emergency, 911 should be called to initiate the emergency response. As an illicit discharge is identified and information is gathered, the responsible party will be identified from the above list.

The following are examples of the types of materials that if discharged constitute a spill or an emergency due to the potential introduction of pollutants to local waterways either directly or through stormwater: dredged spoils, solid waste (see below), sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat sources, wrecked or discarded equipment, rock, sand, petroleum products, industrial, municipal, and agricultural waste. This list is not meant to be exhaustive. The quantity of the spill should also be considered in conjunction with the type of spill that has occurred before reporting it. For example, wastewater from painting activities need not be reported to 911 but one may wish to mention it to the authorities such as public works, or the GCDC to have them contact the offender in order to educate them.

Illegal dumping: permittee will make sure 911 has been contacted, who will contact fire dept, police, emergency management and the hazardous response team. Local responder will depend on the nature of the discharge (see above) and if a responsible party is identified. If a responsible party is identified, a private cleanup company may be involved. MS4 owner is enforcement agency for follow up. (local municipality, County, MDNRE).

Illicit sanitary connection: once identified, GCDC will contact the Health Dept, local community, MS4 owner and MDNRE by letter. Enforcement agency for follow up is Health Dept, coordinated with GCDC.

Failing soil erosion measures: MS4 owners are the enforcement agency once construction is complete and the soil erosion permit has been released. If the site is a current construction site, the permittee will make sure the presiding SESC agency has been notified pursuant section 9107 of Part 91 and fill out a spill form. If there is an active SESC permit then the presiding SESC agency is the enforcement agency.

Large quantity spill: permittee will make sure 911 has been contacted, who will contact fire dept, police, emergency management and the hazardous response team. Local responder will depend on the nature of the discharge and if a responsible party is identified. If a responsible party is identified, a private cleanup company may be involved. MS4 owner is enforcement agency for follow up. (local municipality, County, MDNRE).

In all the above instances, if a responsible party is not identified, and if the spill is significant enough to warrant clean-up, measures will be taken to address the problem by local authorities to levels that at a minimum ensure public safety. The decision to commence with a clean-up will be made by whoever has jurisdiction over the spill site. In some cases there maybe multiple jurisdictions in which case all parties will be consulted on the course of action to occur. For all significant spills, the MDEQ will receive verbal notification of the event within twenty-four (24) hours.

Within Individual communities, if an emergency spill is received, this person will make sure that the call gets resolved or forwarded to the responsible agency.

- Davison Township Department of Public Works
Director
- Fenton Township Ordinance Enforcement
Officer
- Flint Township Building department Agent
- Genesee Township Code Enforcement Officer
- Mount Morris Township Code Enforcement Officer
- Vienna Township Building Superintendent
- City of Burton DPW Director
- City of Clio City Administrator
- City of Davison City Clerk/ Department of
Public Works
- City of Fenton Department of Public Works
- City of Flushing Department of Public Works
Superintendent
- City of Grand Blanc Public Works Director
- City of Linden Department of Public Works
Director
- City of Mount Morris Department of Public Works
Superintendent
- City of Swartz Creek Department of Public Works
Director
- Genesee County GCDC – SWM Drain
Engineer

Illicit Source Identification

GCDC-SWM has been contracted to coordinate the dry weather testing and perform any follow up on behalf of the Contracted Phase II communities and nested jurisdictions listed on the first page of this document. When initial testing has identified a potential problem, it will be given to the GCDC office staff to follow up and confirm an illicit connection or not. The land use and type of buildings in the area will be considered to determine the next course of action. Based on the land use and the results of the observations and chemical testing, additional manholes will be investigated. Tracing of the pollutant stream will continue by manhole investigations until the source is isolated within a relatively short reach of sewer. Dye testing of building fixtures will then be used to locate the source.

Dye testing will be scheduled by GCDC staff at individual buildings following notification of the building owner to explain the need for this investigation and how it will be performed. In general, dye testing will be used as the final step to gain positive identification of an illicit connection. Televising the sewer may be used to further isolate the pollutant source or may be used if dye testing does not reveal the source of the problem. This approach is intended to locate illicit connections in the most cost-effective and efficient manner possible. It will focus the use of dye testing in those areas with the highest potential for illicit connections.

Field investigations to identify specific illicit connection locations will be performed by either the GCDC or a consultant contract. If a source is found discharging to a municipal's or nested jurisdiction's MS4 that is not owned by Genesee County, GCDC will also notify owner, elected official (supervisor, mayor or superintendent) or in the case of the airport the facilities manager for assistance to perform the tracking and elimination of the illicit discharge. If a source is found discharging to a Genesee County MS4, GCDC will also notify the appropriate agency(ies) for assistance to perform the tracking and elimination of the illicit discharge.

Illicit discharges to MS4 systems other than the County's, 342 communities and nested jurisdictions that are discovered will result in the generation of a letter to the owner/operator informing them of the problem. If it is a confirmed illicit discharge the MDEQ will be copied on the letter.

Occasionally, hot spots are located that may threaten local water quality. Stormwater hot spots are areas where current or legacy land uses or activities generate contaminated runoff, with concentrations of pollutants exceeding those typically found in stormwater. A typical example is an abandoned underground storage tank associated with a gas station. If a suspected hot spot comes to the attention of GCDC they will develop a plan to monitor the hot spot and the surrounding area, within their capacity, to determine the degree and extent of the problem and the threat (if any) it may pose to local waterways and public health. Appropriate action will then be taken as limited by the availability of funds.

When potential illicit connections are located, the GCDC will be provided with specific details by the consultant/ field investigator. The GCDC will be responsible for

coordinating the tracking of an illicit connection upstream to its source and elimination. Once an illicit connection has been confirmed a letter to notify the property owner / responsible party and other involved parties (including the municipality, MS4 owner and the MDEQ) of the violation and require corrective action by the property owner or responsible party. If the illicit connection is time sensitive or beyond the jurisdiction of this program (such as an industrial discharge), an e-mail may be sent in lieu of a letter. Once the confirmed illicit connection has been eliminated a follow-up letter will be sent to all involved parties.

Eliminating Illicit Discharges and Pursuing Enforcement Action

Prioritization of verifying and removing potential illicit connection is done through a combination of when they are initially detected (chronologically) and by geographical location (trying to maximize resources through scheduling investigation that are close to each other). If the property owner does not respond in the specified time frame, follow-up enforcement action will be taken by GCDC or the appropriate enforcing agency. Each problem is unique and depending upon the circumstance. When the property owner or responsible party has indicated that a connection has been eliminated, GCDC will confirm that all problems have been fixed to their satisfaction for both the County Departments, nested jurisdictions and 342 communities.

GCDC and its partners will work to eliminate all illicit discharges to the maximum extent practicable. This means exhaustive steps will be taken within the limits of financial and technical resources available to address the problem. Occasionally, elimination of the source is not possible either because it cannot be found or the cost to address the problem exceeds the benefits of making the correction. In these cases, either a management plan will be implemented and/or the location identified for regular monitoring by the owner/operator.

Updated maps are provided in the progress reports that reflect ownership, status of any illicit connections found, as well as corrections to the original information in the permit.

Public Notification System for Illicit Discharges

Currently the Illicit Discharge system is split between those that are associated with illegal dumping and those releases associated with MS4s. The above flow chart illustrates the various paths and responsible parties involved in managing Illicit Discharges.

The number of possible ways that an illegal dumping can occur compounded by the number of agencies involved make centralization of this function extremely difficult and cost prohibitive under the current economic climate. Furthermore, centralization of the function may in-fact reduce response time and clean up efficiency due to having to educate the public about the who they should call. Current laws do not provide for a single responsible party.

The permit requires the permittee to develop and implement a procedure for the receipt and consideration of complaints or other information submitted by the public regarding construction activities discharging waste to the MS4.

The M&M Subcommittee had already created a form to be used to track illegal dumping as reported by the public, similar in concept to a "chain of custody" form used to track hazardous materials. The form originates with the agency that receives the call from the public and ends with GCDC. This way illegal dumping calls will be responded to as they are received. Calls will continue to be prioritized by the type of suspected release. For example, from the responder's perspective a suspected oil spill will take precedent over a suspected detergent spill. Another benefit to improving the current system is that it allows local communities under current laws to levy fines and collect clean-up costs if the responsible party can be identified.

The illicit dumping form will direct the originating agency to notify GCDC within 24 to 48 hours and inform them of any corrective action taken. This way GCDC can track any open notification that still may need to be followed up on as well as determine any apparent patterns that may lead to eliminating re-occurrences in the future.

The permit requires the permittee to develop and implement a procedure to provide notice to the part 91 permitting entity and the Department when pollutants are discharged in violation of section 9116 of Part 91 (SESC rules). The requirement of notice of violation has already been required in section 9107 of Part 91. A new procedure is unnecessary.

Note: minor changes to the spill form have been done to include SESC information to notify of SESC complaints.

Minimizing Seepage from Septic Systems and Sanitary Sewers

A map of the sanitary sewer service areas was prepared in 2006 for the watershed plan to define areas where sanitary service is available and septic tanks can be prohibited. Those areas with possible septic tanks are included in the watershed management plans. As part of the actions in the Watershed Management Plan, Genesee County will explore the possibility for a time of sale septic tank inspection ordinance and coordinate such activities with the County Public Health Department.

GCDC Water and Waste Services (WWS) has a PA 342 Water and Sewer Advisory Board (WSAB) with their water and sewer community customers. The WSAB have a sanitary sewer infiltration and inflow removal program (I&I Program). This program is being enforced by both GCDC-WWS and the local communities that use the WWS treatment plants. Since 2001 there has been a significant effort to reduce I&I through monitoring flows between communities, lining sanitary lines, locking sanitary lids, waterproofing structures, footing drain removal and other efforts by all parties. This has resulted in a wet weather reduction to the treatment plants. There has also been a reduction on sanitary sewer overflows due to wet weather. WWS has also focused on efforts to the infrastructure and treatment plants to build in non-wet weather capacity.

Training

At the start of every IDEP field season training is conducted for new Tetra Tech employees, summer interns, GCDC personnel and individuals from various other firms and municipalities. The training is typically for an entire day and provides procedural information for individuals that have not previously been involved in IDEP operations, and it serves as a refresher for the regular IDEP field crews. There is both an in-class module and a field demonstration. Through the use of Power Point presentations, IDEP protocol manuals, and hands on training in the field, individuals are given the tools to collect and record the required data under the Phase II Storm Water permit.

At a minimum the following topics are covered:

The definition of illicit discharges and connections

Techniques for finding illicit discharges, including field screening, source identification, and recognizing illicit discharges and connections

Methods for eliminating illicit discharges and the proper enforcement response

A training schedule and requirement for training during the term of the permit

Additional topics usually include:

The methodology that will be utilized by the municipality to find, prioritize and eliminate illicit discharges and connections to the municipal separate storm sewer system (MS4)

The IDEP investigation history for the municipality

Desktop assessment of illicit discharge potential within the municipality, including assessment of the highest priority investigation areas based on the prioritization criteria listed in Table 1 of the permits

Investigation planning and preparation for field work

Field techniques that can be used to detect and identify the sources of illicit discharges/connections.

Training for staff that have field jobs

For staff that do not actually perform Dry weather flow, but do work in field jobs that would have the potential for them to witness illicit discharges and connections, a information sheet is being developed. See Attachment C. This will be provided to appropriate staff per IDEP training and evaluation (#18) requirements in the 2014 application and can be used to train staff.

An information sheet on signs of an illicit discharge, see attachment – will be provided to staff per IDEP training and evaluation (#18) requirements in application. We will provide the training/literature on the following schedule:

Annually, on or before May 1.

Effectiveness of IDEP program

The current permit requires that the permittee determine the effectiveness of their illicit discharge elimination activities. These evaluation activities are in addition to inspecting each high and medium storm water point source every five years. GCDC will use three evaluation methods, all of which are approved methods in the MDEQ IDEP guidance. The current GCDC IDEP program will continue to compare the number of illicit discharges/connections eliminated versus the number found and report these in the annual report. The second evaluation method is to use the illicit discharge tracking form for public generated complaints. Information collected will be reported in the progress reports. The last evaluation method to be used is the ambient water quality monitoring results generated yearly from the existing program. Project Green, FRWC's Benthic Monitoring, monitoring conducted for IDEP investigation and any additional hot spot monitoring are updated and analyzed annual.

Progress Report

GCDC together with its member permittees will provide documentation of the actions taken to eliminate illicit discharges. For identified illicit discharges, the permittees shall summarize the total estimated volume and pollutant load eliminated for the main pollutants of concern, and the locations of the discharges into both the permittees MS4 and the receiving water.

Coordination of Activities

The Genesee County Drain Commissioner will be coordinating with all municipalities, county agencies and nested jurisdictions to address illicit connections/discharges, local ordinances, and seepage from septic systems and sanitary sewers. This work is proposed to be performed under a PA 342 contract with Genesee County. All work is proposed to be directed by the Drain Commissioner and coordinated with the Road Commission, Health Department, Emergency Management Services, and local officials, as appropriate. Annual discussions on IDEP matters will be placed on a PA 342 committee of the whole.

Record Keeping

Permittees shall make records associated with IDEP activities to address illicit discharges and connections available to the MNRE upon request.

Program Schedule

Activities to be performed within **12 months** include:

- Continue to annually train field staff on procedures for the IDEP compliance requirements.
- Fully implement the public complaint and reporting system.
- Continue to require sanitary sewer connections when available.
- Track activities for Permit Reports.

Activities to be performed within **24 months** include all of the ongoing actions listed above as well as:

- Visually inspect mapped storm sewer outfalls for dry weather flow for all identified outfalls in the permit application.
- Prepare Permit Report.
- Conduct follow-up field investigation on suspected illicit discharges and priority areas.

DRAINAGE SYSTEM INVENTORY

General		ID
Date	Time	
Crew Initials	Checked By	
Photographs		
Roll #	Picture #'s	

DISCHARGE STRUCTURE TYPE

- PSD
- Manhole
- Catch Basin
- Culvert Outlet
- Point in Open Channel
- Abandoned
- Unknown

PSD Status

- PSD
- Not a PSD
- PSD Not in Permit (New)
- PSD Not Permittable
- Structure within Drainage Network

LOCATION (see back side for location sketch)

Latitude

Longitude

Invert Elevation

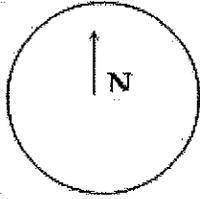
Offset Description:

Receiving Waterbody:

DISCHARGE STRUCTURE INFORMATION

Pipe ID	
Direction from MH	

Shape	
Diameter (inches)	
Width (inches) (Open Channel)	
Depth (inches)	
Measure Down (feet) (Manhole)	
Invert Elevation (feet) (Pipes)	
Conduit Material	
US/ DS End	



Comments

LOCATION SKETCH

LOCATION SKETCH CHECK LIST

Label Street Names

Indicate North

Locate manholes by dimensions from property lines, back of curb, or edge of pavement

Sketch catch basins and connections (no measurements necessary).

Indicate (if possible) distance to upstream and downstream manholes

Landmarks/nearest address, if any

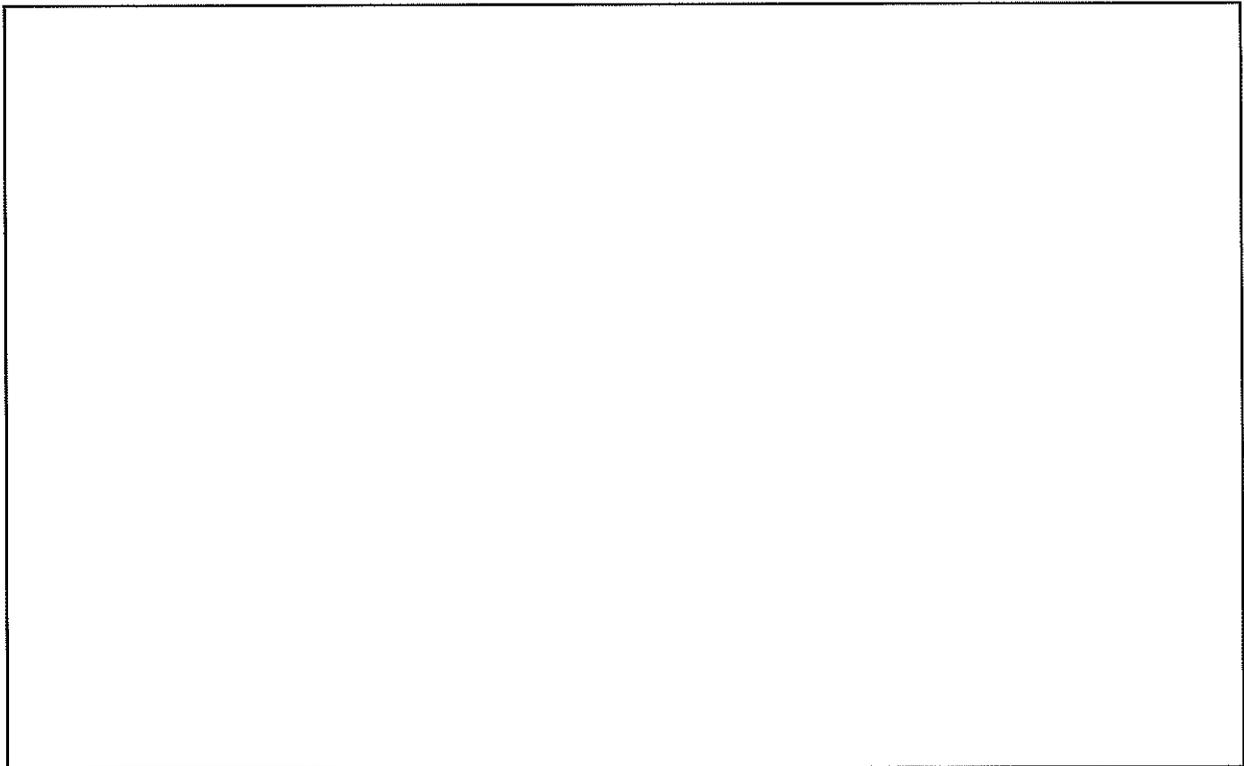
Flow direction

Sample point

Special access/traffic control notes

Between mile markers _____ & _____ or _____ tenths past mile marker _____

Velocity/depth measure location



DRAINAGE SYSTEM SCREENING

General		ID	
Date	Time	Air Temperature	
Crew Initials	Checked By	Rain	Yes <input type="checkbox"/> No <input type="checkbox"/>
Photographs		Clear/ Sunny	<input type="checkbox"/>
Roll #	Picture #'s	Partly Cloudy	<input type="checkbox"/>
		Overcast	<input type="checkbox"/>

DRY WEATHER FLOW PRESENT

- Yes, Dry Weather Flow Present
- Trace, Insufficient
- No Dry Weather Flow Present
- Standing Water
- Submerge
- Inundated
- N/A

FLOW MEASUREMENTS

Pipe Sampled:	Size (inches)	Direction	
Method	<input type="checkbox"/> Tt Method <input type="checkbox"/> Area * Velocity <input type="checkbox"/> Bucket <input type="checkbox"/> Manning's	General Data	
		Depth, (in)	Time Trials
		Distance Traveled (ft)	_____ #1 (sec)
		Bucket Volume, (l)	_____ #2 (sec)
		Channel Slope (%)	_____ #3 (sec)
		Channel Materials	_____ Average (sec)
Flow	_____	Channel, n	_____ Val (fps)

- Intermittent Not Checked
- Flow Check Left Sand Bag in Channel
- Removed Sand Bag, intermittent DWF present Yes No
- if possible describe frequency, duration, time of day of flow slugs – put in comments section

DISCHARGE OBSERVATIONS (if "other" checked fill in description at bottom of page)

Odor	<input type="checkbox"/> None	<input type="checkbox"/> Musty	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Gas	<input type="checkbox"/> Oil	<input type="checkbox"/> Other
Floatables	<input type="checkbox"/> None	<input type="checkbox"/> Trash	<input type="checkbox"/> Sewage	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Suds	<input type="checkbox"/> Other
Deposits/ Stains	<input type="checkbox"/> None	<input type="checkbox"/> Mineral	<input type="checkbox"/> Sediment	<input type="checkbox"/> Oily	<input type="checkbox"/> Grease	<input type="checkbox"/> Suds	<input type="checkbox"/> Other
Vegetation	<input type="checkbox"/> None	<input type="checkbox"/> Normal	<input type="checkbox"/> Excessive	<input type="checkbox"/> Algae	<input type="checkbox"/> Slime		<input type="checkbox"/> Other
Structural	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking	<input type="checkbox"/> Spalling	<input type="checkbox"/> Corrosion	<input type="checkbox"/> Settlement	<input type="checkbox"/> Staining	<input type="checkbox"/> Other
Color		Enter #					
Turbidity	_____	Enter #					

Description:

RECEIVING WATER OBSERVATIONS (if "other" checked fill in description at bottom of page)

Odor	<input type="checkbox"/> None	<input type="checkbox"/> Musty	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Gas	<input type="checkbox"/> Oil	<input type="checkbox"/> Other
Floatables	<input type="checkbox"/> None	<input type="checkbox"/> Trash	<input type="checkbox"/> Sewage	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Suds	<input type="checkbox"/> Other
Deposits/ Stains	<input type="checkbox"/> None	<input type="checkbox"/> Mineral	<input type="checkbox"/> Sediment	<input type="checkbox"/> Oily	<input type="checkbox"/> Grease	<input type="checkbox"/> Suds	<input type="checkbox"/> Other
Vegetation	<input type="checkbox"/> None	<input type="checkbox"/> Normal	<input type="checkbox"/> Excessive	<input type="checkbox"/> Algae	<input type="checkbox"/> Slime		<input type="checkbox"/> Other
Structural	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking	<input type="checkbox"/> Spalling	<input type="checkbox"/> Corrosion	<input type="checkbox"/> Settlement	<input type="checkbox"/> Staining	<input type="checkbox"/> Other
Color		Enter #					
Turbidity	_____	Enter #					

Description:

DRAINAGE SYSTEM SCREENING (Continued)

ID _____

Chemical Analysis

Field Analysis

Lab Sample Collected ID

Surfactants	_____	mg/L	Temperature	_____
Ammonia	_____	mg/L	pH	_____
Boron	_____	mg/L	Special Conditions	_____
Potassium	_____	mg/L		
E Coli	_____	per 100 ml		

RESULTS

- Illicit Connection Ruled Out
- Illicit Connection (undocumented connection)
- Pending
- Notify City
- Not a PSD

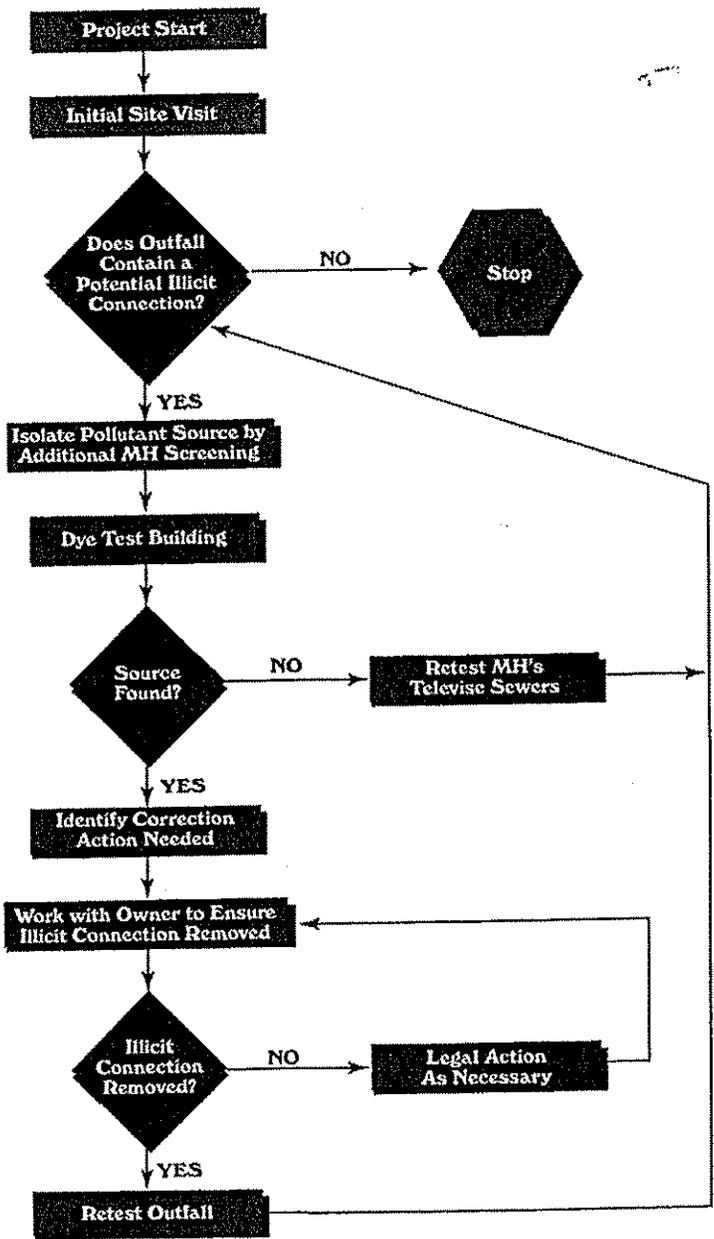
ACTION

- None Required
- Illicit Removed
- Waiting on Lab Results
- Dye Test
- Televis
- Investigate Further
- Illicit Connection

Comments



Illicit Discharge Elimination Program Work Plan Flow Chart



Attachment "A" Drain Code excerpt
Attachment "B" PA283 of 1909 excerpt
Attachment "C" *How to spot Illicit Discharge Brochure
Attachment "D" (~~Left Blank~~) Memo to GCDC-SWM Staff
Attachment "E" Spill Notification
Attachment "F" Outfall or Points of Discharge (Priority)

Attachment "A"
DRAIN CODE

280.423 Discharge of certain sewage or waste matter into drains prohibited; construction to purify flow; petitions; order of determination; findings; construction of drain; plans and specifications; contracts; costs; review; acquisition of land; application and fee for sewer connections; connections; powers of drain commissioner or drain board; failure to comply with section; violation as misdemeanor; fine; "person" defined.

Sec. 423. (1) A person shall not continue to discharge or permit to be discharged into any county drain or intercounty drain of the state any sewage or waste matter capable of producing in the drain detrimental deposits, objectionable odor nuisance, injury to drainage conduits or structures, or capable of producing such pollution of the waters of the state receiving the flow from the drains as to injure livestock, destroy fish life, or be injurious to public health. This section does not prohibit the conveyance of sewage or other waste through drains or sewers that will not produce these injuries and that comply with section 3112 of part 31 (water resources protection) of the natural resources and environmental protection act, Act No. 451 of the Public Acts of 1994, being section 324.3112 of the Michigan Compiled Laws.

(2) Disposal plants, filtration beds, and other mechanical devices to properly purify the flow of any drain may be constructed as a part of any established drain, and the cost of construction shall be paid for in the same manner as provided for in this act for other drainage costs. Plants, beds, or devices may be described in the petition for the location, establishment and construction of drains or in the petition for the cleaning, widening, deepening, straightening, or extending of drains, or in the application for the laying out of a drainage district. Petitions for the construction of plants, beds, and devices for use on any

established drain may be filed by the same persons and shall be received and all proceedings on the petitions in the same manner as other petitions for any drainage construction under this act.

(3) If the department of environmental quality determines that sewage or wastes carried by any county or intercounty drain constitutes unlawful discharge as prescribed by section 3109 or 3112 of part 31 of Ad No. 451 of the Public Acts of 1994, being sections 324.3109 and 324.3112 of the Michigan Compiled Laws, that 1 or more users of the drain are responsible for the discharge of sewage or other wastes into the drain, and that the cleaning out of the drain or the construction of disposal plants, filtration beds, or other mechanical devices to purify the flow of the drain is necessary, the department of environmental quality may issue to the drain commissioner an order of determination identifying such users and pollutants, under section 3112 of Act No. 451 of the Public Acts of 1994, being section 324.3112 of the Michigan Compiled Laws. The order of determination constitutes a petition calling for the construction of disposal facilities or other appropriate measures by which the unlawful discharge may be abated

or purified. The order of determination serving as a petition is in lieu of the determination of necessity by a drainage board pursuant to chapter 20 or 21 or section 122 or 192 or a determination of necessity by a board of determination pursuant to section 72 or 191, whichever is applicable. A copy of the findings of the department shall be attached to the order of determination which shall require no other signature than that of the director of the department of environmental quality. Upon receipt of the order of determination, the drain commissioner or the drainage board shall proceed as provided in this act to locate, establish, and construct a drain. If the responsible users of the drain are determined to be public corporations in the drainage district, the drain commissioner or the drainage board shall proceed as provided in chapters 20 and 21, as may be appropriate, using the order of determination as the final order of determination of the drainage board. If the responsible users are determined to be private Persons, the drain commissioner shall proceed as provided in chapters 8 and 9, using the order of determination as the first order of determination.

(4) Plans and specifications for the construction as part of a drain of any disposal plant, filtration bed, or other mechanical device to properly purify the flow of the drain shall be prepared by the drain commissioner or the drainage board. Contracts for construction shall be let in the manner provided in this act. To meet the cost of any preliminary engineering studies for the construction of abatement or purification facilities, the drain commissioner or the drainage board shall apportion the cost among the several parcels of land, highways, and municipalities benefited thereby in the same manner as provided in chapter 7 or against the public corporations affected by the order of determination in the same manner as provided in chapters 20 and 21. The costs and charges for maintenance shall be apportioned and assessed each year. If the apportionment is the same as the last recorded apportionment, a day of review' or a hearing on apportionments is not necessary, but if tire apportionment is changed, notice of a day of review or a hearing on apportionment shall be given to each person whose percentage is raised.

(5) Land may be acquired as a site for the construction of such plants, beds, and devices, and releases of land may be obtained in the same manner as provided in this act for other lands acquired for right of way.

(6) A person shall not connect sewage or other waste to a county or intercounty drain except with the written approval of the appropriate commissioner or the drainage board indorsed upon a written application for such service and the payment of a service fee of not to exceed \$50.00 for each connection to a covered drain. The application shall include information showing that all other local, state, and federal approvals related to the sewage or waste have been obtained.

(7) The fee provided for in subsection (6) shall be set and collected by the drain commissioner, as approved by the county board of commissioners or the drainage board, and deposited with the county treasurer, to be credited to the drain fund set up

for the maintenance or construction of the drain. The commissioner or the drainage board shall keep a record of applications made and the action on the applications. The commissioner or the drainage board may reject applications for or require such modification in requested applications for sewer connections to county drains as necessary to attain the objectives set forth in this section.

(8) Subject to the review and approval of the department of environmental quality, the drain commissioner or drainage board may study the requirements of persons for flood control or drainage projects including sewage disposal systems, storm sewers, sanitary sewers, combined sanitary and storm sewers, sewage treatment plants, and all other plants, works, instrumentalities, and properties useful in connection with the collection, treatment, and disposal of sewage and industrial wastes or agricultural wastes or runoff, to abate pollution or decrease the danger of flooding. The objective of such studies shall be that sewers, drains, and sewage disposal facilities are made available to persons situated within the territorial limits of any drainage district or proposed drainage district as necessary for the protection of public health and the promotion of the general welfare.

(9) The drainage board or drain commissioner may cooperate, negotiate, and enter into contracts with other governmental units and agencies or with any public or private corporation including the United States of America, and to take such steps and perform such acts and execute such documents as may be necessary to take advantage of any act of the congress of the United States which may make available funds for any of the purposes described in this section.

(10) Failure to comply with any of the provisions of this section subjects the offender to the penalties described in section 602. However, for each offense, a person who violates subsection (6) is guilty of a misdemeanor punishable by a fine of not more than \$25,000.00 or imprisonment for not more than 90 days, or both. In addition, the person may be required to pay the costs of prosecution and the costs of any emergency abatement measures taken to protect public health or the environment. Payment of a fine or costs under this subsection does not relieve a person of liability for damage to natural resources or for response activity costs under the natural resources and environmental protection act, Act No. 451 of the Public Acts of 1994, being sections 324.101 to 324.98106 of the Michigan Compiled Laws.

11) As used in this section, "person" means an individual, partnership, public or private corporation, association, governmental entity, or other legal entity.

History: 1956,Act 40, Imd. Eff. Mar. 28,1956 ;--Am. 1972,Act 298, Imd. Eff. Dec. 14,1972;--b.1996, Act 60,Imd.Eff. Feb. 26,1996 ;-Am. 1996,Act 552, Eff. Mar. 31,1997.

280.421 Obstructions; removal; expenses, notice; livestock; criminal complaint.

Whenever any person shall obstruct any established drain, it shall be the duty of the commissioner to cause such obstruction to be removed. Any lessening of the area of a drain, which area shall be a cross section of the drain, shall be deemed to be an obstruction. The person causing such obstruction shall be liable for the expense attendant upon the removal thereof, together with the charges of the commissioner, and the same shall be a lien upon the lands of the party causing or permitting such obstruction, and all of the expense shall by the commissioner be reported to the board of supervisors, together with the report of his doings in the premises, and by said board ordered spread upon the land of the offending party, should the same remain unpaid: Provided, That the offending party causing such obstruction shall be given a notice in writing of at least 5 days to remove such obstruction. This provision as to obstruction of any drain shall not apply where the obstruction was caused by natural causes, but the owner of the stock who shall permit his horses, cattle, pigs and other stock to obstruct any drain by tramping in it shall be deemed to be the party causing such obstruction. Nothing contained in this section shall in any way impede or bar the right of any person to make criminal complaint under any existing law for any obstruction of a drain.

History: 1956, Act 40, Imd. Eff. Mar. 28, 1956

Popular Name: Act 40

280.424 Inadequate disposal or filtration plant; abatement of nuisance; estimate of annual cost; appeal; notice; posting; review of apportionment; board of review; meeting; proceedings; determination; payment; assessment; water rates.

Whenever a disposal plant, filtration plant or other mechanical device to purify the flow of such drain or sewer has been heretofore constructed, but is inoperative or improperly operated and, in the opinion of the state commissioner of health, the public health is endangered by reason thereof, said state commissioner of health may file with the judge of probate of the county in which said facilities are located, a petition reciting his findings and recommendations as to how the menace to health may be corrected or the nuisance may best be abated and how the improperly operated or inoperative disposal plant, filtration plant or other mechanical device to purify the flow of a drain or sewer should be operated. Upon satisfying himself as to the reasonableness of said recommendations, it shall be the duty of the judge of probate of said county to direct the drain commissioner of said county to prepare a plan for and estimate the annual cost of executing the recommendations of the state commissioner of health, and/or of rehabilitation, ordinary maintenance and operation of said improperly operated or inoperative facilities, to prepare a map showing the extent of the area contributing to said condition, and to make a determination of the annual expense thereof apportioned according to benefits to the state highways, cities, villages and townships benefited by the same. Upon receipt of the map, tentative assessment district and other information

from the county drain commissioner, the judge of probate shall give notice of said facts and of the date of receiving appeals by publication in at least 2 insertions in some newspaper published and of general circulation in the county, if there be one, the first publication to be at least 10 days before the date set for receiving appeals and said notice shall also be posted at least 10 days before the date for receiving appeals in 5 or more conspicuous places in each city, village and township, where any part of the district may be located and within the limits of such district.

The state highway commissioner or any city, township or village which may feel aggrieved by the apportionment of benefits so made by the drain commissioner may make an application to said probate court for review of the apportionment by a board of review by filing with said probate court a notice of appeal. Only 1 board of review shall be appointed by said court. Upon receipt of any such notices of appeal, as hereinbefore provided, the probate court shall forthwith notify the drain commissioner, in writing, of such appeal and thereupon make an order appointing 3 disinterested freeholders of such county, not residents of said district, to constitute such board of review. The court shall thereupon, with the concurrence of the drain commissioner, immediately fix the time and place when and where said board of review shall meet to review said apportionments, which said time shall be not less than 10 nor more than 15 days from the date of filing such appeal.

The drain commissioner shall thereupon give notice to the persons so appointed of their appointment and of the time and place of meeting and shall give notice of such meeting by posting notices in at least 5 public places in each city, village and township forming a part of the drainage district and shall serve a like notice upon the state highway commissioner and each of said cities, villages and townships. Such service shall be made not less than 5 days before hearing. Return shall be made by the person serving said notice and shall be filed in the office of the judge of probate. At such hearing the board of review shall have the right and it shall be their duty to review all apportionments made by the drain commissioner. Persons appointed on said board of review shall be sworn by the drain commissioner to faithfully discharge their duties as members of said board.

The board of review shall proceed at the time and place specified in the notice to hear the proofs and allegations of all parties in respect to the matter of appeal. A review of apportionments shall be made by the board of review and if, in their judgment, there shall be manifest error or inequality in such apportionments, they shall order and make such changes therein as they shall deem just and equitable. Determination of the drain commissioner, if not appealed from, or of said board, in case of an appeal, shall be final and there shall be no right of appeal from such determination, except by writ of certiorari to the proper court. The determination shall be reduced to writing and signed by the drain commissioner, or in case of appeal a majority of the board making the same, and shall be delivered to the judge of probate together with all other papers relating thereto. Upon the apportionments becoming final, as hereinbefore set forth, the judge of probate

shall deliver said approved roll of apportionments of benefits and expense to the drain commissioner, who shall assess the amounts therein set forth to the respective cities, villages and townships involved, and said cities, villages and townships shall thereafter make payment thereof as collected in quarterly installments to the county treasurer to be deposited in a separate fund for the rehabilitation, ordinary maintenance and operation of said facilities, which said fund shall be paid out only on the order of the drain commissioner of the county in which said facilities are located.

Payment for services and providing for substitute membership necessary on the board of review shall be in accordance with sections 158 and 159 of this act. Such necessary costs of the proceeding shall be determined by the judge of probate, said cost to be paid from the revolving fund of the county and same to be returned to the county out of the first assessment against said district. Immediately upon receipt of sufficient funds so to do, the drain commissioner of the county shall proceed with the rehabilitation, ordinary maintenance and operation of said facilities, and shall continue the same as long as funds are available. The costs and charges hereinbefore set forth shall be an annual charge and shall be assessed against the state highways and the several cities, villages and townships by said drain commissioner each year as long as said facility continues to be operated, unless in the opinion of the drain commissioner, the state highway commissioner or of any of said cities, villages or townships, said apportionment should be changed, in which event either said drain commissioner, the state highway commissioner, or any of said cities, villages or townships may petition the judge of probate of the county in which said proceedings were had for the appointment of a board of review to reapportion said expense, and on filing said petition said judge of probate shall proceed to appoint a board of review on notice and in the manner hereinbefore set forth, which said board of review shall review such assessments and make a new apportionment: Provided, however, That no reapportionment shall be made oftener than once in each calendar year.

The several cities, villages and townships against whom an assessment is made, as hereinbefore provided, shall collect for such expense so assessed to them under this act by charges for the use of said facilities, to be added to and collected with the water rates of said cities, villages and townships, in the same manner as other water rates of said cities, villages and townships are collected, or in such other manner as the several governing bodies of said respective cities, villages and townships may determine.

History: 1956, Act 40, Imd. Eff. Mar. 28, 1956

Popular Name: Act 40

Attachment "B"

Attach B

PUBLIC HIGHWAYS AND PRIVATE ROADS (EXCERPT)
Act 203 of 1909
(Act 212 of 1960)

224.19b Working within right-of-way of county road; permit required; exceptions; permit requirements and schedule of fees; itemization of costs; annual and emergency permits; security.

Sec. 19b.

(1) A person, partnership, association, corporation or governmental entity shall not construct, operate, maintain or remove a facility or perform any other work within the right of way of a county road except sidewalk installation and repair without first obtaining a permit from the county road commission having jurisdiction over the road and from the township, city or village in which the county road is located when a permit is required by ordinance of the township, city or village, pursuant to authority conferred by article VII, section 29 of the Michigan constitution of 1963. The adjacent property owner shall not be required to obtain a permit for work incidental to the maintenance of the right of way lying outside of the shoulder and roadway.

(2) A county road commission and a local unit of government may adopt after a public hearing of which notice has been given by publication at least twice in a newspaper circulated in the county not more than 30 days nor less than 7 days prior to the hearing, reasonable permit requirements and a schedule of fees to be charged sufficient to cover only the necessary and actual costs applied in a reasonable manner for the issuance of the permit and for review of the proposed activity, inspection and related expenses. After the work authorized in the permit has been completed, itemization of all costs shall be supplied upon request of the permit holder.

(3) When a road commission adopts procedures for the issuance of permits or adopts a schedule of fees in accordance with the provisions of this section, separate procedures and fee schedules shall be adopted for the issuance of annual and emergency permits which reflect the minimal administrative burden of issuing an annual permit for frequent but routine and unobtrusive work such as surveying and the extraordinary emergency repairs to municipal or public utilities.

(4) A county road commission may not refuse a permit requested by a government entity for the installation of a facility or utility owned by that entity if security is given by the permittee or its contractor to the county road commission sufficient to insure restoration of the road and appurtenances thereto and adjacent right of way to a condition reasonably equal to or better than that existing prior to such installation nor may a county road commission charge a government entity a permit fee exceeding \$300.00 per permit or \$1,000.00 total for all permits per project.

History: Add. 1980, Act 212, Eff. Mar. 31, 1981

Attachment "C"

How to spot an Illicit Discharge Brochure:

This brochure is under development. It is modeled on the alliance of rouge communities IDEP Tip Card (shown below). It may be used to train staff and can be made available to the public.

- What is an illicit discharge and how to identify
- Hazards associated with illegal discharges
- What to report
- Who to report to

Schedule: PEP subcommittee/ Tetra Tech will have brochure complete by July 1, 2014 for distribution.

What are the Signs of an Illicit Discharge?

<p>Sanitary Sewer Discharges</p> <p><u>Observations</u></p> <ul style="list-style-type: none"> • Staining on pipe • Soap suds • Gray or discolored water • Odors: sewage, rotten eggs or detergent <p><u>Contact</u></p> <p>IDEP coordinator and/or DFW</p>	<p>Failed Septic Systems</p> <p><u>Observations</u></p> <ul style="list-style-type: none"> • Overgrowth or wet patch of grass • Greener pipe to ditch • Soap suds • Gray or discolored water • Odors: sewage, rotten eggs or detergent <p><u>Contact</u></p> <p>Health Department and/or IDEP coordinator</p>	<p>Illegal Dumping, Spills or Floor Drain Connections</p> <p><u>Observations</u></p> <ul style="list-style-type: none"> • Odors • Bleached sediment, rocks or vegetation • Odors: petroleum, chemical <p><u>Contact</u></p> <p>IDEP coordinator and/or DFW</p>	<p>Industrial Discharges</p> <p><u>Observations</u></p> <ul style="list-style-type: none"> • Discolored water or vegetation • Odors: petroleum, chemical <p><u>Contact</u></p> <p>IDEP coordinator and/or DFW</p>
<p>Agricultural Runoff, Fertilizers, or Sanitary Sewer Waste</p> <p><u>Observations</u></p> <ul style="list-style-type: none"> • Algae growth near drain outlet or in a ditch <p><u>Contact</u></p> <p>IDEP coordinator, DFW and/or Drain Office</p>	<p>Soil Erosion from Construction Sites</p> <p><u>Observations</u></p> <ul style="list-style-type: none"> • Bare soils or banks with no soil erosion control fencing • Muddy discharge from an outlet <p><u>Contact</u></p> <p>Local soil erosion control agency (either the local community or county)</p>		

CEP # 413 (discharge remediation program) DFW # Department of public works services MDEQ Michigan Department of Environmental Quality
1/20/12

Important Numbers

EMERGENCIES	
• Police/Fire	911
• MDEQ Pollution Alert System (PEAS)	800-282-4700, 24 hrs
NON-EMERGENCIES	
Livingston County:	
Health Department	517-540-9550, 8 am - 5 pm
Drain Office	517-546-0030, 8 am - 5 pm
Macomb County:	
Health Department	569-420-5226, 8 am - 5 pm
IDEP Hotline	877-870-4337, after 5 pm
IDEP e-mail	IDEP@macombcountymt.gov
Oakland County:	
	248-850-0931, 24 hrs
St. Clair County:	
	877-504-SWIM (7846), 24 hrs
Washtenaw County:	
	734-222-3880, 8 am - 5 pm
Wayne County:	
	800-223-2303, 24 hrs
Local IDEP Coordinator:	
Local	_____
Soil Erosion Control Agency	_____

How to Spot Illicit Discharges A Tip Card for Municipal Staff



An Illicit Discharge is any discharge containing polluting material, such as sediment, nutrients, oil and bacteria. These discharges can drain to lakes and streams via storm drains. The communities in Southeast Michigan are required to prevent illicit discharges from entering storm water. You can do your part by notifying the appropriate agency when you spot a potential illicit discharge.

What to Report?

- Spills and contamination to lakes, rivers and streams
- Suspicious dumping to catch basins or waterways
- Unusual discharges from pipes
- Sewage on the ground or draining to surface water
- Large number of dead fish in waterways
- Failing or leaky septic systems
- Polluted runoff from storage piles or dumpsters to catch basins or waterways
- Sewage, detergent, chemical, petroleum or rotten egg odors
- Soil erosion from construction sites

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Attachment "D"



GENESEE COUNTY DRAIN COMMISSIONER'S OFFICE

DIVISION OF
SURFACE WATER MANAGEMENT

G-4608 BEECHER ROAD, FLINT, MI 48532
PHONE (810) 732-1590 FAX (810) 732-1474

JEFFREY WRIGHT
COMMISSIONER

28 April 2014

Memorandum:

Reference: NPDES Ph II IDEP response
Correspondence From: Susanne Kubic

GCDC-SWM Field Staff,

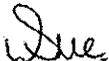
Under Genesee County's NPDES Ph II permit, as the County's Agent, this office is responsible for responding to illicit connections and discharges (spills). The State wants us to have procedures to provide timely and effective referral of the prioritized screening results to the appropriate staff for follow up. The purpose of this memo is to provide guidance on what a timely response to a suspected Illicit Connection or Discharge is.

When GCDC staff witness a discharge or are notified by a 3rd party of an active discharge (spill) or a connection with an active discharge, Staff shall visit the site of the suspected Illicit Discharge within 3 business days for an initial site investigation. Although our policy is 3 business days, this office will make every effort to have GCDC staff onsite the same day we are notified. When GCDC staff witness a connection with no active discharge or are notified by a 3rd party of a connection that has intermittent discharge Staff shall visit the site of the suspected Illicit Discharge within 30 business days for an initial site investigation.

The time needed for subsequent follow up investigation will depend on what is found on site and the ability to contact the responsible party(s). Our main goal is to stop/contain active or intermittent discharges as quickly as possible and then permanently eliminate the illicit connection.

If you have questions or comments please feel free to contact our office. Thank you.

Sincerely,


Susanne Kubic

File: K:/stormwater/IDEP Memo.doc

Spill Notification Complaint Reporting Form
 Illicit Discharge Elimination Program
 Genesee County

Municipality: _____
 TWP Section where incident occurred: _____

Complaint made by: _____
 Phone #: _____ Date: _____ Time: _____
 Location of Discharge: _____ Offending Party (if known) _____
 Nature of Problem (i.e. paper waste, odor, color, etc.): _____

Is this an Emergency?
 Yes (Then Phone 911) No
 Nature of Emergency: _____
 Initial Contact made to:
 • 911 _____
 • Fire Dept. _____
 • Police Dept. _____
 • GCDC 732-1590 _____
 • GCHD 257-3612 _____
 • GCRC 767-4920 _____
 • PEAS Hotline (State) 1-800-292-4706 _____
 • Other _____

Site Investigation
 Date of Observation: _____
 Investigating Agency: _____
 Location of Discharge: _____
 Initial Investigation
 Follow-up Investigation
 Crew Members: _____
 Investigation Location: _____
 Observations (odor, color, volume, etc): _____

Actions Taken:

 Danger to health and/or environment:
 Yes No
 Were photos taken: Yes* No
 Date Corrected: _____
 * Please attach copies
 If necessary:
 Agency Referred to: _____
 Agency Contact: _____
 Method of Communication:
 E-mail Letter/memo Phone
 Content of Communication: _____

Additional Comments:

Spill Notification Complaint Reporting Form
Illicit Discharge Elimination Program
Genesee County

1. Take down complaint information.
2. Fill out the Spill Notification form for the Illicit Discharge Elimination Reporting System.
3. Inform the caller that the problem will be further investigated and thank him/her for calling in.
4. If the problems are related to sanitary please contact the Genesee County Health Department at (810) 257-3612.
5. If the problem is related to oil please phone 911.
6. If the spill/ discharge has released any polluting materials to the surface waters of the State or the ground waters of the State the appropriate district office must be notified immediately. Phone (517) 284-6651, fax: (517) 241-3571. You may call 24-hour Polluting Emergency Alerting System phone # (800) 292-4706 after hours.

7. Please fax completed form to appropriate agency:

Stephanie Kammer at the MDEQ and Genesee County Drain Commissioner
kammers@michigan.gov c/o Sue Kubic skubic@co.genesee.mi.us
Phone 517-897-1597 Phone 810-732-1590 Fax (810)732-1474

GCHD: Fax: (810) 257-3125
GCRC: Fax: (810) 767-5373

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Outfalls or Points of Discharge
Table
City of Clito

ID #	Outfall/POD	Receiving Water	Latitude	Longitude	Priority	Priority Explanation
9614502	Outfall	Pine Run	-83.73232	43.177678	High	Older Storm
9614523	Outfall	Pine Run	-83.732983	43.179153	High	Older Storm
9614524	Outfall	Pine Run	-83.734323	43.179881	High	Older Storm
9614525	Outfall	Pine Run	-83.734401	43.179924	High	Older Storm
9614530	Outfall	Collins Drain 0025	-83.732825	43.183958	Medium	Older Storm-Subd' > 30-years
9614531	Outfall	Collins Drain 0025	-83.731247	43.184214	Medium	Older Storm-Subd' > 30-years
9615509	Outfall	Pine Run	-83.751748	43.180331	Low	Newer Storm-Subd' < 30-years
9615523	Point of Disch	Pine Run	-83.748618	43.17952	Low	Sampled as #9615513
9615754	Outfall	Pine Run	-83.73878	43.180146	High	Older Storm
9615757	Outfall	Pine Run	-83.734995	43.179983	High	Older Storm
9615758	Outfall	Pine Run	-83.734885	43.179985	High	Older Storm
9615759	Outfall	Pine Run	-83.73686	43.180006	High	Older Storm
9615760	Outfall	Pine Run	-83.735588	43.180187	High	Older Storm
9615761	Outfall	Pine Run	-83.736836	43.179925	High	Older Storm
9615762	Outfall	Pine Run	-83.73628	43.180061	High	Older Storm
9615765	Outfall	Pine Run	-83.740901	43.180016	Medium	Older Storm-Subd' > 30-years
9615770	Outfall	Pine Run Tributary	-83.743082	43.178271	Medium	Older Storm-Subd' > 30-years
9615771	Point of Disch	Pine Run	-83.738996	43.179485	High	Older Storm
9615772	Point of Disch	Pine Run	-83.739791	43.18208	Medium	Older Storm-Subd' > 30-years
9615773	Point of Disch	Pine Run	-83.739447	43.18144	Medium	Older Storm-Subd' > 30-years
9622005	Point of Disch	Pine Run Tributary	-83.742379	43.177239	Medium	Older Storm-Subd' > 30-years
9623013	Outfall	Benjamin Run	-83.731268	43.175124	High	Older Storm
9623016	Outfall	Pine Run	-83.730136	43.174148	Medium	Older Storm-Subd' > 30-years
9623017	Outfall	Pine Run	-83.725765	43.174601	Medium	Older Storm-Subd' > 30-years
9623501	Outfall	Benjamin Run	-83.729281	43.169559	High	Older Storm

Attachment 3 – City of Clio
To MDEQ Stormwater Discharge Permit Application
(PPP Plan)

Attachment 3 to MDEQ Stormwater Discharge Permit Application
Public Participation Plan (PPP)

Public Participation Plan (PPP)

Attachment 3 to MDEQ Stormwater Discharge Permit Application

1. Provide the procedure for making the SWMP available for public inspection and comment. The procedure shall include a process for notifying the public when and where the SWMP is available and of opportunities to provide comment. The procedure shall also include a process for complying with local public notice requirements, as appropriate.

As a permittee, the City of Clio adopted City of Clio Ordinance Number 475, An Ordinance to amend the Code of Ordinances for the City of Clio, Michigan, by adding a new Chapter 62: Storm Water, to Regulate Storm Water Control; to Provide for Storm Water Permits and for Payment of Reimbursement of Costs Incurred by the City due to Storm Water Permits; and the Provide Penalties for Violations on May 4, 2015.

This Ordinance is the product of a City Commission designated committee established on March 2, 2015. The Commission discussed this Ordinance during its March 16, 2015 regular meeting and approved a resolution providing for the first reading during an April 20, 2015 regular meeting and a resolution providing for its second reading during a May 4, 2015 regular meeting at which time it was adopted with a summary published in The Herald on or about May 6, 2015. All public meetings, including meetings of the Clio City Commission are noticed pursuant to the Open Meetings Act, 267 of 1976.

The City's Water Management Plan (SWMP), which is this application, will be available for public inspection at Clio City Hall, 505 West Vienna Street, Clio, Michigan and posted to its website, www.clio.govoffice.com, with an invitation for written public comment to be submitted to the Clio City Clerk, 505 West Vienna Street, Clio, Michigan 48420. The approved, or final, SWMP will also be available for public inspection at the Clio City Hall and posted to its website.

Finally, the annual report and any future SWMP amendment(s) or application(s) will also be available for public inspection at Clio City Hall, 505 West Vienna Street, Clio, Michigan and posted to its website, www.clio.govoffice.com, the City of Clio Michigan Facebook page and the next City newsletter with an invitation for public comment to be submitted to the Clio City Clerk, 505 West Vienna Street, Clio, Michigan 48420 and the City's Facebook page.

2. Provide the procedure for inviting public involvement and participation in the implementation and periodic review of the SWMP.

Same as above.

Attachment 3 – City of Clio
To MDEQ Stormwater Discharge Permit Application
(PPP Plan)

Attachment 3 to MDEQ Stormwater Discharge Permit Application
Public Participation Plan (PPP)

Public Participation Plan (PPP)

Attachment 3 to MDEQ Stormwater Discharge Permit Application

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2. Provide the procedure for inviting public involvement and participation in the implementation and periodic review of the SWMP.

Same as above.

**CITY OF CLIO
ORDINANCE NO: _____**

**AN ORDINANCE ADOPTING CHAPTER 63: STORM WATER ILLICIT
DISCHARGE AND CONNECTION OF THE CITY OF CLIO CODE OF
ORDINANCES**

THE CITY OF CLIO ORDAINS:

That the City of Clio Code of Ordinances Chapter 63: Storm Water Illicit Discharge and Connection be adopted to read as follows:

Section

- 63.101 Purpose.
- 63.106 Definition.
- 63.111 Applicability.
- 63.116 Responsibility for Administration.
- 63.121 Ultimate Responsibility.
- 63.126 Discharge Prohibitions.
- 63.131 Suspension of MS4 Access.
- 63.136 Industrial or Construction Activity Discharges.
- 63.141 Monitoring of Discharges.
- 63.146 Requirement to Prevent, Control, and Rescue Storm Water Pollutants by the Use of Best Management Practices.
- 63.151 Watercourse Protection.
- 63.156 Notification of Spills.
- 63.161 Enforcement.
- 63.166 Appeal of Notice of Violation.
- 63.171 Enforcement Measures after Appeal.
- 63.176 Cost of Abatement of the Violation.
- 63.181 Injunctive Relief.
- 63.186 Compensatory Action.

63.191 Violations Deemed a Public Nuisance.

63.196 Penalty.

Section 63.101 Purpose.

The purpose of this ordinance is to provide for the health, safety, and general welfare of the public through the regulation of non-storm water discharges to the storm drainage system to the maximum extent practicable as required by federal and state law. This ordinance establishes methods for controlling the introduction of pollutants into the MS4 in order to comply with requirements of the NPDES permit process. The objectives of this ordinance are:

- (1) To regulate the contribution of pollutants to the municipal separate MS4 by storm water discharges by any user
- (2) To prohibit illicit connections and discharges to the municipal separate storm sewer system
- (3) To establish legal authority to carry out all inspection, surveillance and monitoring procedures necessary to ensure compliance with this ordinance

Section 63.106. Definitions.

For the purposes of this chapter, the following shall mean:

Best Management Practices (BMPs). Schedules of activities, prohibitions of practices, general good housekeeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to storm water, receiving waters, or storm water conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

Clean Water Act. The federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.), and any subsequent amendments thereto.

Code Official. The official who is charged with the administration and enforcement of this article, or their designee.

Construction Activity. Activities subject to NPDES Construction Permits. Currently these include construction projects resulting in land disturbance of 5 acres or more. Beginning in March 2003, NPDES Storm Water Phase II permits will be required for construction projects resulting in land disturbance of 1 acre or

more. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.

EPA. Environmental Protection Agency or its successor.

Hazardous Materials. Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Illegal Discharge. Any direct or indirect non-storm water discharge to the storm drain system, except as exempted in Section X of this ordinance.

Illicit Connections. An illicit connection is defined as either of the following:

- (1) Any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the storm drain system including but not limited to any conveyances which allow any non-storm water discharge including sewage, process wastewater, and wash water to enter the storm drain system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by an authorized enforcement agency or,
- (2) Any drain or conveyance connected from a commercial or industrial land use to the storm drain system which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

Industrial Activity. Activities subject to NPDES Industrial Permits as defined in 40 CFR, Section 122.26 (b)(14).

MDEQ. Michigan Department of Environmental Quality or its successor.

MS4. municipal separate storm sewer system.

National Pollutant Discharge Elimination System (NPDES) Discharge Permit. A permit issued by EPA (or by a State under authority delegated pursuant to 33 USC § 1342(b)) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

Non-Storm Water Discharge. Any discharge to the storm drain system that is not composed entirely of storm water.

NPDES. National Pollutant Discharge Elimination System

Person. Any individual, association, organization, partnership, firm, corporation or other entity recognized by law and acting as either the owner or as the owner's agent.

Pollutant. Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordinances, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

Premises. Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

Storm Drainage System. Publicly-owned facilities by which storm water is collected and/or conveyed, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, and other drainage structures.

Storm Water. Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation and resulting from such precipitation.

Storm Water Pollution Prevention Plan. A document which describes the Best Management Practices and activities to be implemented by a person or business to identify sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to storm water, storm water conveyance systems, and/or receiving waters to the maximum extent practicable.

Wastewater. Any water or other liquid, other than uncontaminated storm water, discharged from a facility.

Section 63.111 Applicability.

This chapter shall apply to all water entering the storm drain system generated on any developed and undeveloped lands unless explicitly exempted by an authorized enforcement agency.

Section 63.116 Responsibility for Administration.

The code official or their designee shall administer, implement, and enforce the provisions of this ordinance. Any powers granted or duties imposed upon the authorized enforcement agency may be delegated in writing by the director of the authorized enforcement agency to persons or entities acting in the beneficial interest of or in the employ of the agency.

Section 63.121 Ultimate Responsibility.

The standards set forth herein and promulgated pursuant to this chapter are minimum standards; therefore, this chapter does not intend nor imply that compliance by any person will ensure that there will be no contamination, pollution, nor unauthorized discharge of pollutants.

Section 63.126 Discharge Prohibitions.

(1) Prohibition of Illegal Discharges.

No person shall discharge or cause to be discharged into the municipal storm drain system or watercourses any materials, including but not limited to pollutants or waters containing any pollutants that cause or contribute to a violation of applicable water quality standards, other than storm water.

The commencement, conduct or continuance of any non-authorized discharge to the storm drain system is prohibited except as described as follows:

- a. The following discharges are exempt from discharge prohibitions established by this chapter: water line flushing or other potable water sources; landscape irrigation or lawn watering, and irrigation waters; diverted stream flows and flows from riparian habitats and wetlands; rising ground water and springs; uncontaminated ground water infiltration and seepage; uncontaminated pumped ground water except for groundwater cleanups specifically authorized by NPDES permits; foundation drains, water from crawl space pumps, footing drains and basement sump pumps (not including active groundwater dewatering systems); air conditioning condensation; waters from non-commercial washing of vehicles; street wash water; dechlorinated swimming pool water from single, two, or three family residences; firefighting activities; and any other water source not containing pollutants.
- b. Dye testing done under the authorization of the MDEQ (general Rule 97) is an allowable discharge but requires a complete Notice

of Intent to the MDEQ prior to the time of the test.

- c. The prohibition shall not apply to any non-storm water discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the EPA, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drain system.

(2) Prohibition of Illicit Connections.

- a. The construction, use, maintenance or continued existence of illicit connections to the storm drain system is prohibited.
- b. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.
- c. A person is considered to be in violation of this ordinance if the person connects a line conveying sewage to the MS4 or allows such a connection to continue.

Section 63.131 Suspension of MS4 Access.

(1) Suspension due to Illicit Discharges in Emergency Situations

The code official or their designee may, without prior notice, suspend MS4 discharge access to a person when such suspension is necessary to stop an actual or threatened discharge which presents or may present imminent and substantial danger to the environment, or to the health or welfare of persons, or to the MS4 or Waters of the United States. If the violator fails to comply with a suspension order issued in an emergency, the authorized enforcement agency may take such steps as deemed necessary to prevent or minimize damage to the MS4 or Waters of the United States, or to minimize danger to persons.

(2) Suspension due to the Detection of Illicit Discharge

Any person discharging to the MS4 in violation of this ordinance may have their MS4 access terminated if such termination would abate or reduce an illicit discharge. The authorized enforcement agency will notify a violator of the proposed termination of its MS4 access. The violator may petition the authorized enforcement agency for a reconsideration and hearing.

A person commits an offense if the person reinstates MS4 access to premises terminated pursuant to this Section, without the prior approval of the authorized enforcement agency.

Section 63.136 Industrial or Construction Activity Discharges.

Any person subject to an industrial or construction activity NPDES storm water discharge permit shall comply with all provisions of such permit. Proof of compliance with said permit may be required in a form acceptable to the [authorized enforcement agency] prior to the allowing of discharges to the MS4.

Section 63.141 Monitoring of Discharges.

(1) Applicability.

This section applies to all facilities that have storm water discharges associated with industrial activity, including construction activity.

(2) Access to Facilities.

- a. The code official or their designee shall be permitted to enter and inspect facilities subject to regulation under this ordinance as often as may be necessary to determine compliance with this chapter. If a discharger has security measures in force which require proper identification and clearance before entry into its premises, the discharger shall make the necessary arrangements to allow access to representatives of the authorized enforcement agency.
- b. Facility operators shall allow the code official or their designee ready access to all parts of the premises for the purposes of inspection, sampling, examination and copying of records that must be kept under the conditions of an NPDES permit to discharge storm water, and the performance of any additional duties as defined by state and federal law.
- c. The code official or their designee shall have the right to set up on any permitted facility such devices as are necessary in the opinion of the authorized enforcement agency to conduct monitoring and/or sampling of the facility's storm water discharge.
- d. The code official or their designee has the right to require the discharger to install monitoring equipment as necessary. The facility's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the discharger at its own expense. All devices used to measure storm water flow

and quality shall be calibrated to ensure their accuracy.

- e. Any temporary or permanent obstruction to safe and easy access to the facility to be inspected and/or sampled shall be promptly removed by the operator at the written or oral request of the code official or their designee and shall not be replaced. The costs of clearing such access shall be borne by the operator.
- f. Unreasonable delays in allowing the code official or their designee access to a permitted facility is a violation of a storm water discharge permit and of this ordinance. A person who is the operator of a facility with a NPDES permit to discharge storm water associated with industrial activity commits an offense if the person denies the authorized enforcement agency reasonable access to the permitted facility for the purpose of conducting any activity authorized or required by this ordinance.
- g. If the code official or their designee has been refused access to any part of the premises from which storm water is discharged, and he/she is able to demonstrate probable cause to believe that there may be a violation of this ordinance, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designed to verify compliance with this ordinance or any order issued hereunder, or to protect the overall public health, safety, and welfare of the community, then the authorized enforcement agency may seek issuance of a search warrant from any court of competent jurisdiction.

Section 63.146 Requirement to Prevent, Control, and Rescue Storm Water Pollutants by the Use of Best Management Practices.

The City Commission will adopt requirements identifying BMPs for any activity, operation, or facility which may cause or contribute to pollution or contamination of storm water, the storm drain system, or waters of the United States. The owner or operator of a commercial or industrial establishment shall provide, at their own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the municipal storm drain system or watercourses through the use of these structural and non-structural BMPs. Further, any person responsible for a property or premise, which is, or may be, the source of an illicit discharge, may be required to implement, at said person's expense, additional structural and non-structural BMPs to prevent the further discharge of pollutants to the municipal separate storm sewer system. Compliance with all

terms and conditions of a valid NPDES permit authorizing the discharge of storm water associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this section. These BMPs shall be part of a storm water pollution prevention plan (SWPP) as necessary for compliance with requirements of the NPDES permit.

Section 63.151 Watercourse Protection.

Every person owning property through which a watercourse passes, or such person's lessee, shall keep and maintain that part of the watercourse within the property free of trash, debris, excessive vegetation, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner or lessee shall maintain existing privately-owned structures within or adjacent to a watercourse, so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse.

Section 63.156 Notification of Spills.

Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into storm water, the storm drain system, or water of the U.S. said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the authorized enforcement agency in person or by phone or facsimile no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the City within three business days of the phone notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

Section 63.161 Enforcement.

Whenever the code official or their designee finds that a person has violated a prohibition or failed to meet a requirement of this chapter, the authorized enforcement agency may order compliance by written notice of violation to the responsible person. Such notice may require without limitation:

- (1) The performance of monitoring, analyses, and reporting;
- (2) The elimination of illicit connections or discharges;
- (3) That violating discharges, practices, or operations shall cease and desist;
- (4) The abatement or remediation of storm water pollution or contamination hazards and the restoration of any affected property; and
- (5) Payment of a fine to cover administrative and remediation costs; and
- (6) The implementation of source control or treatment BMPs.

If abatement of a violation and/or restoration of affected property is required, the notice shall set forth a deadline within which such remediation or restoration must be completed. Said notice shall further advise that, should the violator fail to remediate or restore within the established deadline, the work will be done by a designated governmental agency or a contractor and the expense thereof shall be charged to the violator.

Section 63.166 Appeal of Notice of Violation.

Any person receiving a written notice of violation may appeal the determination of the authorized enforcement agency. The notice of appeal must be received within twenty (20) days from the date of the notice. Hearing on the appeal before the City Commission shall take place at their next regular meeting, but not less than fifteen (15) days from the date of receipt of the notice of appeal. The decision of the City Commission shall be final.

Section 63.171 Enforcement Measures after Appeal.

If the violation has not been corrected pursuant to the requirements set forth in the written notice of violation or, in the event of an appeal, within thirty (30) days of the decision of the City Commission upholding the decision of the authorized enforcement agency, then representatives of the authorized enforcement agency shall enter upon the subject private property and are authorized to take any and all measures necessary to abate the violation and/or restore the property. It shall be unlawful for any person, owner, agent or person in possession of any premises to refuse to allow the government agency or designated contractor to enter upon the premises for the purposes set forth above.

Section 63.176 Cost of Abatement of the Violation.

Within thirty (30) days after abatement of the violation, the owner of the property will be notified of the cost of abatement, including administrative costs. The property owner may file a written protest objecting to the amount of the

assessment within ten (10) days. If the amount due is not paid within a timely manner as determined by the decision of the municipal authority or by the expiration of the time in which to file an appeal, the charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment.

Any person violating any of the provisions of this chapter shall become liable to the City by reason of such violation.

Section 63.181 Injunctive Relief.

It shall be unlawful for any person to violate any provision or fail to comply with any of the requirements of this chapter. If a person has violated or continues to violate the provisions of this chapter, the authorized enforcement agency may petition for a preliminary or permanent injunction restraining the person from activities which would create further violations or compelling the person to perform abatement or remediation of the violation.

Section 63.186 Compensatory Action.

In lieu of enforcement proceedings, penalties, and remedies authorized by this chapter, the authorized enforcement agency may impose upon a violator alternative compensatory actions, such as storm drain stenciling, attendance at compliance workshops, creek cleanup, etc.

Section 63.191 Violations Deemed a Public Nuisance.

In addition to the enforcement processes and penalties provided, any condition caused or permitted to exist in violation of any of the provisions of this chapter is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily abated or restored at the violator's expense, and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken.

Section 63.196 Penalty

Any person violating any provisions of this article shall be responsible for a municipal civil infraction and subject to the penalties and sanctions provided by this Code. The authorized enforcement agency may recover all attorney's fees court costs and other expenses associated with enforcement of this ordinance, including sampling and monitoring expenses.

The remedies listed in this chapter are not exclusive of any other remedies available under any applicable federal, state or local law and it is within the discretion of the authorized enforcement agency to seek cumulative remedies.

Attachment 4 – City of Clio
To MDEQ Stormwater Discharge Permit Application
(PEP plan- Table 2)
(Procedure for assessment and effectiveness of PEP)

ATTACHMENT 4 – PUBLIC EDUCATION PROCEDURE FOR ASSESSMENT AND EFFECTIVENESS OF PEP

The Genesee County Drain Commissioner's Office leads a consortium of communities (through the provisions of a 342 agreement) that collaboratively work to meet their Phase II stormwater permit requirements, including their Public Education activities. Additionally, there are several nested jurisdictions under Genesee County participating in the group that participate.

The PEP sub-committee (derived from a selection of 342 community representatives) annually review the public education activities/actions to be undertaken for the forthcoming year. The actions are reviewed to make sure they are meeting their goals before a budget for those actions is voted on for implementation. All actions that are proposed address one or more of the Education Topics (A through K) identified in the Stormwater Discharge Permit Application in #5. Table 2 outlines those actions being done.

Procedure with assessment of high priority, community wide issues and targeted issues to reduce pollutants in the stormwater runoff as part of the PEP.

Chapter 6 of the watershed plan:

Water Quality Concerns

Water quality concerns were solicited from the public and stakeholders through a series of workshops and meetings, Described in Section 5.

A list of the public's concerns is provided below:

- Flooding Problems
- Concerns Affecting Drainage Ditches
- Parking Lot Spills
- Landfill Runoff/Groundwater Leachate
- Car Wash
- Groundwater pumping, irrigation affecting local wells
- Over-fertilization
- Sedimentation and soil erosion
- Source of Funding to Address the Above Concerns
- Wetland Destruction
- Need for Ordinance and Permit Compliance Enforcement for Environmental Protections

- Development Concerns
- Negative Public Perception of Flint River
- Need for Cooperation with Health Department
- Lack of Citizen and Municipal Education
- Lack of access to recreational opportunities

The concerns identified by the stakeholders are ranked and presented below. The public and stakeholders ranked their concerns to determine which issues they felt were more important. Each Concern is labeled as Rural (R), Urban (U) or Both (B) to indicate where in the watershed the concern is of most relevance.

1. Funding (B)
2. Education for planning commissions and zoning boards-municipals, government officials (B)
3. Need innovative ideas and solutions implemented locally-pilot project w/education component (B)
4. Sanitary Connections to storm sewer (U)
5. Education for builders and developers (B)
6. Stormwater treatment with BMPs must be maintained (U)
7. Streets directly discharge into river within minutes of rain events (U)
8. Flooding due to new development (B)
9. Master Gardeners-Volunteer Work link to projects (U)
10. Promote education at a publicly planned event (B)
11. Time of Sale Homeowner Packet (U)
12. Education (B)
13. More recreational opportunities (B)

We also looked at DESIGNATED USES IN THE STATE

The Michigan Department of Environmental Quality (MDEQ), acting under authority of the federal Clean Water Act, aims to make waters in the state meet certain designated uses (State of Michigan, 1999):

- Agricultural Water Supply • Industrial Water Supply
- Public Water Supply • Warm water Fishery
- Other Aquatic Life / Wildlife • Partial Body Contact
- Coldwater Fisheries (specifically identified waterbodies only)
- Total Body Contact (May 1st – October 31st)
- Navigation

This was used to develop the Public Education program. Based on the work done we have determined that the high priority community wide issues are:

- Educate the public (residential) on how their actions impact the water.
- Educate the public on how the water system is interconnected.
- Promote proper disposal practices for pollutants. (residential)

The high priority targeted issues are:

- Manage riparian lands to protect water quality
- Educate on septic system use and maintenance
- Educate developers on Green infrastructure and LID

The following topics has been ranked from 1 to 11, with 1 being highest and 11 being lowest:

- | | |
|-------|--------|
| • A=1 | • G=10 |
| • B=2 | • H=6 |
| • C=8 | • I=9 |
| • D=3 | • J=7 |
| • E=5 | • K=11 |
| • F=4 | |

Note at this time we do not have enough information on commercial, industrial, and institutional entities within Genesee County Communities to develop an effective program for **K**. Identify and educate commercial, industrial, and institutional entities likely to contribute pollutants to stormwater runoff. During the new permit cycle the Public Education Committee will inventory the commercial, industrial, and institutional entities to determine where an effective public education program can be developed.

Determining Effectiveness

From the watershed plans:

Program Assessment

“Program assessment involves reviewing the attainment of primarily the indirect measures of success. Measures of success will be reviewed for achievement and if the desired level of achievement is not attained, an investigation will be conducted to determine possible factors causing failure.

The PEP has developed and administered a phone survey to the public. Besides as a tool to direct the education committee, it can be used as a baseline assessment of where the public’s knowledge is now. Future surveys can be used to measure change in

knowledge and behavior. Other methods can provide measurable quantities like counting number of hits on the website or how many pounds of household hazardous waste have been dropped off.

Assessing the attainment of the measures of success is a yearly task that will be reported in the annual progress reports. The annual progress report is required to cover decisions made, actions performed, and results for the IDEP, PEP, SWPPI, and any other storm water actions conducted during the previous permit year (The IDEP and PEP are separate documents containing additional actions and measures of success not covered in this WMP.) The annual report must also cover updates of nested drainage system agreements and point source discharges to the storm water system.”

Additionally, there is a second iteration of the social survey planned for this permit cycle aimed at assessing the public’s knowledge, attitudes, and behaviors. Also, please note the last column in Table 2 that indicates the specific evaluation measure to be undertaken for each public education activity.

Modifications of the PEP may be implemented administratively by the City of Clio City Administrator, the responsible department head, or their designee. Modification will be made to improve ineffective BMP based on review of the annual report.



Water Resources Division

**Municipal Separate Storm Sewer
System (MS4) Program**

Illicit Discharge Elimination Program (IDEP)

Compliance Assistance Document

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Overview

The MS4 individual permit application is designed to develop a Stormwater Management Program (SWMP) by prompting the applicant to describe the current or proposed structural or managerial best management practices (BMP) to meet the six minimum control measures and water quality requirements. The IDEP is one of the six minimum control measures and should be designed to detect and eliminate illicit discharges and connections to the applicant's regulated MS4. This compliance assistance document addresses the MS4 permit application and implementation requirements associated with the IDEP. The compliance assistance document identifies the key components relating to these requirements which are considered necessary in order to have a complete application and an approvable SWMP. Applicants may work collaboratively with watershed or regional partners on any or all BMPs during the permit cycle if approved as part of the IDEP.

An MS4 includes both open and enclosed drainage systems that are owned or operated by the applicant; solely convey stormwater; and discharge, either directly or via an MS4 owned or operated by another public body, to a surface water of the state. An "outfall" means a discharge point from an MS4 directly to surface waters of the state. A "point of discharge" means a discharge from an MS4 to an MS4 owned or operated by another public body.

A water body cannot be both an MS4 and a surface water of the state. An MS4 is a conveyance designed to solely collect or convey stormwater. A surface water of the state has non-stormwater inputs such as groundwater, nonpoint source runoff, etc. Open county drains that are identified on a topographic map are usually a surface water of the state. The Michigan Water Quality Standards define surface waters of the state to include lakes, rivers, streams, open drains, and wetlands. Department of Environment Quality (DEQ) staff is available to provide assistance with identifying a surface water of the state.

The application does not require the applicant to detect and eliminate illicit discharges directly to surface waters of the state (including an open county drain when it is also a surface water of the state). Note, however, that the application does not preclude the applicant from having a more expansive program if the applicant desires.

An example of a surface water of the state is an open county drain that flows in the historical path of a stream.

The county drain receives inputs of groundwater, nonpoint source runoff, and stormwater runoff.

Privately owned and operated drainage systems that discharge directly to surface waters of the state do not have to be included in the IDEP. See Appendix A for an example of where IDEP activities are required.

The county drain is identified on a topographic map and would be protected as a surface water of the state.

The IDEP should be designed to implement BMPs where the permittee owns and operates an MS4 in the regulated area identified on the 2010 urbanized area maps. These maps are available by going to <http://www.michigan.gov/deqstormwater> and clicking on MS4 Program / MS4 Compliance Assistance then clicking on the hyperlink under the heading MS4 Permits. All references to the applicant's MS4 in this compliance assistance document refer to the applicant's regulated MS4. An applicant that chooses to be responsible for permit requirements for another regulated MS4 should include BMPs to address both MS4s as part of the IDEP.

Measurable Goals

Once a permit is issued, the permittee will be required to track implementation of the SWMP. Measurable goals are a means for assessing progress and effectiveness of the BMPs that, together, constitute the applicant's SWMP. The Application requires that a measurable goal be provided for each BMP. Measurable goals should be selected to fit each BMP and, as appropriate, each measurable goal should include a schedule for BMP implementation (month and years), including interim milestones and the frequency of the action. Properly selected measurable goals will incorporate a means to assess a BMP's progress towards reaching the goal. Although a measurable goal is required for each BMP, it doesn't mean that each BMP must have a unique measurable goal. Consideration should be given to ensure a selected measurable goal fits the targeted BMP, but it may be appropriate for some BMPs to share a common measurable goal.

Measurable goals may demonstrate: 1) specific actions, such as tracking implementation of the activity itself; 2) results, such as tracking behavioral change or quantifiable targets; and 3) the schedule to complete certain actions or targets. More information on developing measurable goals and measurable goals as they relate to the IDEP minimum control measure is available in the U.S. Environmental Protection Agency's (EPA) Measurable Goals Guidance for Phase II Small MS4s at <http://www.epa.gov/npdes/pubs/measurablegoals.pdf>.

Finding and Eliminating Illicit Connections and Discharges

A program should be developed to find and eliminate illicit connections and discharges to the regulated MS4 from commercial, industrial, private educational, public, and residential sources.

- An "illicit discharge" is any discharge to, or seepage into, an MS4 that is not composed entirely of stormwater or uncontaminated groundwater except discharges pursuant to an NPDES permit. A discharge that originates from the applicant's property and meets the illicit discharge definition is considered an illicit discharge.
- An "illicit connection" is a physical connection to an MS4 that primarily conveys non-stormwater discharges other than uncontaminated groundwater into the MS4; or a physical connection not authorized or permitted by the local authority, where a local authority requires authorization or a permit for physical connections.

The IDEP should include procedures and ordinances or other regulatory mechanism to meet the following requirements. The term "procedure" means a written process, policy or other mechanism describing how the applicant will implement the minimum requirements. The applicant is afforded flexibility in the formatting of the procedures and in the case of the IDEP requirements an applicant may choose to incorporate the various IDEP components into one procedure since many requirements build on one another.

Storm Sewer System Map

The applicant should provide the location where an up-to-date storm sewer system map(s) is available. In accordance with the application, the map shall identify the following: the

regulated separate storm sewer system, the location of all outfalls and points of discharge, and the names and location of the surface waters of the state that receive the discharge from the applicant's regulated MS4 (for both outfalls and points of discharge). The maps are to be retained by the applicant and made available to the DEQ upon request. Storm sewer system information shall be maintained and updated as discharge points are identified or added.

A separate storm sewer system includes: roads, catch basins, curbs, gutters, parking lots, ditches, conduits, pumping devices, and man-made channels.

Example Application Requirement Response

- An example response would be to identify the Department of Public Works office as the location where the maps are available.
- The map requirement may be a series of maps which together identify the entire separate storm sewer system. Maps may include available diagrams, such as certification maps, road maps showing rights-of-way, as built-drawings, diagrams, or other hard copy or digital representation of the storm sewer system. Maps may be accompanied by narrative descriptions for portions of the system.
- When mapping discharge points, include enough detail for staff to easily locate discharge points. This may necessitate one general overview map and several detailed maps. Include the discharge point identification name/number on the maps. Narrative information about the discharge point can accompany the maps to allow the user to further understand the characteristics of the discharge point.

Field Observation Scope

The applicant should develop a procedure to perform field observations (i.e., dry-weather screening) at outfalls and points of discharge during the permit cycle. The application affords two options for meeting this requirement: observe all outfalls and points of discharge during dry-weather or prioritize outfalls and points of discharge for observation during dry-weather to maximize implementation efforts during the permit cycle in areas with a high illicit discharge potential.

An applicant may choose to prioritize target areas during the permit cycle in an effort to maximize resources and implementation efforts in areas with a high illicit discharge potential. A procedure should be developed for prioritizing the MS4 for detecting non-stormwater discharges including identifying lower priority areas as part of the process. The procedure should document the process for selecting each priority area using the list below. A narrative description or map should be developed identifying the prioritized areas that will be targeted during the permit cycle.

- Areas with older infrastructure
- Industrial, commercial, or mixed use areas

- Areas with a history of past illicit discharges
- Areas with a history of illegal dumping
- Areas with onsite sewage disposal systems
- Areas with older sewer lines or with a history of sewer overflows or cross-connections
- Areas with sewer conversions or historic combined sewer systems
- Areas with poor dry-weather water quality
- Areas with water quality impacts, including water bodies identified in a Total Maximum Daily Load
- Priority areas applicable to the applicant not identified above

Example Procedure

Applicants may choose to conduct a desktop analysis by ranking each sewershed or outfall/point of discharge as a high, medium, or low risk for illicit discharge potential. Based on the ranking, applicants can develop a procedure to investigate sewersheds or outfalls/points of discharge in the highest risk areas first to maximize implementation efforts during the permit cycle. The procedure would also include a plan for investigating medium and low risk areas, with a timeframe for implementation. To meet the requirement to identify the geographical location of each prioritized area, the applicant may delineate areas on its MS4 map and include a year for dry-weather screening.

Additional detail on performing a desktop analysis can be found in the Environmental Protection Agency guidance manual titled *Illicit Discharge Detection and Elimination – A Guidance Manual for Program Development and Technical Assessments* which is available [here](#).

Performing Dry-weather Screening

Dry-weather screening is a term that includes a field observation followed by field screening and source investigation, as appropriate. An applicant should develop several procedures (or combine the procedures into one document) to identify the process of dry-weather screening during the permit cycle. The dry-weather screening requirements are described in the following table.

<p>Field Observation</p>	<p>Develop a procedure for performing a field observation at all outfalls and points of discharge in the priority areas or for the entire MS4 during dry-weather once during the permit cycle.</p> <p>A schedule should be included in the procedure for completing field observations during the permit cycle or more expeditiously if the applicant becomes aware of a non-stormwater discharge. It is recommended that field observations be performed at least 48 hours after any precipitation.</p>	<p>The following should be observed as part of a field observation:</p> <ul style="list-style-type: none"> • Presence/Absence of flow • Water clarity • Color • Odor • Floatable materials • Deposits/Stains on the discharge structure or bank • Vegetation condition • Biology (e.g., bacterial sheens, algae, slimes)
<p>Field Screening</p>	<p>Develop a procedure for performing a field screening if flow is observed at an outfall or point of discharge and the source is not identified during the field observation. If the illicit discharge is identified during the field observation then an applicant shall eliminate the illicit discharge.</p> <p>A schedule should be included for performing field screening.</p>	<p>Indicator parameters should be identified. Example indicator parameters include ammonia, fluoride, detergents, and pH.</p> <p>The purpose of indicator parameters is to assist with determining if an illicit discharge is present and gathering information regarding potential sources. Select a set of indicator parameters using the nature of historic problems and land use as a guide. An example list is available here.</p>
<p>Source Investigation</p>	<p>Develop a procedure for performing a source investigation if the source of an illicit discharge is not identified by field screening.</p> <p>A schedule should be included for performing a source investigation.</p>	<p>A method for performing a source investigation should be included. The following are example methods:</p> <ul style="list-style-type: none"> • Indicator parameter testing (chemical and bacterial sampling) • Dye testing (Department approval is required – see Appendix C) • Video testing • Smoke testing • Documented visual observation or physical indicators • Homeowner surveys and surface condition inspections for on-site sewage disposal systems • Drainage area investigations

If an applicant chooses to dry-weather screen in priority areas, then a procedure should be developed for responding to non-stormwater discharges outside of the priority areas. The procedure should include a schedule for performing field observations, and follow-up field screening and source investigations, as appropriate, when the applicant becomes aware of the discharge.

Illegal Dumping/Spills

Illegal dumping and accidental spills are significant sources of illicit discharges to an MS4. The applicant should develop a procedure for responding to illegal dumping and spills. The procedure should identify how spills will be contained and cleaned-up. The procedure should include a schedule for responding to complaints received, performing field observations and follow-up field screening and source investigations, as appropriate.

The potential for spills to contain oil and other highly polluting materials is significant. The Part 5 Rules identify threshold quantities for spillage of oil and certain polluting materials and the requirements when threshold quantities are exceeded. The applicant should develop a procedure to immediately report any release of any polluting materials from the MS4 to the surface waters or groundwaters of the state, unless a determination is made that the release is not in excess of the threshold reporting quantities in the Part 5 Rules, by calling the appropriate DEQ District Office, or if the notice is provided after regular working hours call the DEQ's 24-Hour Pollution Emergency Alerting System telephone number 800-292-4706.

Working Collaboratively

The applicant may choose to work collaboratively to meet the dry-weather screening requirements by collaborating with the owner or operator of the downstream MS4 to identify responsibilities for dry-weather screening. Collaborative efforts can assist with maximizing available resources while still effectively eliminating illicit discharges. If this option is pursued, the applicant should submit as part of the procedure for performing field observations an interagency agreement with the owner or operator of the downstream MS4 identifying responsibilities and schedules for ensuring an illicit discharge is effectively eliminated if originating from the applicant's point of discharge. For more information and an example of an interagency agreement see Appendix B.

Example Procedure

- To make regular progress towards the schedule, perform field screening at a rate of 20% of outfalls and points of discharge in the high priority areas per year with scheduled completion of all dry-weather screening within the 5-year permit cycle. For example, a city owns and operates 200 outfalls and points of discharge. The city identified 100 outfalls and points of discharge in the high priority areas. The schedule for performing field screening is 20 outfalls or points of discharge per year with a focus on screening in the same sewersheds first.
- Consider integrating dry-weather screening with other watershed or stream assessments.
- The scheduling of field screening and source investigations should be minimized due to the variable nature of an illicit discharge. Prior to starting a dry-weather screening field season, purchase field kits or develop a relationship with a contract laboratory to ensure timely analysis of sampling and testing efforts.
- Create a template for performing dry-weather screening to prompt staff to record specific information. Staff can then enter the data into a database to track illicit discharges and generate reports.

- Illicit discharge source identification can be completed in various manners including a combination of a desktop analysis and field verification. There are four basic types of investigations, which may be used independently or in combination.

MS4 Investigation	Field crews perform an investigation by either strategically inspecting or testing manholes or by moving systematically upstream or downstream within the storm drain network.
Drainage Area Investigation	An initial desktop analysis is performed to determine potential generating sites by reviewing land uses followed by inspections or testing in areas where the illicit discharge appears to be specific to a certain type of land use or generating site.
On-Site Investigation	Dye, video, or smoke testing can isolate segments of the storm drain network to allow for focused on-site investigations. Discharges of tracer dyes shall be authorized by the Department in accordance with Appendix C.
On-Site Sewage Disposal System Investigation	On-site investigations may be necessary in areas with the potential for failing septic systems and illegal dumping.

- Establish a schedule for staff assigned to emergency response activities to practice implementing the procedure for illegal dumping and spills.

Equivalent Alternative Approaches

Applicants have the option of proposing an alternative approach to finding and identifying an illicit discharge that differs from the dry-weather screening requirements (i.e., field observations, field screenings and source identification) described above. When presenting an alternative approach, the applicant shall demonstrate how the approach provides an equivalent or greater level of protection as the dry-weather screening requirements.

Eliminating illicit discharges

Once the field observation and potentially the field screening and source investigation is complete efforts should focus on responding to the illicit discharge with the requirement to effectively eliminate. The applicant should develop a procedure with response activities to implement once the source of the illicit discharge is identified. The procedure should include a schedule for requiring the elimination of illicit discharges and pursuing enforcement actions. The procedure should be encompassing of illegal spills/dumping.

Example Procedure

A procedure is developed to identify response activities for various types of illicit discharges (e.g., illegal dumping, illicit sanitary connection, failing soil erosion measures, large quantity spill), what enforcement tools are available to address illicit discharges (e.g., ordinances, regulatory mechanisms, procedures), and information on HAZMAT first responders (local, county, state, private clean-up companies). A schedule for eliminating illicit discharges within 90 days of becoming aware of the discharge is developed and enforced through the use of various enforcement tools.

Once an illicit discharge has been detected or reported a log of the type of illicit discharge, identification information, elimination status, and enforcement actions completed is maintained. This can be as simple as a hard copy information log or a more complex geographical information system database.

Training Staff

A training program is an important component to an effective IDEP. Applicants should develop a program to train staff employed by the applicant who are involved in illicit discharge-related activities. Training a wide range of staff at the appropriate level is an effective approach to increasing the potential for identifying illicit discharges. The application requires, at a minimum, training for existing staff at least once during the permit cycle and new hires within the first year of their hire date. It is recommended that staff is trained more than once per permit cycle. Training refreshers are recommended when IDEP related policies and procedures are updated, or in response to program evaluation findings.

Who should be trained?

- Staff or a representative that will participate in:
 - IDEP activities to find and eliminate illicit discharges and connections
 - Spill response and response to emergency IDEP situations
 - Ordinance/regulatory mechanism enforcement
- Staff or a representative that may have the opportunity to identify illicit discharges and connections in day-to-day activities
- Staff or a representative, such as building and engineering department staff, that have the opportunity to identify cross-connections and drainage issues in processes such as plan review
- Municipal officials who oversee IDEP related work, as appropriate

Example Training Program

Who should be trained	Content of Training
All municipal staff and consultants that have responsibility for any IDEP related program activities, including spill and IDEP related emergency response and observation of illicit discharges in the course of their daily work	<ul style="list-style-type: none"> • The definitions of illicit discharges, illicit connections, and sanitary seepage • The municipality's stormwater infrastructure, and where to obtain municipal storm sewer maps and/or electronic storm sewer datasets • Contact information to report illicit discharges to staff with emergency response responsibility • Common types of illicit discharges that occur in or are commonly associated with the local area • Recognition of naturally occurring phenomena and their sources (mineral deposits, bacterial sheens, slimes and films, bryozoans, pollen, blue-green algae, green algae, tannins and foams) • The municipal ordinance/regulatory mechanism/procedures, including the requirements and authority given to the municipality to eliminate illicit discharges • The authority of other agencies that may also be involved in local spill response • Illicit discharge preventative measures

Who should be trained	Content of Training
<p>Staff that will participate in the municipal program to find and eliminate illicit discharges</p>	<ul style="list-style-type: none"> • The IDEP investigation history for the municipality • Desktop analysis of illicit discharge potential within the municipality, including assessment of the highest priority investigation areas based on the prioritization criteria • Field observation planning and preparation for field work • Procedures for performing field observations, field screenings and source investigations • Methods for eliminating illicit discharges and the proper enforcement response
<p>Staff that will participate in enforcement of the IDEP ordinance/regulatory mechanism/procedures</p>	<ul style="list-style-type: none"> • The requirements and authority of the ordinance/regulatory mechanism • The process that will be used to prohibit and eliminate illicit discharges, including ordinance enforcement mechanisms • Tracking illicit discharge elimination status and enforcement actions
<p>Staff that has responsibility for IDEP related spill response and environmental emergency response</p>	<ul style="list-style-type: none"> • The municipal spill response protocols and responsibilities • The municipal authority during spill response • Protocols for release/spill reporting to other agencies, and response coordination with other agencies • Methods to prevent further migration of materials through a storm sewer system • Methods to prevent materials from entering storm sewer systems • Recordkeeping • Tracking illicit discharge elimination status and enforcement actions • A number of other regulations may also apply to spill and emergency situations. • These may require additional training and reporting related to spill response.

Additional Training Topics

Additional training topics for municipal staff and consultants may include:

- Safety issues associated with IDEP activities
- Training schedule during the term of the permit
- Conducting internal audits of the IDEP program
- Mock incidents for response practice
- Case history review
- Local and regional spill response debriefings – assessing what worked, what should be improved

Evaluating IDEP Effectiveness

Overall IDEP effectiveness assesses how well implementation is working at the program level to determine the success of the program in detecting and eliminating illicit connections and discharges to the MS4. A procedure should be developed for evaluating and determining the overall effectiveness of the IDEP. The appropriate method of determining effectiveness will depend on the IDEP approach.

Example Procedure

The procedure should focus on an effectiveness evaluation that provides results to meet permit requirements. The following are examples of evaluation methods:

- Evaluate the prioritization process to determine if efforts are being maximized in areas with high illicit discharge potential
- Evaluate the effectiveness of using different detection methods
- Evaluate the number of discharges and/or quantity of discharges eliminated using different enforcement methods
- Evaluate ambient water quality monitoring data to measure changes in the receiving water
- Evaluate program efficiency and staff training frequency

Resources

- Wayne County Illicit Connection and Discharge Elimination Training Program. Contact Wayne County at 734-326-4483
- EPA Illicit Discharge Detection and Elimination Resources
<http://water.epa.gov/polwaste/npdes/swbmp/Illicit-Discharge-Detection-and-Elimination.cfm>
- EPA Emergency Management Program Guidance
<http://www.epa.gov/emergencies/programs.htm>
- Part 5 Rules- Spillage of Oil and Polluting Materials
http://www.michigan.gov/deq/0,1607,7-135-3313_23420---,00.html

IDEP Ordinance or Other Regulatory Mechanism Requirement

The applicant is required to develop an ordinance or other regulatory mechanism to effectively prohibit illicit discharges into the applicant's regulated MS4 to be implemented and enforced during the permit cycle. Examples of non-ordinance regulatory mechanisms include internal policies or procedures.

Factors that influence the appropriateness of an ordinance or other regulatory mechanism are whether or not the applicant has ordinance authority and the potential for illicit discharges. A combination of an ordinance and other regulatory mechanism may also be appropriate. In addition, as long as the IDEP requirements are fully addressed, the requirements may be distributed throughout a combination of several ordinances and/or regulatory mechanisms. The following table provides likely scenarios for the applicability of ordinance and other regulatory mechanisms.

<ul style="list-style-type: none"> • Cities and villages • Townships with a more complex MS4 (e.g., a township that owns or operates roads) 	<ul style="list-style-type: none"> • County agencies • Townships with a regulated MS4 limited to township-owned property • Public institutions (e.g., school systems and universities)
Primary Legal Authority: Ordinance	Primary Legal Authority: Regulatory Mechanism
Secondary Legal Authority: Policies and procedures for staff to implement IDEP activities	

The ordinance or regulatory mechanism shall include the following application requirements for the regulated MS4:

- (1) Prohibit non-stormwater discharges (see exceptions below)
- (2) Regulate the contribution of pollutants
- (3) Prohibit illicit discharges, including illicit connections and direct dumping/disposal
- (4) Establish the authority to investigate, inspect, and monitor suspected illicit discharges
- (5) Require and enforce elimination of illicit discharges and connections

Options to Exclude Prohibiting Certain Non-stormwater Discharges

Applicants may choose to exclude prohibiting the discharges or flows from the following categories of non-stormwater discharges as part of the ordinance or other regulatory mechanism requirement.

1. Firefighting Activities – Applicants have the option to exclude prohibiting the discharges or flows from firefighting activities to the MS4 as part of the ordinance or other regulatory mechanism and require that these discharges or flows only be addressed if they are identified as significant sources of pollutants to waters of the State. For example, an applicant should require that discharges or flows to the MS4 from firefighting activities cease as soon as the emergency is over. Discharges or flows from firefighting training activities should be treated using BMPs to ensure there are no discharges of pollutants during the training.
2. Non-Stormwater Categories – Applicants have the option to exclude prohibiting the discharges and flows from the following list of non-storm water discharges as part of the ordinance or other regulatory mechanism provided that they are identified as not being a significant contributor to violations of Water Quality Standards. Identifying a discharge or flow as a significant contributor is completed on a case-by-case basis and is dependent on many factors, including the type of pollutant, amount discharged, and impacts to surface waters of the state.

- Water line flushing and discharges from potable water sources
- Landscape irrigation runoff, lawn watering runoff, and irrigation waters
- Diverted stream flows and flows from riparian habitats and wetlands
- Rising groundwaters and springs
- Uncontaminated groundwater infiltration and seepage (see discussion below)
- Uncontaminated pumped groundwater, except for groundwater cleanups specifically authorized by NPDES permits
- Foundation drains, water from crawl space pumps, footing drains, and basement sump pumps
- Air conditioning condensation
- Waters from noncommercial car washing
- Street wash water
- Dechlorinated swimming pool water from single, two, or three family residences. (A swimming pool operated by the permittee shall not be discharged to a separate storm sewer or to surface waters of the state without NPDES permit authorization from the Department.

These discharges shall not be authorized. Authorization to discharge these non-stormwater discharges would be in conflict with the ordinance/regulatory mechanism requirement above to prohibit non-stormwater discharges.

Contaminated Groundwater

Uncontaminated groundwater infiltration and seepage into an MS4 is identified above as a discharge or flow that does not need to be prohibited provided the uncontaminated groundwater is not a significant contributor to violations of Michigan Water Quality Standards. If an applicant chooses to allow this option, a procedure should be established to determine whether or not groundwater infiltrating or seeping into the MS4 is contaminated. Appendix C includes a flowchart and narrative description to assist with developing a procedure. The flowchart provides the framework for determining whether groundwater infiltration/seepage is contaminated and options for eliminating the groundwater infiltration/seepage if it is contaminated.

An applicant may be the responsible party for a Part 201 cleanup site or Part 213 leaking underground storage tank (LUST) site or may be aware of a Part 201 cleanup site or Part 213 LUST site infiltrating or seeping into the applicant's MS4. In December 2010 Part 201 was amended, specifically the criteria associated with the generic groundwater surface water interface (GSI) criteria. It is important to note that the illicit discharge definition applies at the point of infiltrating or seeping into the regulated MS4 while the GSI criteria are applied at the outlet to surface waters of the state. An MS4 permittee shall apply the ordinance or regulatory requirement to eliminate illicit discharges prior to infiltrating/seeping into the MS4 in accordance with the permit requirement.

Example Implementation

- An applicant may use an existing ordinance/regulatory mechanism or multiple ordinances/ regulatory mechanisms as the primary legal authority as long as the

application requirements are met. Supplemental documents may also be used to further support the primary legal authority, such as adopting standard plumbing or Michigan building codes to further support ordinance language; using existing ordinances, such as planning or zoning ordinances; and adopting the county's environmental health codes. If the MS4 is owned or operated by a drain commissioner the existing Drain Code, PA 40 of 1956 and Chapter 18, section 280.423, is applicable where discharge of certain sewage and waste matter is prohibited.

- Develop an all-encompassing ordinance to fulfill the requirements above. Applicants may want to collaborate with other municipalities to develop consistent ordinance or other regulatory mechanism language and legal authority.

Progress Reporting

Once a permit is issued, the permittee will be required to track implementation of the SWMP. For the IDEP, in addition to evaluating its effectiveness, a permittee shall provide documentation of the actions taken to eliminate illicit discharges. If an illicit discharge has been identified, but not yet eliminated, a schedule for eliminating the illicit discharge shall be identified.

For illicit discharges identified under an interagency agreement coming from other participating owners/operators of the MS4, the permittee performing dry-weather screening at the discharge points to surface waters of the state shall provide documentation of the notifications to the other participating operators and the information given to them with the notifications.

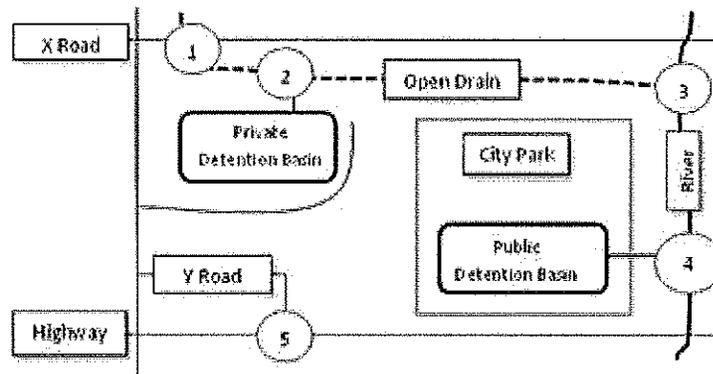
Example Implementation

The following are examples of activities that when fully tracked provide enough details to describe IDEP implementation efforts.

- Number of discharge points observed for dry-weather screening
- Number of illicit discharges identified
- Location of the illicit discharge into the permittee's MS4 and the receiving water
- Documentation of the illicit discharge notification and information provided with the notification if the illicit discharge does not originate within the permittee's MS4
- Number of illicit discharges corrected. If an illicit discharge is not corrected provide a schedule for elimination.

If implementing an IDEP as part of an interagency agreement, each responsible permittee shall keep detailed records of progress/implementation that shall be provided to the DEQ.

Appendix A



The map above was created to assist with determining where dry-weather screening may be performed as part of the approved IDEP. As noted in the overview on page one of this compliance assistance document, a determination needs to be made as to whether an open water body is defined as an MS4 or surface water of the state. The following facts apply to the map:

- The open drain is owned and operated by a drain commissioner. The designated county drain is a surface water of the state throughout the open and enclosed portions since it is marked as blue on a topographic map and does not solely convey stormwater.
- X and Y roads are city or county-owned roads served by open and enclosed separate storm sewers that solely convey stormwater.
- The highway is owned and operated by the Michigan Department of Transportation (MDOT).

Location 1

The MS4 serving X road first discharges to the open drain (surface water of the state). The city or county should consider performing dry-weather screening at this location as part of the IDEP.

Location 2

The detention pond is privately owned and therefore not a part of the MS4. Dry-weather screening is not required at this location.

Location 3

The open county drain is a surface water of the state discharging to a river that is also a surface water of the state. There are no MS4s involved with this location and therefore dry-weather screening is not required.

Location 4

The detention pond is owned and operated by an MS4 permittee. The detention pond first discharges to the river. Dry-weather screening should be considered at this location as part of the IDEP.

Location 5

The MS4 serving Y road first discharges to MDOT's MS4. This location is considered a "point of discharge" or the location where one MS4 discharges to an MS4 owned or operated by another public body. Dry-weather screening should be considered at this location as part of the IDEP.

Appendix B – Example of a Collaborative Dry Weather Screening Agreement

Each participating applicant should fill in the specific details for the italicized placeholders below and include this document in their application. Delete remaining italicized text.

Application/Permit Requirement: Procedures for performing field observations at all outfalls and points of discharge in the priority areas

Best Management Practice: Collaborative IDEP for performing field observations at all outfalls and points of discharge in the priority areas

Responsible Applicants/Permittees: [List MS4 owners/operators Participating] certify a commitment and participation in this collaborative IDEP.

Method of Implementation: [List Responsible MS4 owners/operators] (responsible applicants/permittees) have agreed to work collaboratively to perform dry-weather screening at all outfalls and points of discharge in the priority areas [Define the scope of the regulated MS4s and direct discharges to surface waters of the state] (see attached map). If an illicit connection or discharge is detected, the responsible permittees will work collaboratively to identify and eliminate the source.

The responsible applicants/permittees have agreed that [List Primary Applicant/Permittee] will be the primary contact for performing the field observations. Additional permittees not included with this agreement, but who own or operate storm sewer systems within this regulated MS4 area include, but are not limited to, [List Permittees].

The [Primary Applicant/Permittee] will take responsibility for performing field observations at all outfalls and points of discharge in the priority areas at least once during the permit cycle. The [List Primary Applicant/Permittee] agrees to complete this task no later than [Insert date not to exceed five years]. The [List Primary Applicant/Permittee] may choose to complete this task using a consultant or internal staff.

At the time of application for all responsible applicants/permittees, outfalls and points of discharge in the priority areas will be identified, given a unique ID and the owner/operator identified by the responsible permittees. If unknown outfalls or points of discharge are identified in the field, they will be noted and observed by the [List Primary Applicant/Permittee]. The Primary Applicant/Permittee will make a determination about the ownership of previously-unknown outfalls or points of discharge. Dry-weather flow from private drainage systems will be reported to the DEQ. Outfalls or points of discharge that are found to be associated with orphan drains will be reported to the DEQ and local health department for further follow-up, if required.

Dry-weather screening will be completed in accordance with the prioritized areas identified for the purpose of maximizing the detection and elimination of illicit discharges [Insert or attach prioritized areas as a narrative description or map]. Dry-weather screening will be completed, at a minimum of 48 hours after any precipitation, and include observations of the receiving water characteristics, discharge pipe characteristics and flows. The observations will include: presence/absence of flow; water clarity, color, odor and floatable materials; deposits/stains on the discharge structure or bank; vegetation condition of receiving water; structural condition of discharge pipe; and biology, such as bacterial sheens, algae, and slimes; and staining of the banks and unusual vegetative growth.

If flow is observed from the outfall or point of discharge, then the responsible applicants/permittees commit to do one of the following:

1. If by observation it is obvious that an illicit discharge is present and the source is obvious, the [Primary Applicant/Permittee] will document the observations and source for follow-up by the responsible permittees. The [Primary Applicant/Permittee] will notify the responsible permittees in writing within 10 days of detection and provide all applicable observation information, including the date and location where the illicit discharge was detected and the obvious source. The illicit discharge will be eliminated.
2. If flow is observed and the source is not obvious, the [Primary Applicant/Permittee] will conduct a field screening of the dry-weather flow to analyze the discharge for the following indicator parameters: [Insert indicator parameters]. Field screening will be conducted at a minimum of two times within two-weeks of the initial observation to determine if flow is intermittent or constant. The [Primary Applicant/Permittee] will notify the responsible permittees in writing within 30 days of detection and given all applicable field information, including the date and location where the illicit discharge was detected. All responsible permittees where the illicit discharge was detected will perform dry-weather screening of their outfalls and points of discharge in the jointly-operated MS4 within 13 months of detection, unless the illicit discharge is eliminated or identified in a portion of the MS4 not influenced by discharges from the responsible permittee's outfalls or points of discharge.

Optional: *The [Primary Applicant/Permittee] will perform dry-weather screening of all outfalls or discharge points within the jointly-operated MS4 where the illicit discharge was detected within 13 months of detection, unless the discharge is eliminated or identified in a portion of the MS4 not influenced by discharges from the responsible permittee's outfalls or discharge points. The [Primary Permittee] will provide all applicable information to the responsible permittees for illicit discharge elimination.*

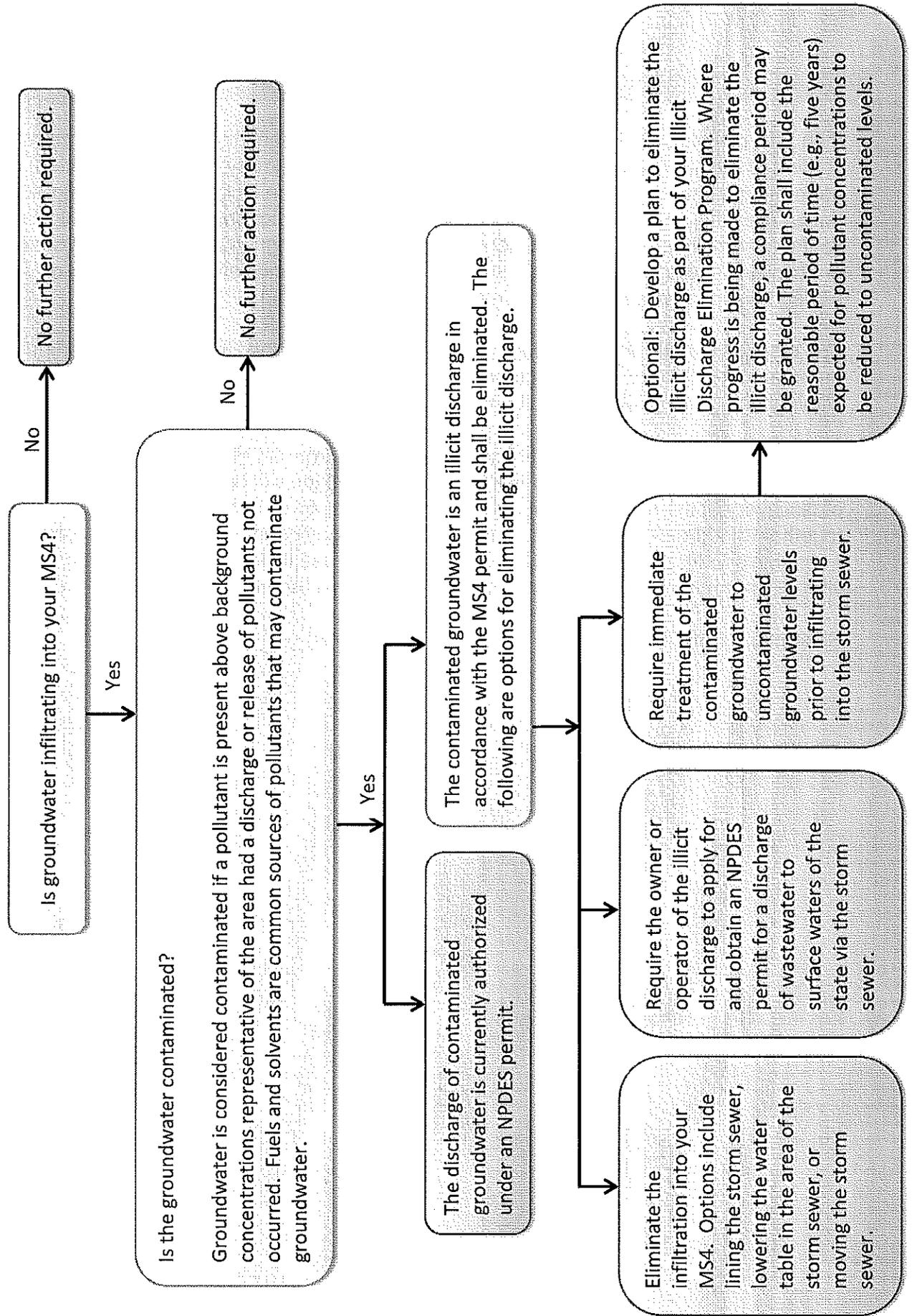
If an illicit discharge is detected, but the source has not been identified, the source will be confirmed by the [responsible applicants/permittees OR primary applicant/permittee] by performing a source investigation. The source investigation includes the following activities: [Insert activities, such as indicator parameter sampling, which may include chemical and bacterial sampling; dye testing; video testing; smoke testing; documented visual observation or physical indicators; homeowner surveys and surface condition inspections for on-site sewage disposal systems; and drainage area investigations].

The responsible permittee with legal authority to eliminate the illicit discharge and pursue enforcement will follow their ordinance and procedures for the expeditious response to and elimination of each identified illicit discharge.

If it is determined that the potential source is coming from an MS4 that is not a party to this agreement then that non-participating MS4 permittee will be notified within 10 days of discovery of the suspected illicit discharge and where applicable all parties will work together to address the problem. If the illicit discharge continues to enter the responsible permittee's MS4, then the responsible permittee will use its legal authority to eliminate the illicit discharge and pursue enforcement action against the non-participating MS4 permittee.

Schedule: Complete by [Insert same date from above]

Appendix C - Options for Eliminating an Illicit Discharge of Contaminated Groundwater into your MS4



Illicit Discharges of Contaminated Groundwater to a Regulated MS4

Illicit discharges to regulated MS4s are prohibited and the permittee is required to eliminate the illicit discharge to comply with permit requirements. This document will focus on when an NPDES permit may be appropriate.

Questions to consider regarding the illicit discharge:

- Is the contaminated groundwater entering the MS4?
- If yes, how has this been documented?
- What are the parameters of concern?
- Has the owner of the MS4 been notified?
- Is there an existing clean-up plan in place that will eliminate the illicit discharge to the MS4 in the next 5 years (e.g. a permit cycle)?

Options for eliminating illicit discharges to the MS4:

- Prohibit the discharge into the storm sewer (options include lining it, lowering the water table in the area of the storm sewer or moving the storm sewer)
- Treat on-site to uncontaminated groundwater levels
- Apply for and obtain an NPDES permit for the discharge to surface waters of the state via the storm sewer system

NPDES Permit considerations for illicit discharges to MS4s

- Has the groundwater plume been adequately characterized with respect to pollutants and how the plume intersects the MS4?
 - Natural attenuation in the groundwater can be a plan in some cases when there is a clean-up effort in place and Technology-Based Effluent Limits (TTBELs) won't be more restrictive.
- The NPDES compliance point for the TTBEL/Water Quality Based Effluent Limits (WQBELs) should be representative of the discharge prior to mixing with in the MS4 unless otherwise allowed by the MS4 for WQBELs.
 - Note that water quality requirements must ensure that Water Quality Standards are met in waters of the state; therefore, consistent and reliable dilution available from the storm water/infiltration into the MS4 upstream of surface waters of the state can be considered. Seasonal variation should be addressed.
- The NPDES permit must ensure that TTBELs are specified and that more stringent WQBELs are achieved if applicable.
- The treatment-based requirements should be based on effluent guidelines if promulgated, or previous DEQ decisions for a class of discharges under Best Professional Judgment (BPJ). If these are not available, a new case-specific BPJ decision under 40 CFR 125 should be made and appropriate conditions established. Such conditions could include effluent limits, operational conditions, and/or appropriate Best Management Practices.
- Ensure the discharge of the pollutant will not jeopardize the structural integrity of the MS4.

Appendix D – Tracer Dye Authorization

In compliance with the provisions R323.1097 of Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), the Department of Environment Quality has regulatory jurisdiction over projects involving the application of tracer dyes to surface waters of the state.

An entity is authorized to apply tracer dyes to surface waters of the state by following the provisions under the appropriate certification. The certifications are as follows:

1. For applications or discharges of tracer dyes appearing on the Acceptable Michigan Tracer Dye List to surface waters of the state, coverage under the General Rule 97 Certification of Approval Authorizing Tracer Dyes in Surface Waters is necessary. This process is initiated by submittal of a Notification of Intent by the applicant. Upon acknowledgement from the Department that a Notification of Intent has been received, the applicant is authorized to commence tracer dye study in compliance with the certification. Acknowledgement of receipt of the Notification of Intent can be determined at www.michigan.gov/deq or by contacting Ms. Renee Comage at 517-241-8714 or by e mail at comager@michigan.gov.
2. For any application or discharge of tracer dyes to waters of the state that is not authorized by a General Rule 97 Certification of Approval, an Individual Rule 97 Certification of Approval is necessary. Upon receipt of approval by the Department, the applicant is authorized to commence treatment under the individual Rule 97 approval.

Additional information on tracer dye studies can be found at www.michigan.gov/deq. On the left side of the screen, click on "Water," followed by "Rule 97 Certifications," then "Tracer Dye Studies." This website includes the Acceptable Michigan Tracer Dye List and Notification of Intent.

GENESEE COUNTY

Illicit Discharge Elimination Program

FIELD PROTOCOL MANUAL



Prepared by:



TETRA TECH

**March 2014
DRAFT**

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INTRODUCTION

PHASE II ILLICIT DISCHARGE ELIMINATION REQUIREMENTS

The United States Environmental Protection Agency's (EPA) Phase II Storm Water regulations require all permitted MS4 communities and agencies to address six minimum measures. Amongst the six measures are the Illicit Discharge Detection and Elimination Minimum Control Measures. Under the regulations, these measures must include the following:

- A storm sewer system map showing the location of all discharge points and outfalls and the names and location of all waters of the United States that receive discharges from those points.
- Through an ordinance or other regulatory mechanism, a prohibition on non-storm water discharges into the MS4 community and appropriate enforcement procedures and actions.
- A plan to detect and address non-storm water discharges, including illegal dumping into the MS4 community.
- The education of public employees, businesses, and the general public about the hazards associated with illegal discharges and improper disposal of waste.
- The determination of appropriate best management practices (BMPs) and measurable goals for this minimum control measure.

WHAT IS AN ILLICIT CONNECTION?

An illicit connection is the discharge of pollutants or non-storm water materials into a storm sewer system via a pipe or other direct connection. Sources of illicit connections may be sanitary sewer taps, wash water from commercial laundry facilities or carwashes, and other similar sources.

WHAT IS AN ILLICIT DISCHARGE?

An illicit discharge is the discharge of pollutants or non-storm water materials to the storm sewer systems via overland flow or direct dumping of materials into a catch basin. Some examples of illicit discharges include the overland drainage from a carwash, or dumping used motor oil in or around a catch basin.

WHAT ARE ACCEPTABLE NON-STORM WATER DISCHARGES?

Acceptable non-storm water discharges include:

- Water line flushing and discharge from potable water sources
- Landscape irrigation runoff, lawn watering runoff, and irrigation waters
- Diverted stream flows and flows from riparian habitats and wetlands
- Rising groundwater and springs
- Uncontaminated groundwater infiltration and seepage
- Uncontaminated pumped groundwater, except for groundwater cleanups specifically authorized by NPDES permits
- Foundation drains, water from crawl space pumps, footing drains, and basement sump pumps
- Water from non-commercial, residential car washing
- De-chlorinated swimming pool water from single, two, or three family residences. (A swimming pool operated by the permittee shall not be discharged to a separate storm sewer or to surface waters of the state without NPDES permit authorization from the MDEQ.)
- Residual street wash waters
- Discharges or flows from emergency firefighting activities

GENESEE COUNTY'S ILLICIT DISCHARGE ELIMINATION PLAN

Genesee County has received an NPDES Phase II Storm Water Certificate of Coverage (COC). The County has been and will continue to conduct IDEP investigations for all participating municipalities within the County's permit agreement.

PURPOSE OF THIS PROTOCOL MANUAL

The purpose of this manual is to define the procedures for the Illicit Discharge Elimination Program (IDEP) plan. This manual reviews the steps used to find and locate illicit connections/discharges. The primary steps are:

- A. Planning
- B. Preparation
- C. Inventory Phase Fieldwork
- D. Screening Phase Fieldwork
- E. Post Fieldwork
- F. Source Confirmation

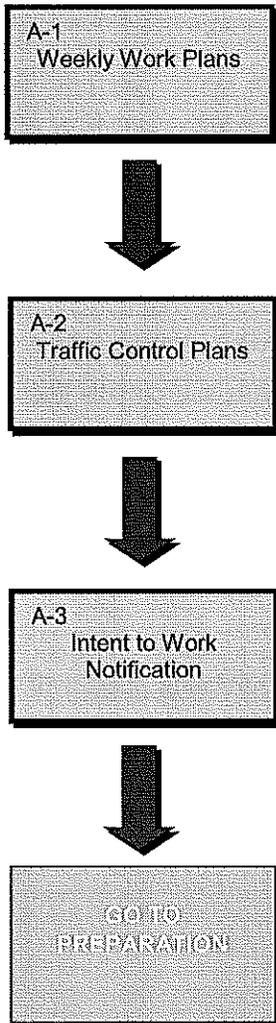
Also discussed are notification requirements and procedures, contact information, structure numbering and health and safety issues.

The IDEP investigations in Genesee County will initially focus on the inventory phase of the fieldwork. The inventory phase will identify the location of discharge points and outfalls and determine which of these should be revisited for further investigation during the screening phase by identifying the presence or absence of dry weather flow and documenting physical observation of the site. This data will be used to prioritize the screening phase of the investigations.

The screening phase will be conducted as suspected problems arise. The screening phase will look at those discharge points and outfalls which have dry weather flow and identify, through sampling, if an illicit connection is present. If an illicit connection is present, the storm sewer system will be further investigated until the source is identified and removed.

A. INITIAL PLANNING

Figure 1 - Planning Flow Chart



Prior to beginning investigation planning, a copy of the discharge points and outfall maps submitted with the permit application must be obtained. Storm sewer drainage maps should also be acquired, if available. Other valuable information that may be collected, if applicable and available, includes:

- Land use maps
- Age of development
- CSO areas
- Depth of groundwater
- Areas of failing infrastructure
- Contact information

A.1 WEEKLY WORK PLANS

Weekly work plans should be developed to identify the discharge points and outfalls or points to investigate for that week's work and the roads where lane closures may be occurring. The weekly work plans should also remind the crew to confirm that the weather is appropriate and to check supplies.

A.2 TRAFFIC CONTROL PLANS

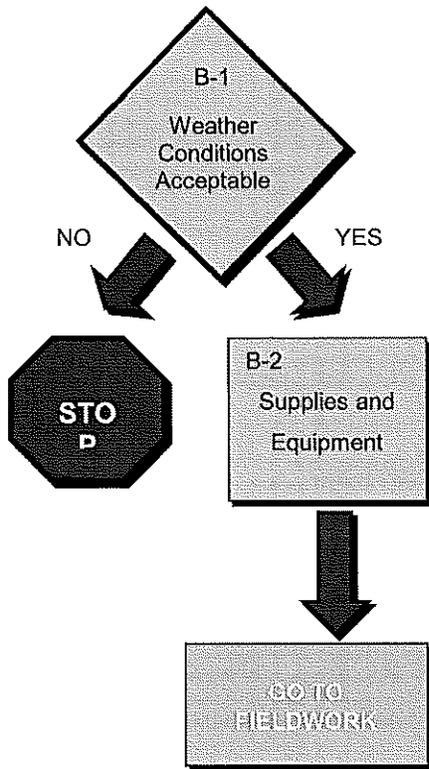
Traffic control must be conducted in accordance with the local community's traffic control requirements and individual company policy and procedures. Work required on the MDOT rights-of-way must follow the Michigan Manual of Uniform Traffic Control Devices.

A.3 INTENT OF WORK NOTIFICATION

If work is required on Michigan Department of Transportation (MDOT) rights-of-way, an Advanced Notice form must be completed and sent to the MDOT Transportation Service Center five days prior to the field visit. If work is being conducted on private property the landowner must also be notified at least one week prior to fieldwork. All local intent of work notifications must be followed.

B. FIELDWORK PREPARATION

Figure 2 - Preparation Flow Chart



B.1 WEATHER CONDITIONS

To minimize the chance of observing and sampling wet weather storm water flow, a dry weather period of 72 hours with less than 0.10 inches of total precipitation must be observed prior to sampling.

Screening phase fieldwork, therefore, must be planned several days in advance based on the precipitation totals and the forecast. Weather data should be checked prior to going into the field. This data can be obtained from the National Weather Service website www.weather.gov or commercial weather sites such as www.accuweather.com or from local rain gauges.

B.2 SUPPLIES AND EQUIPMENT

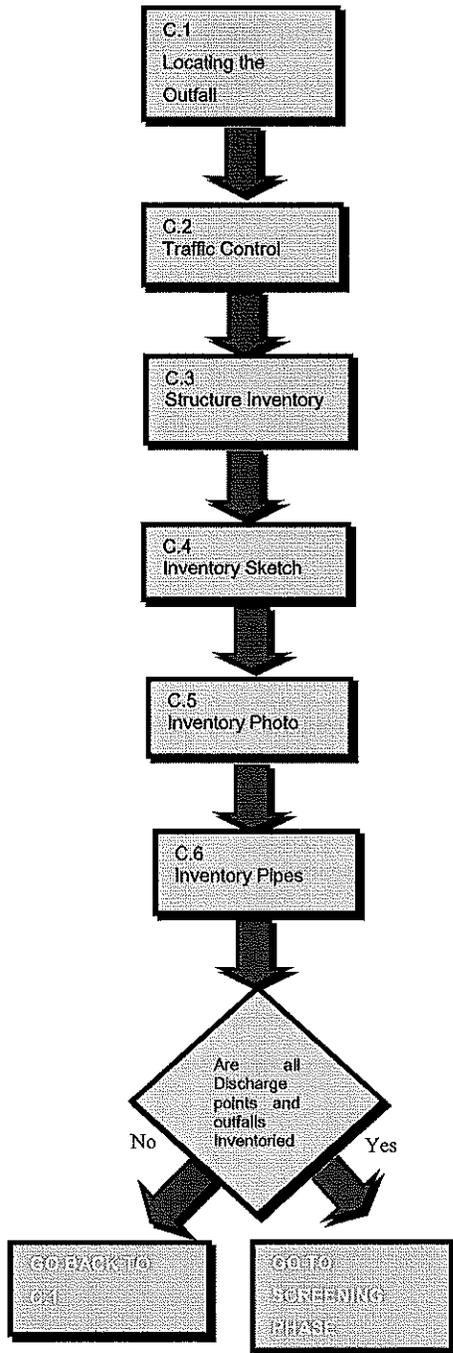
To insure that the proper equipment and supplies are available for field investigations, supplies and equipment should be inventoried prior to any scheduled fieldwork day.

A suggested list of supplies and equipment for field investigations is located in Appendix A.

At least once a week, field testing equipment must be calibrated against a known standard. The calibration instructions and procedures for using the pH pen are located in Appendix B. The thermometer should be verified by comparison with a certified thermometer. Each time the thermometer and pH pen are verified, the results must be recorded on a calibration log provided in Appendix B.

C. PHASE I INVENTORY FIELDWORK

Figure 3 - Inventory Flow Chart



The inventory phase will be the initial phase of fieldwork conducted in the IDEP investigation. This phase focuses on finding the structures, geo-referencing them, and documenting their physical characteristics. These characteristics include its latitude and longitude coordinate location, the type of structure, the size of the structure, and the number and size of conduits entering the structure. An inventory should be completed for each structure visited. Only one inventory should be conducted per structure, therefore, subsequent visits will not require an inventory sheet to be completed unless the structure has been altered.

During the inventory phase, the investigator will also identify the presence of dry weather flow and make physical observations of the site. This data will be recorded on the screening form in the database.

C.1 LOCATING THE DISCHARGE POINTS AND OUTFALLS

Identifying the location of structures in the field should be done by utilizing the previously mentioned maps submitted with the NPDES Phase II permit, in conjunction with municipal drainage system maps. If reliable latitude and longitude data is available a GPS unit may be used to locate the structures..

C.2 TRAFFIC CONTROL

As previously specified, traffic control must be conducted in accordance with the local municipality's traffic control requirements. Work required on the MDOT rights-of-way (ROW) must follow the Michigan Manual of Uniform Traffic Control Devices.

C.3 DRAINAGE SYSTEM INVENTORY

A brief description of each field is provided below.

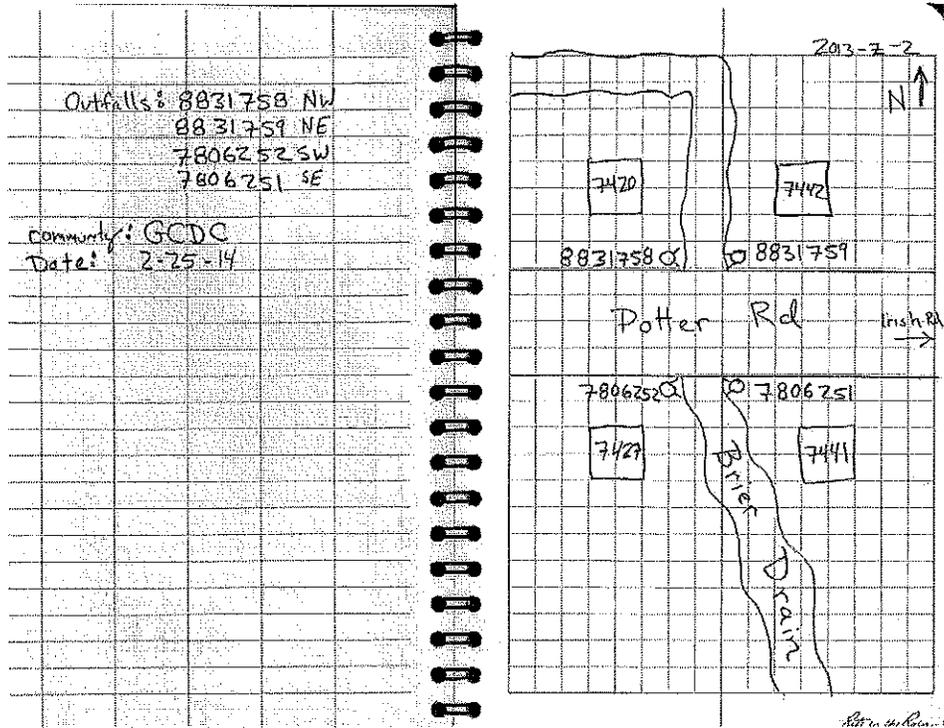
SELECTIONS

Date:	Date of fieldwork
Crew 1 & Crew 2:	Field crew initials
Structural ID:	Id of structure
County Assigned ID:	Same as Structural ID unless county assigned another ID
Structure Type:	Discharging Pipe, Manhole, Catch Basin, Culvert Outlet, Point in Open Channel, Not Found, Blind Tie or Tap, Non-Point Source
Ownership:	Public, private, GCDC, GCRC, other
Photo Number:	Number of photo (using identification board in photo)
Latitude/Longitude:	GPS location of structure
XY_Accuracy:	Sub-meter GPS, sub-centimeter GPS, estimates from USGS, estimated from Google Earth
Receiving Water Body:	Name of receiving water body (required)
Offset Description:	Description of structure offset
Inventory Comments:	Any comments by the field investigator

C.4 INVENTORY – SKETCH

Sketches are done in All-Weather Field Books and then scanned as an image and downloaded to the IDEP website. The inventory sketch is an opportunity to provide a diagram of the structure location in respect to buildings, rivers, and roads, or just to provide any visual description of the structure.

Figure 4 - Example of Sketch



C.5 INVENTORY – PHOTO

Inventory Photo is to take a snapshot of the structure for reference of a problem with structure or water quality. Use a camera and dry-erase board to identify the structure number, date and community. Put the Structure ID, community and date on the dry-erase board and place the board in front of the structure so you can identify the photo.

Figure 5 - Photo Label Sample



C.6 INVENTORY – PIPES

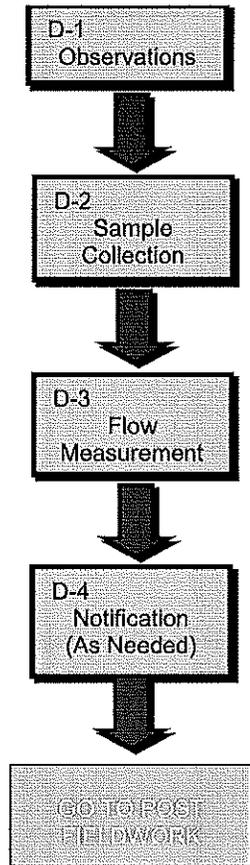
A pipe inventory data form must be completed for all conduits to and from the structure or making up the structure. These include a pipe discharging into a water body, an open channel, or the pipes entering and leaving a manhole. Multiple pipe inventory data forms can be filled out for one structure inventory or inventory sketch.

A brief description of each field is provided below.

Pipe ID:	City assigned ID (not required)
Pipe Direction:	N, NE, E, SE, S, SW, W, NW
Conduit Type:	Unknown, Pipe, Culvert End, Open Channel
Shape:	Unknown, Round, Rectangular, Elliptical, Open Channel
Diameter:	Diameter of pipe (inches)
Width:	Width of open channel or rectangular pipe (inches)
Depth:	Open channel (inches)
Measure Down:	Rim to manhole bottom (feet)
Invert Elevation:	Rim to pipe invert
Conduit Material:	Unknown, RCP, VCP, Brick, Poured-in-Place, PVC, Segmented Tile, Cast Iron, DIP, Corrugated Steel Pipe, Clay Tile Pipe, Other
Inlet/Outlet:	Inlet: flow entering a structure Outlet: flow leaving a structure
General Comments:	Any comments regarding the pipe

D. SCREENING PHASE FIELDWORK

Figure 6 - Fieldwork Flow Chart



The screening phase investigates each of the discharge points and outfalls identified during the inventory phase of the program for illicit connections. To conduct a screening on a structure, record physical observations, calculate flow rates, and take samples (if necessary).

Screenings may be repeated for structures if the results of a previous screening suggest that an illicit connection may be present. In this scenario, a new inventory of the structure is not needed, but a new screening record must be made in the database to show the results from that day's investigation. The observations, sample results, and flow measurements should all be recorded in the database.

Dry Weather Flow

Dry weather flow can be a valuable tool to determine the presence of illicit connections or discharges. Dry weather flow is flow that is observed 72 hours after the last rainfall greater than 0.10 inches and may indicate the presence of an illicit connection or discharge. Dry weather by itself may not indicate an illicit discharge problem however, as there are many sources of non-

storm water discharge like those listed in the introduction section of this manual. If dry weather flow alone is observed, other indicators should be explored that could provide further evidence of an illicit connection.

If no flow is present during the initial screening, but evidence such as staining or odor indicates an illicit connection may be present, a check for intermittent dry weather flow should be made. To check for intermittent flows, place a sandbag so that it is blocking the lower part of the flow channel of the pipe or open channel in question. If a dry weather flow check is required in a

manhole, a sandbag can be secured to a rope and lowered into position. Secure the top of the rope to a manhole step for easy retrieval. Sandbags should only remain in the conduit for a maximum of 1 to 2 days, and never when rain is forecasted. If water has ponded behind the sandbag and no rain has fallen, then intermittent flow is likely. Be sure to remove the sandbags after testing is completed.

D.1 OBSERVATIONS

Careful observation of conditions at an outfall structure is critical in determining the likelihood of an illicit connection within the upstream drainage system. Physical observations such as odor, staining, coloring, and deposition can strongly indicate an illicit discharge is present, even though no dry weather flow is observed. Observations of the receiving water body are also noted.

Odor:	None, Musty, Sewage, Rotten Egg, Gas, Oil, Other
Floatables:	None, Trash, Sewage, Bacterial Sheen, Oil Sheen, Suds, Other
Deposits/Stains:	None, Mineral, Sediment, Oily, Grease, Suds, Other
Vegetation:	None, Normal, Excessive, Algae, Slime
Structural:	Normal, Cracking, Spalling, Corrosion, Settlement, Other
Color:	Clear, Light Brown, Dark Brown, Green, Gray, Black, Other
Turbidity:	Enter #
Description:	Any observation of structure that needs to be addressed

RECEIVING WATER OBSERVATIONS

Odor:	None, Musty, Sewage, Rotten Egg, Gas, Oil, Other
Floatables:	None, Trash, Sewage, Bacterial Sheen, Oil Sheen, Suds, Other
Deposits/Stains:	None, Mineral, Sediment, Oily, Grease, Suds, Other
Vegetation:	None, Normal, Excessive, Algae, Slime
Structural:	Normal, Cracking, Spalling, Corrosion, Settlement, Other
Color:	Clear, Light Brown, Dark Brown, Green, Gray, Black, Other
Turbidity:	Enter #
Description:	Any observation of structure that needs to be addressed

Floatables

The occurrence of floatables in the storm sewer system can be one of the most defining pieces of

evidence. Floatables can consist of a variety of items including oil sheens, sewage, and sanitary trash, such as toilet paper. If sewage and/or sanitary trash are observed in the storm sewer system, it is an indicator that a sanitary system is connected. Floatables may naturally occur, like those found in streams and rivers, including algae, bryozoans, pollen, and oil-like sheens, which may actually be bacteria. Additional information on naturally occurring floatables is presented in Appendix D.

If floatables are observed in lakes or streams, an attempt to identify a relationship between these materials and any nearby discharge points and outfalls should be made. If it appears that the floatables are originating from a structure, it could be a sign of an illicit discharge.

Odor

Strong chemical or sewage odors in a storm sewer may indicate a potential illicit connection or discharge. If odors are detected, one should look for other indicators including floatables, dry weather flow, water color, and/or stains inside the manhole or pipes.

Foam

The occurrence of accumulations of foam in a storm sewer system may indicate an illicit connection or discharge. Foam can be a natural occurrence in streams and lakes, but if the foam is concentrated around a storm sewer, or appears to be originating from a structure, it may be an indication of an illicit connection or discharge in that system. Additional information on foam is shown in Appendix D.

Other Indicators

Other indicators, which may not be significant by themselves, can provide valuable additional evidence to any of the above indicators. These indicators include color, turbidity, the existence of stains or deposits, and the occurrence of excessive vegetation at the discharge point. The structural observations on the screening form are helpful for explaining sources of dry weather flow and do not necessarily indicate the presence of an illicit discharge.

Chemical Analysis

Chemical and physical testing is performed on dry weather flow water samples to determine if an

upstream investigation is warranted. Water samples for surfactant, ammonia, and E. coli are collected and submitted to a contract lab for analysis. A multi-parameter testing pen is used in the field to determine pH, temperature and specific conductance. Results of the field tests are noted on the screening form.

CHEMICAL ANALYSIS

Lab Sample ID:	ID tagged on lab sample
Surfactants:	mg/L
Ammonia:	mg/L
E.Coli	per100ml
Temperature:	Fahrenheit
pH:	
Specific Cond.:	µS

Results/Actions

As the inventory and screening process goes forward, decisions must be made about the best way to proceed. If the observations and testing are conclusive that no illicit discharge is likely to be present, then the investigation is concluded and no further work is done. If there is an indication that an illicit discharge is present, then further investigation is inventory required. Each form contains a listing of the options to follow based on the latest screening and lab results.

RESULTS/ACTIONS

Screening Results:	Illicit Connection Ruled Out, Illicit Connection, Pending, Notify County, Not a Point Source Discharge
Screening Actions:	None Required, Illicit Removed, Waiting on Lab Results, Dye Test, Televiser, Investigate Further, Illicit Connection
Analysis Comments:	Any analysis comments by user
Other values as indicated	

D.2 SAMPLE COLLECTION

When dry weather flow is observed, a sample of the flow must be collected for chemical analysis. Samples of standing water should not be collected. The samples are tested at an

analytical lab for ammonia, detergents, and *E-Coli*. In the field, temperature and pH are taken for each sample and recorded on the screening form. Samples should be collected prior to flow measurements in order to ensure undisturbed samples.

Free Fall Discharge Sampling

To sample free fall discharge, secure the appropriate bottles and fill out the required information on the bottle label. Remove the bottle cap with caution as not to spill any preservative inside. Place the bottle in the flow and collect sample to the top of the shoulder of the bottle. Do not overflow bottle. If possible, avoid the introduction of sediment or other debris in the sample. Replace the cap securely and store the sample on ice in a plastic cooler for transfer to the laboratory.

Open Channel Sampling

If flow is observed in an open channel, a disposable plastic syringe may be used to obtain a sample. You may obtain a sterile, 60 ml disposable plastic syringe from a scientific supply company such as Fisher Scientific Company or a veterinary supply company. Syringe a portion of sample from the flow stream taking care not to include sediment or debris in the sample. Transfer the sample from the syringe to the appropriate bottle and secure the cap. Store as above for transfer to the laboratory.

Manhole Pipe Sampling

Sampling flow in a manhole presents several challenges. Since any manhole is considered a confined space, a manhole may not be entered to obtain a sample. Instead, a telescopic extension rod is used to reach the pipe to be sampled. Depending on the conditions in the manhole at the time of sampling, either a bottle holder or a syringe can be used to obtain a sample. To avoid confusion, label all bottles before sampling begins.

- **Bottle Holder Sampling Method**
 - If sufficient flow is observed coming from a pipe that enters the manhole above the bottom, and there is enough room to do so, a sample bottle holder may be attached to the end of a telescopic rod. Telescopic sampling poles and bottle holding hardware are available from many environmental sampling supply companies.

- Lower the bottle beneath the flowing pipe and fill with sample. As noted above, do not overflow the bottle and avoid introducing sediment and debris to the sample.
 - Carefully bring the bottle back to the surface, replace cap, and store as above.
- **Syringe Method**

If a pipe enters the manhole at or near the bottom, or if sampling a pipe using the Bottle Holder Sampling Method is not practical, then the Syringe method may be used. See Appendix E, Fig1.

 - Secure a light string such as masons twine to the plunger of a sterile, disposable plastic syringe and secure the barrel of the syringe to the end of a telescoping extension rod with heavy-duty tape (duct tape works best). A photo of this sampler is provided in Appendix E.
 - While holding the string, extend the telescopic rod until the tip of the syringe enters the flow. To avoid introducing sediment into the sample and clogging the tip of the syringe, hold the tip of the syringe above the bottom of the pipe.
 - Gently pull the string until the plunger of the syringe is fully extended and the barrel is full of sample.
 - Bring the syringe full of sample back to the surface and fill the appropriate sample bottle(s).
 - Repeat as necessary until all the sample bottles have been filled.
 - Discard used syringe and store filled sample bottles as above.

Complete a chain of custody form for all samples prior to delivery to the lab.

Field Testing

Temperature and pH are measured in the field immediately after the collection of a sample with a calibrated thermometer and pH pen. The calibration methods are located in Appendix B. The results are recorded in the field database.

Laboratory Testing

Prepared sample bottles from the laboratories are to be picked up prior to the screening activities. Water samples will be collected for both the chemical parameter tests and the microbiology tests, where possible, and sent to the respective laboratories for analysis. Samples should arrive at the testing lab in a timely manner. Samples should be kept cool until delivered to the laboratory. This requires storing samples on ice on warm days. Microbiology tests have a hold time of 6

hours between the time when the sample is collected and when the sample needs to be at the laboratory. Due to the nature of this work, this hold time may need to be exceeded. The microbiology samples should be dropped off at the lab by the end of the day in which the samples were taken. All other samples are sent to the designated laboratory via overnight courier.

Table 1 summarizes the chemical parameters being tested and corresponding bottle characteristics. Refer to Appendix G for testing laboratory contact information. Upon receiving results, the data must be entered into the database.

Table 1 - Sample Parameter Information

Analyze	Test Method	Bottle Type/Size	Preservative	Hold Time
Ammonia	SM 2340C/ EPA 130.2	150 mL plastic	Sulfuric Acid (H ₂ SO ₄)	28 days
E. Coli	EPA 340.2/300	100 mL sterile plastic	Thiosulfate	6 hours
Surfactant (Detergent)	SM 5540C	250 mL plastic	None	48 hours

Notes: All samples are grab samples.
All bottles are pre-prepared by the laboratory.

D.3 FLOW MEASUREMENTS

Dry weather flow rate measurements are intended to provide an estimate of the existing flow rate. Field crews should make an initial assessment regarding the level of effort required to estimate flows. If flow measurements require more than approximately 10 to 15 minutes to perform, note the flow depth, approximate velocity, and pipe size so that flow data can be calculated. Flow estimates should not become the primary focus of the dry weather field screening activities. Flow measurements should be performed only after a water quality grab sample has been collected to avoid disturbing bottom sediments. The results will be recorded in the screening form of the field database on Page 2 (See Appendix I).

Three methods are outlined for estimating dry weather flow rates at field screening points. These methods include (1) measuring the time it takes to fill a bucket; (2) measuring area and velocity, and calculating flow as the cross-sectional area times the average velocity; and (3) measuring the depth, width, and slope of the channel and calculating the flow based on Manning's equation.

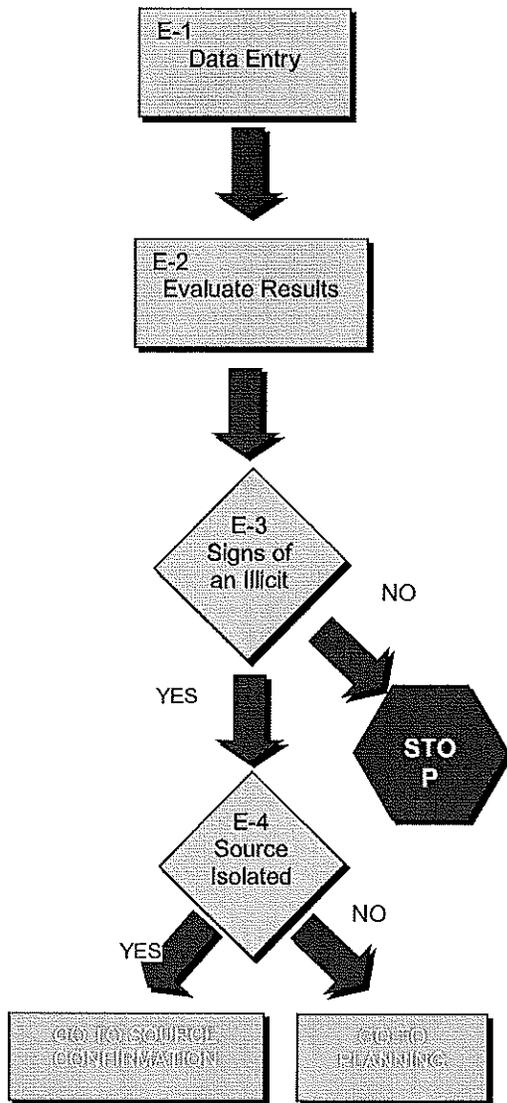
Information on calculating flow is found in Appendix F.

D.4 NOTIFICATION

If the source to an obvious illicit connection or discharge is known (i.e. sanitary line connected to the storm sewer system), follow the procedures outlined above to record the connection and immediately notify the municipality (see G. Notification section).

E. PHASE I AND PHASE II POST FIELDWORK

Figure 7 - Post Fieldwork Flow Chart



Post fieldwork is required for both the inventory phase and the screening phase fieldwork. The inventory phase post fieldwork primarily focuses on consolidating the data, identifying if any obvious illicit connections exist from observations recorded, and preparing a summary of those structures that need to be investigated in the screening phase.

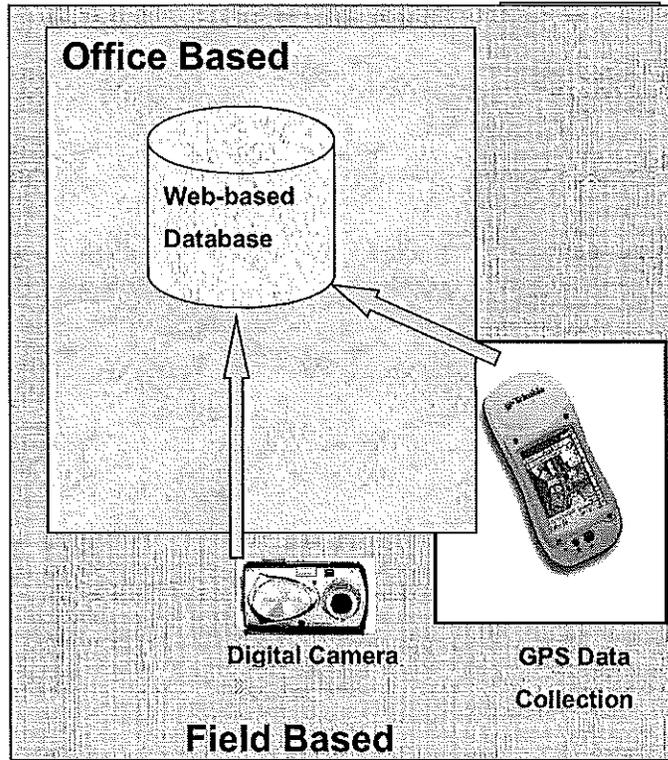
The post fieldwork for the screening phase includes consolidating the data, evaluating the laboratory and observation results, determining if follow-up work is needed, and identifying if an illicit connection is likely present.

E.1 DATA ENTRY

All inventory and screening information must be routinely entered into the web-based database. Data from fieldwork should be entered into the database as soon as is practical following fieldwork. Progress and data summary reports can be compiled from the database. See Figure 8.

Figure 8 - IDEP Data Management System

Illicit Discharge Elimination Data Management System



E.2 EVALUATE RESULTS

Once the laboratory analysis is completed, the results are compiled into the screening section of the database by going through the SQL edit. Once the results are documented, a determination can be made regarding the likelihood of an illicit connection or discharge. Figure 9 shows the parameter cut-off limits for the chemical parameters being tested indicating whether the sample results are out of the "normal" range.

Figure 9 - Parameter Cut-Off Limits

Parameter	Illicit Likely	Illicit Unlikely
Bacteriological (<i>E. Coli</i>)	>2500 colonies/100 ml	<2500 colonies/100 ml
Surfactants (Detergents)	>0.25 mg/l	<0.25 mg/l
Ammonia	>1.0 mg/l	<1.0 mg/l
Temperature	>72°	<45°
pH	>9.0	<6.0

Chemical parameters are only a portion of the decision in identifying the presence or absence of an illicit connection or discharge. The flow rate, visual observations, and the chemical results must all be considered.

Reporting a Suspected Illicit Discharge

If laboratory results and/or field observations indicate that an illicit discharge is likely and follow-up investigation to find the source is required, then a written report must be made to GCDC within 5 days. The report shall contain the outfall number where the suspected discharge was found, the location of the outfall, the laboratory results or observations that indicate a problem, and any other pertinent information that will be helpful in finding and removing the illicit discharge.

E.3 SIGNS OF AN ILLICIT?

Based on the results evaluation, if an illicit connection or discharge is likely present, then further work is needed to isolate the source. Dry weather flow and sediment must be investigated

further to confirm the source. A windshield survey should be conducted to locate potential sources of water and sediment throughout the drainage area. If excessive sediment is a significant issue, a catch basin survey should be conducted in addition to the windshield survey to try and track the source of the problem. If there is no indication of an illicit connection or discharge, then the appropriate results should be recorded by editing the record in the Access database.

E.4 SOURCE ISOLATED?

If the investigation results suggest that there is a potential illicit discharge within the drainage system, then follow-up investigations will be required. Tracking a potential illicit discharge through a sewer system is limited to the access points of the sewer system. Key points or confluences within the drainage area should be targeted and investigated using the methodology discussed in previous sections. The discharge point or outfall must be sampled each time the drainage system is visited and structures are investigated and sampled within it. Investigations should continue until the problem is isolated between one or two stretches of pipe. Once the source has been isolated to a specific reach, the task will become source confirmation.

Sound Testing

Sound testing can be used to quickly determine the pipe connectivity within an underground sewer system. This method relies on the ability of open piping to conduct sound over great distances and is especially efficient in large diameter pipes (e.g. 12 inch pipes or larger). While this testing method has limitations, it is a quick method for tracing piping upstream from an outfall to find the source of dry weather flow or an illicit discharge. Once the possible source of an illicit discharge is found, a dyed water test should be used to positively identify the location of the source.

To conduct a sewer connectivity sound test, proceed as follows:

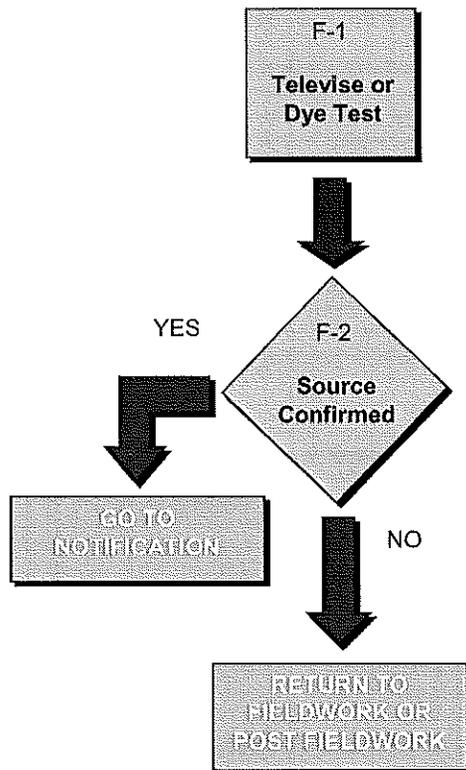
- Station one person (the listener) at the downstream outfall, catch basin, or manhole. If the downstream end is a manhole, remove the cover taking all appropriate safety measures. Position the listener so that they are in close proximity to the outfall pipe in question, or so they can listen directly over the manhole or catch basin.
- A second person (the striker) proceeds to the next upstream manhole or catch basin

and, using a light sledge hammer or similar device, strikes the structure with enough force so that the listener can hear the sound through the pipe system. To help eliminate background noise interference, the striker should hit the structure cover in a rhythmic fashion with a short, evenly spaced pause between strikes.

- An absence of sound between structures may mean that there is no connection between the structures. Bear in mind that underground pipes may be crushed or contain water or debris that prevents sound from travelling between two structures. A positive sound test may be bright and clear or, in some instances, faint and echoed depending on a number of factors including distance, pipe size, multiple connections, and compromised pipes.
- If a positive test is confirmed, repeat the process, if necessary, moving upstream through the system.

F. SOURCE CONFIRMATION

Figure 10 - Source Confirmation Flow Chart



F.1 TELEVISIONING AND DYE TESTING

An illicit connection can be connected directly into the manhole or can be connected into the system between manholes, where visual observations of the illicit connection cannot be made. In these instances, televising the storm sewer line may be utilized. This method is also valuable when access to private property is not available to conduct dye testing.

Dye testing should be utilized to confirm the source of an illicit connection. The building owners and/or tenants must be contacted to acquire available building plans and to set up an appointment to conduct the site visit. This notification should be coordinated through the municipality. A permit must be submitted to the MDEQ to obtain permission to dye test. Once the permit has been

approved, the MDEQ must be notified prior to all dye testing and only approved dyes may be used. Additional notifications to the local Health Department, Fire, and Police Departments may be required and should be coordinated through the local municipality.

F.2 SOURCE CONFIRMED

If the source is not confirmed, additional fieldwork or dye testing will be necessary. If the source is identified, refer to the notification procedure section.

G. NOTIFICATION

G.1 NOTIFICATION OF ADDITIONAL DISCHARGE POINTS AND OUTFALLS

Requirements

The general watershed-based storm water NPDES permit (Permit No. M1G619000) has the following requirements for notification of additional Discharge points and outfalls:

If the permittee becomes aware of any storm water drainage system discharges which were not identified in the application, the permittee shall provide the following information to the Department as part of the annual progress report (Part I.B.3.):

- a. the location of the discharge of storm water for which coverage is requested,*
- b. the receiving water for the discharge, and*
- c. any necessary updates to the map of the drainage area indicating the hydrologic boundary and approximate square miles of the coverage area (originally submitted with the application).*

These requirements can be satisfied by providing an updated map of the permittee's separate storm water drainage system.

G.2 NOTIFICATION OF ILLICIT DISCHARGES AND/OR CONNECTIONS

Requirements

Compliance with all requirements set forth in the Federal Act, Parts 31 and 41 of the Michigan Act, and related regulations and rules is required. All instances of noncompliance shall be reported as follows:

- a. 24 Hours Reporting – Any noncompliance which may endanger health or the environment (including daily maximum discharge limitation exceedances) shall be reported, verbally, within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within five (5) days.
- b. Other Reporting – The permittee shall report in writing all other instances of

noncompliance not described in a. above at the time monitoring reports are submitted; or, in the case of retained self-monitoring, within five (5) days from the time the permittee becomes aware of the noncompliance.

Written reporting shall include: (1) a description of the discharge and cause of noncompliance; and (2) the period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and the step taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

G.3 REPORTING OTHER FIELD OBSERVATIONS

During IDEP investigation activities, notable deficiencies such as broken or failing infrastructure, field observations that are inconsistent with maps, or activities that compromise water quality may be noted by field staff. Any observations of this nature must be added to the screening comments on the IDEP field form and reported to GCDC in a timely manner.

If an activity is noted that is an immediate threat to public health such as a possible hazardous material spill or leak, call and report the incident to 911 and then contact GCDC and inform them of the situation. Activities that threaten water quality but are not an emergency should be reported to GCDC as soon as possible. These situations include dumping or leaking of garbage or pet waste, dumping lawn clippings or other yard waste into a drain or catch basin, disposing of oil, paint, or other materials into a storm sewer, or other violations of Stormwater Good Housekeeping Best Management Practices.

Damage to storm water infrastructure should also be noted and reported to GCDC. This includes damage to pipes, catch basins, manholes, etc. as well as erosion along a riparian buffer or around an outfall pipe. These observations should be included in weekly or bi-weekly updates to GCDC.

Appendix A
Supplies and Equipment

Example Field Equipment and Supplies List

- Traffic Safety
 - Arrow Board
 - Traffic Cones
 - Safety Vest
 - Truck
- Inventory
 - Data forms, clipboard
 - Handheld GPS with Differential Receiver
 - Manhole hook
 - Grade Rod
 - Survey Tape
 - Folding Ruler
 - Sledge hammer
 - Survey Wheel
- Screening
 - Stop Watch or a watch with a second hand
 - Water Marking Paste
 - Grade Rod Fitted for Sample Removal. Disposable syringes mounted to grade rod with pull string and duct tape
 - Disposable 60 ml Syringes
 - pH Pen
 - Thermometer
 - Sample bottles laboratory (automated partial chemistry)
 - Sample bottles from Health Department (microbiology)
 - Instrument Cleaning Supplies
 - Cooler
- Miscellaneous
 - Camera, flash, film, 200 ASA color
 - Mobile Phone and/or Pager
 - Flash Light
 - Mirror (for shining into manholes)
 - Marking Paint, case
 - Storm Drainage Maps
 - Phone Numbers (office staff, emergency)
 - Permit to work in MDOT ROW
 - Business Cards and/or Field Badge
 - Metal detector
 - Spray paint
 - Two spades/shovels
 - Waders
 - Fluorescent dye
 - Corks, fish bobbers, etc.
 - Pencils, pens, sharpener
 - Daily field log to summarize activities
 - Truck log
 - Accident/ incident report form
 - Insurance/registration
 - Sunscreen and bug spray
 - Antibacterial hand sanitizer (waterless)
 - First Aid Kit

Appendix B
pH Pen Calibration Instructions

pH

Pocket Pal pH Tester

Range: 0 – 14 pH units

Procedure

1. Turn on unit.
2. Remove protective cap from the bottom
3. Immerse the bottom of the Pocket Pal 1 to 3½ inches into the sample.
4. Using the Pocket Pal, gently stir the sample for several seconds. After stirring, and when the digital display stabilizes, read the pH value.
5. Rinse the bottom of the Pocket Pal and replace the protective cap.
6. For faster response and longer tester life, place several drops of DI water in the protective cap to prevent the glass bulb from drying out between uses.

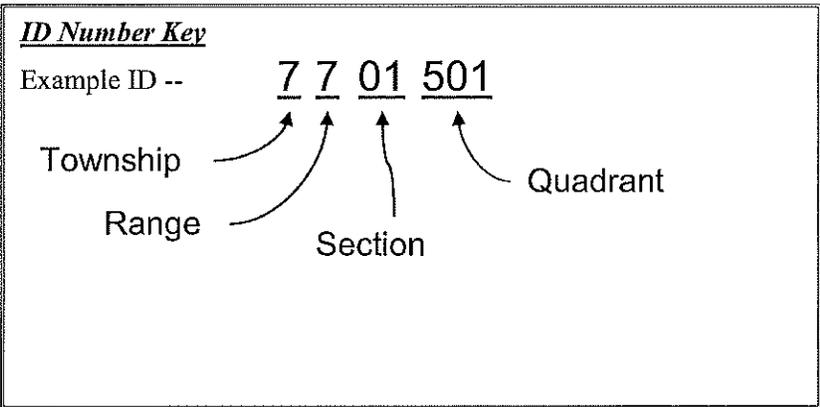
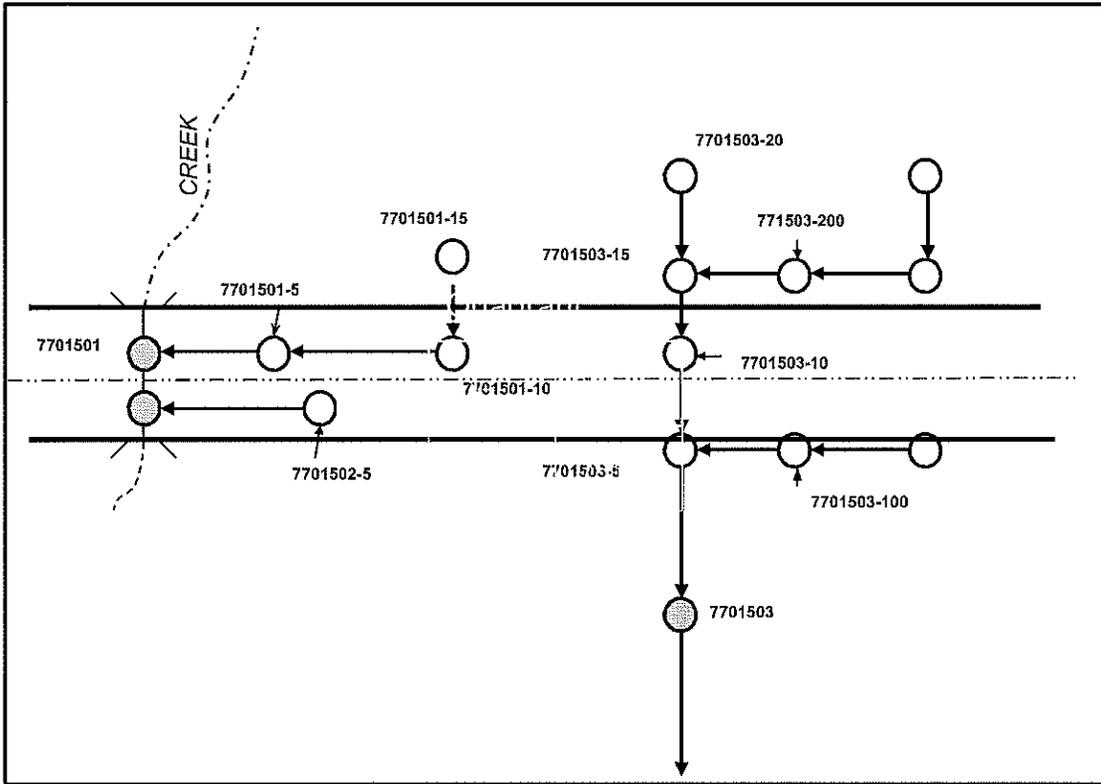
Calibration

1. Prepare a pH 7.00 and a pH 4.00 or 10.00 buffer solution.
2. Measure the pH using the tester.
3. If necessary, adjust the Calibration Trimmer (small screws on back) until the reading corresponds to the pH of the buffer.

Notes

- Soak the electrode tip in tap water for a few minutes each week to condition the electrode.
- If pH readings become erratic, replace the batteries.
- Potassium chloride, used as a reference solution electrolyte, may deposit on the tester as a white precipitate. Although the precipitate is normal and does not affect performance, it may be removed with a damp cloth or tissue.

Appendix C
Structure Numbering



Quadrant Key

1-250	251-500
501-750	751-999

Appendix D
MDEQ Fact Sheets

Appendix E
Sampling Devices

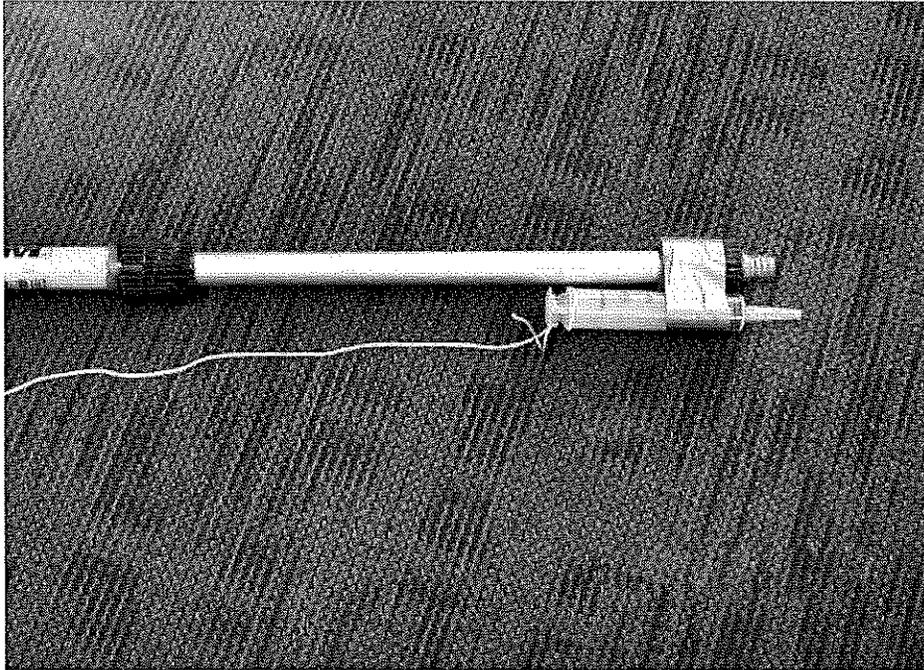


Fig 1 - Syringe Sampling Setup

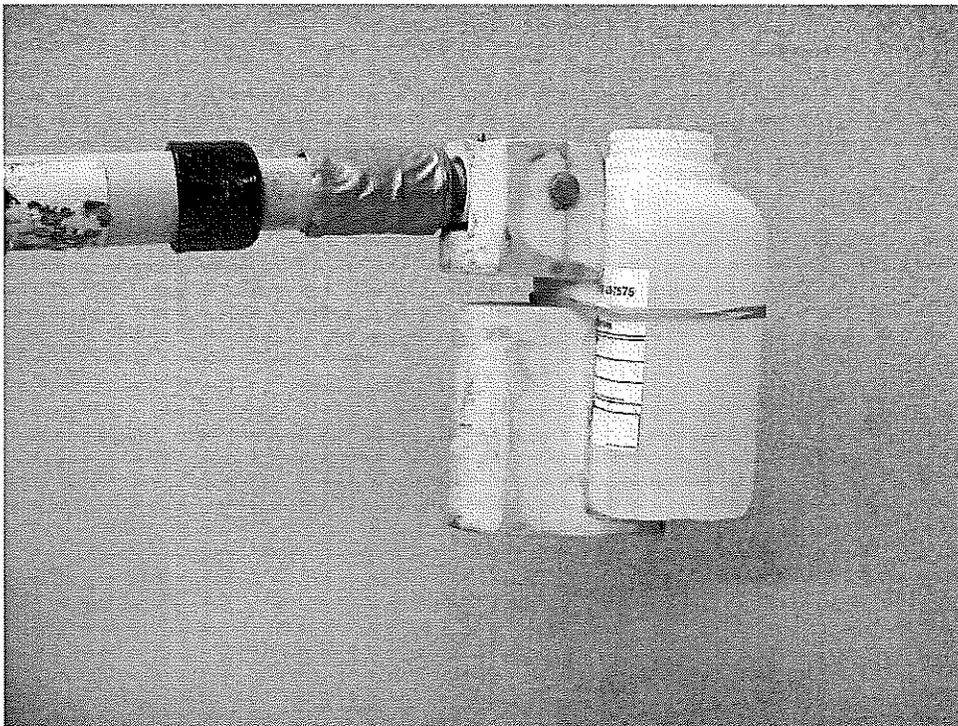


Fig 2 - Bottle Holder Sampling Setup

Appendix F
Flow Measurement Methods

Bucket Method

This method is typically limited to locations where there is free fall of water at the discharge point. The free fall must be high enough and concentrated along a narrow area so that a calibrated container can be positioned to collect all of the flow.

Equipment Needed:

1. Wide mouthed container(s) (bucket) graduated in known volume increments.
2. Stopwatch.

Procedure:

1. Place container under flow discharge point so that entire flow is collected.
2. Measure the time it takes to fill the bucket to a known volume.
3. Record the time duration and the volume.
4. Repeat Steps 1 through 3 at least once. Repeat steps at least twice, if the results vary by more than 20 percent.
5. Calculate the average time.
6. Compute the flow rate as follows: (Calculations to be done in the office).

$$Q = V/t$$

where:

Q = flow rate

V = volume

t = time required

7. Convert the calculated flow rate to liters per second.

Channel/Pipe Measurements

The second method for estimating flow requires channel measurements. The cross-sectional area of the flowing water and velocity must be estimated. This method should be used to estimate flow rates in pipes or channels where a significant, measurable, or steady velocity is observed and cross-sectional measurements can be readily obtained. The channel measurements can be fairly accurately measured for pipes of a known diameter. However, open channel measurements will generally rely on estimates of a top and bottom width. Velocity

measurements will be performed using floats and a stopwatch. Channel pipe flow calculations will be performed in the office.

Equipment Needed:

1. Depth Measurement Rod.
2. Tape Measure.
3. Float(s). These might include corks, fishing bobbers, wooden sticks, sticks and leaves, Cheerios, orange peel, or popcorn. If the float is not recoverable, then only objects that are non-objectionable in streams should be used.
4. Stopwatch.

Procedure:

1. Locate a relatively uniform section of the channel/pipe between 3 to 10 feet long.
2. Mark off a known length of the channel/pipe using available objects, such as rocks or sticks. If the site is at a manhole the diameter (typically 4 feet) of the manhole can be used as the travel length. If the discharge point location is at the end of a pipe and is accessible, a yardstick can be placed into the pipe or measure the length of a pipe section with a tape measure or folding ruler.
3. Use the stopwatch to measure the time required in seconds for a float to travel the marked off distance. If conditions are windy, it is desirable to have a float that is partially submerged. The float can be inserted upstream and timed as it passes the starting point. If swirls or eddies are observed, or if the flow depth is not very deep, this technique may not be applicable.
4. Step No. 3 should be repeated at least twice. If the velocity measurements vary by more than 20 percent a fourth measurement should be performed. The measurements should be averaged after dropping any outliers.
5. Measurements to calculate the cross-sectional area of the discharge should be obtained. For flow in a pipe, measure the depth of flow and the size of the pipe (if the pipe is other than round, sufficient measurements are needed to fully describe the shape of the pipe). For flow in a natural channel, measure the depth of flow, the bottom width of the channel, and the width of the channel at the flow surface.

6. Calculate the cross-sectional area of the flow. Calculations are to be done in the office. The following equations or (for partially filled circular pipes) may be used.

Rectangular Pipes: area = width * depth

Trapezoidal Channels: area = (top width + bottom width)/2 * depth

Circular Pipes:

$$A = \frac{d^2}{4} (\Theta - \sin(\Theta)\cos(\Theta))$$

$$\Theta = \cos^{-1}\left(1 - \frac{2y}{d}\right)$$

where:

A = Area

d = diameter of pipe

y = depth of flow

7. Calculate the flow rate and express the result in units of liters per second. Calculations are to be done in the office.

Flow = Area * Velocity

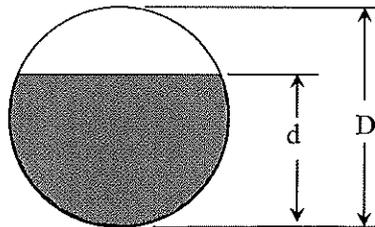
Table F-1 Area of Partial Filled Round Pipe

Diameter(in)	8	10	12	15	18	24	27	30	36	42	48	54	60
Diameter(ft)	0.67	0.83	1.0	1.3	1.5	2.0	2.3	2.5	3.0	3.5	4.0	4.5	5.0
Depth (ft)	Area (sf)												
0.05	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03
0.10	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.08	0.09	0.09
0.15	0.06	0.07	0.07	0.08	0.09	0.11	0.11	0.12	0.13	0.14	0.15	0.16	0.17
0.20	0.09	0.10	0.11	0.13	0.14	0.16	0.17	0.18	0.20	0.22	0.23	0.25	0.26
0.25	0.12	0.14	0.15	0.17	0.19	0.23	0.24	0.26	0.28	0.31	0.33	0.35	0.37
0.30	0.15	0.18	0.20	0.23	0.25	0.30	0.32	0.33	0.37	0.40	0.43	0.46	0.48
0.40	0.22	0.26	0.29	0.34	0.38	0.45	0.48	0.51	0.56	0.61	0.65	0.70	0.74
0.50	0.28	0.34	0.39	0.46	0.52	0.61	0.66	0.70	0.77	0.84	0.91	0.97	1.02
0.60	0.33	0.42	0.49	0.58	0.66	0.79	0.85	0.91	1.01	1.10	1.18	1.26	1.33
0.70		0.49	0.59	0.71	0.81	0.98	1.06	1.13	1.25	1.37	1.48	1.58	1.67
0.80		0.54	0.67	0.83	0.96	1.17	1.27	1.35	1.51	1.66	1.79	1.91	2.03
0.90			0.74	0.95	1.11	1.37	1.49	1.59	1.78	1.96	2.12	2.26	2.40
1.00			0.79	1.05	1.25	1.57	1.71	1.83	2.06	2.27	2.46	2.63	2.80
1.10				1.14	1.39	1.77	1.93	2.08	2.35	2.59	2.81	3.01	3.20
1.20				1.21	1.52	1.97	2.16	2.33	2.64	2.92	3.17	3.40	3.62
1.30					1.63	2.16	2.38	2.58	2.94	3.25	3.54	3.81	4.06
1.40					1.72	2.35	2.60	2.83	3.23	3.59	3.92	4.22	4.50
1.50					1.77	2.53	2.82	3.08	3.53	3.94	4.30	4.64	4.95
1.60						2.69	3.02	3.32	3.83	4.29	4.69	5.07	5.42
1.70						2.85	3.22	3.55	4.13	4.64	5.09	5.50	5.89
1.80						2.98	3.41	3.78	4.43	4.99	5.48	5.94	6.36
1.90						3.08	3.58	4.00	4.72	5.33	5.88	6.38	6.85
2.00						3.14	3.73	4.21	5.01	5.68	6.28	6.83	7.33
2.10							3.86	4.40	5.29	6.03	6.68	7.28	7.83
2.20							3.95	4.58	5.56	6.37	7.08	7.73	8.32
2.30								4.72	5.82	6.70	7.48	8.18	8.82
2.40								4.84	6.06	7.03	7.87	8.63	9.32
2.50								4.91	6.29	7.35	8.26	9.07	9.82
2.60									6.51	7.66	8.65	9.52	10.32
2.70									6.70	7.96	9.02	9.96	10.82
2.80									6.87	8.25	9.40	10.40	11.31

Diameter(in)	8	10	12	15	18	24	27	30	36	42	48	54	60
2.90									7.00	8.52	9.76	10.84	11.81
3.00									7.07	8.78	10.11	11.26	12.30
3.10										9.01	10.45	11.68	12.79
3.20										9.22	10.78	12.10	13.27
3.30										9.40	11.09	12.50	13.75
3.40										9.54	11.38	12.89	14.22
3.50										9.62	11.66	13.27	14.68
3.60											11.91	13.64	15.13
3.70											12.14	13.99	15.58
3.80											12.33	14.33	16.01
3.90											12.48	14.64	16.43
4.00											12.57	14.94	16.84
4.10												15.21	17.23
4.20												15.45	17.61
4.30												15.65	17.96
4.40												15.82	18.30
4.50												15.90	18.61
4.60													18.90
4.70													19.15
4.80													19.37
4.90													19.54
5.00													19.63

Table F-2 Area and Hydraulic Radius for Various Flow Depths

d/D	A/D ²	R/D	d/D	A/D ²	R/D	d/D	A/D ²	R/D
0.01	0.0013	0.0066	0.36	0.2546	0.1978	0.71	0.5964	0.2975
0.02	0.0037	0.0132	0.37	0.2642	0.2020	0.72	0.6054	0.2987
0.03	0.0069	0.0197	0.38	0.2739	0.2062	0.73	0.6143	0.2998
0.04	0.0105	0.0262	0.39	0.2836	0.2102	0.74	0.6231	0.3008
0.05	0.0147	0.0326	0.40	0.2934	0.2142	0.75	0.6319	0.3017
0.06	0.0192	0.0389	0.41	0.3032	0.2182	0.76	0.6405	0.3024
0.07	0.0242	0.0451	0.42	0.3130	0.2220	0.77	0.6489	0.3031
0.08	0.0294	0.0513	0.43	0.3229	0.2258	0.78	0.6573	0.3036
0.09	0.0350	0.0575	0.44	0.3328	0.2295	0.79	0.6655	0.3039
0.10	0.0409	0.0635	0.45	0.3428	0.2331	0.80	0.6736	0.3042
0.11	0.0470	0.0695	0.46	0.3527	0.2366	0.81	0.6815	0.3043
0.12	0.0534	0.0755	0.47	0.3627	0.2401	0.82	0.6893	0.3043
0.13	0.0600	0.0813	0.48	0.3727	0.2435	0.83	0.6969	0.3041
0.14	0.0668	0.0871	0.49	0.3827	0.2468	0.84	0.7043	0.3038
0.15	0.0739	0.0929	0.50	0.3927	0.2500	0.85	0.7115	0.3033
0.16	0.0811	0.0986	0.51	0.4027	0.2531	0.86	0.7186	0.3026
0.17	0.0885	0.1042	0.52	0.4127	0.2562	0.87	0.7254	0.3018
0.18	0.0961	0.1097	0.53	0.4227	0.2592	0.88	0.7320	0.3007
0.19	0.1039	0.1152	0.54	0.4327	0.2621	0.89	0.7384	0.2995
0.20	0.1118	0.1206	0.55	0.4426	0.2649	0.90	0.7445	0.2980
0.21	0.1199	0.1259	0.56	0.4526	0.2676	0.91	0.7504	0.2963
0.22	0.1281	0.1312	0.57	0.4625	0.2703	0.92	0.7560	0.2944
0.23	0.1365	0.1364	0.58	0.4724	0.2728	0.93	0.7612	0.2921
0.24	0.1449	0.1416	0.59	0.4822	0.2753	0.94	0.7662	0.2895
0.25	0.1535	0.1466	0.60	0.4920	0.2776	0.95	0.7707	0.2865
0.26	0.1623	0.1516	0.61	0.5018	0.2799	0.96	0.7749	0.2829
0.27	0.1711	0.1566	0.62	0.5115	0.2821	0.97	0.7785	0.2787
0.28	0.1800	0.1614	0.63	0.5212	0.2842	0.98	0.7816	0.2735
0.29	0.1890	0.1662	0.64	0.5308	0.2862	0.99	0.7841	0.2666
0.30	0.1982	0.1709	0.65	0.5404	0.2881	1.00	0.7854	0.2500
0.31	0.2074	0.1756	0.66	0.5499	0.2900			
0.32	0.2167	0.1802	0.67	0.5594	0.2917			
0.33	0.2260	0.1847	0.68	0.5687	0.2933			
0.34	0.2355	0.1891	0.69	0.5780	0.2948			
0.35	0.2450	0.1935	0.70	0.5872	0.2962			



Manning's Equation

Manning's equation can be used under certain circumstances to provide an estimate of the flow rate without velocity measurements. Manning's equation requires measurements of the channel cross-section, depth of flow, and slope of the channel, and a roughness coefficient, n , must be estimated. Manning's equation should only be used where the cross-section of the channel or pipe is uniform, the slope and roughness of the channel can be estimated, where measurements are taken at the upstream end of a uniformly sloping channel and where flow discharges freely with no backwater or impoundment due to a downstream condition. Slope of the channel should either be taken off as-builts or should be surveyed.

Equipment Needed:

1. Tape measure and/or depth measuring rod.

Procedure:

1. Measurements to calculate the cross-sectional area of the discharge should be obtained. For flow in a pipe, measure the depth of flow and the size of the pipe (if the pipe is other than round, sufficient measurements are needed to fully describe the shape of the pipe). For flow in a natural channel, measure the depth of flow, the bottom width of the channel, and the width of the channel at the flow surface.
2. Additional observations should include information to determine Manning's roughness coefficient. If possible, photographs should be taken of channel to help select the Manning roughness coefficients.
3. Calculate flows using the Manning equation. All calculations are to be done in the office. The Manning equation is:

$$Q = \frac{c1}{n} A^{(5/3)} P_w^{-(2/3)} \sqrt{S}$$

Rectangular Channels

$$A = by$$

$$P_w = b + 2y$$

Trapezoidal Channels

$$A = \frac{y(b+B)}{2}$$

$$P_w = b + 2\sqrt{y^2 + \left(\frac{B-b}{2}\right)^2}$$

Circular Channels

$$A = \frac{d^2}{4}(\Theta - \sin(\Theta)\cos(\Theta))$$

$$P_w = \Theta d$$

$$\Theta = \cos^{-1}\left(1 - \frac{2y}{d}\right)$$

where:

Q = flow (cms)

c1 = 1.0 for cms; 1.49 for cfs.

n = Manning's roughness coefficient

A = Area (square feet)

P_w = Wetted Perimeter (ft)

S = Channel Slope (ft/ft)

y = depth of water (ft)

d = diameter (ft)

b = bottom width (ft)

B = top width (width at water surface) (ft)

Table F-3 Typical Manning's Roughness Coefficient Values

Description	n
A. Closed Conduits Flowing Partly Full	
Cast Iron	
Coated	0.013
Uncoated	0.014
Corrugated Metal	
Subdrain	0.019
Storm drain	0.024
Concrete	
Culvert	0.013
Sewer	0.014
Clay	
Vitrified sewer	0.013
B. Lined or Built-up Channels	
Concrete	
Trowel Finish	0.013
Float Finish	0.015
Finished, with gravel on bottom	0.017
Unfinished	0.017
Concrete bottom float finished with sides of	
Dressed stone in mortar	0.017
Random stone in mortar	0.020
Cement rubble masonry	0.025
Gravel bottom with sides of	
Formed concrete	0.020
Random stone in mortar	0.023
Dry rubble or rip-rap	0.033
Asphalt	
Smooth	0.013
Rough	0.016
C. Excavated or Dredged	
Earth, straight and uniform	
Clean, recently completed	0.018
Clean, after weathering	0.022
Gravel, uniform section, clean	0.025
With short grass, few weeds	0.027
Earth, winding and sluggish	
No vegetation	0.025
Grass, some weeds	0.030
Dense weeds or aquatic plants in deep channels	0.035
Earth bottom and rubble sides	0.030
Stony bottom and weedy banks	0.035
Cobble bottom and clean sides	0.040
Channels not maintained, weeds and brush uncut	
Dense weeds, high as flow depth	0.080
Clean bottom, brush on sides	0.050

* Source: Open-Channel Hydraulics by Ven Te Chow, Ph.D. 1959

Appendix G
Contact Information

The following contact information is offered for this project.

Table G-1 Tetra Tech Contact Information

Name	Contact Information	Responsibilities
Steve Pennington	Tetra Tech 401 S. Washington Sq. Suite 100 Lansing, MI 48933 Office: (517) 316-3958 Cell: (517) 204-9232	Project Manager
Natalie Trotter	Tetra Tech 401 S. Washington Sq. Suite 100 Lansing, MI 48933 Office: (517) 316-3947	Technical Assistance
Robert Domm	Tetra Tech 401 S. Washington Sq. Suite 100 Lansing, MI 48933 Office: (517) 316-3943 Cell: (734) 891-4250	Technical Assistance

Table G-2 Laboratory Contact Information

Laboratory Name	Address	Telephone
MDEQ Drinking Water Laboratory	3350 N. Martin Luther King Blvd Lansing, MI 48909	(517) 335-8184
Brighton Analytical LLC	2105 Pless Drive Brighton, MI 48114	(810) 229-7575

Appendix H

MSDS

Material Safety Data Sheet

Section 1. Product and Company Identification

Product Name	Nitric Acid	Product Code	NX0409
Manufacturer	EM Science A Division of EM Industries P.O. Box 70 480 Democrat Road Gibbstown, N.J. 08027	Effective Date	3/22/2002
For More Information Call	856-423-6300 Technical Service Monday-Friday: 8:00 AM - 5:00 PM	In Case of Emergency Call	800-424-9300 CHEMTREC (USA) 613-996-6666 CANUTEC (Canada) 24 Hours/Day: 7 Days/Week
Synonym	None.		
Material Uses	Laboratory Reagent		
Chemical Family	Inorganic acid.		

Section 2. Composition and Information on Ingredients

Component	CAS #	% by Weight
NITRIC ACID	7697-37-2	100

+ Section 3. Hazards Identification

Physical State and Appearance	Liquid. (Yellowish.)
Emergency Overview	DANGER! POISON! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. VAPOR REDUCES OXYGEN AVAILABLE FOR BREATHING. MAY BE FATAL IF INHALED OR SWALLOWED. CAUSES SEVERE RESPIRATORY TRACT, EYE AND SKIN BURNS. CAUSES DAMAGE TO THE FOLLOWING ORGANS: LUNGS, MUCOUS MEMBRANES, RESPIRATORY TRACT, SKIN, EYE, LENS OR CORNEA, TEETH.
Routes of Entry	Absorbed through skin. Inhalation. Ingestion.

Potential Acute Health Effects

Eyes	Hazardous in case of eye contact (corrosive). Causes eye burns.
Skin	Corrosive to skin on contact.
Inhalation	Extremely hazardous in case of inhalation (lung corrosive). Do not breathe vapor or mist. May be fatal if inhaled. Inhalation of vapors may cause dizziness, an irregular heartbeat, narcosis, nausea or asphyxiation.
Ingestion	Extremely hazardous in case of ingestion. May be fatal if swallowed.

Potential Chronic Health Effects

Carcinogenic Effects	This material is not known to cause cancer in animals or humans.
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Additional information See Toxicological Information (section 11)

Medical Conditions	Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation.
Aggravated by	Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.
Overexposure:	

Section 4. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.
Skin Contact	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Ingestion	If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Section 5. Fire Fighting Measures

Flammability of the Product	Non-flammable.
Auto-ignition Temperature	Not applicable.
Flash Points	Not applicable.
Flammable Limits	Not available.
Products of Combustion	Not applicable.
Fire Hazards in Presence of Various Substances	Not applicable.
Explosion Hazards in Presence of Various Substances	Risks of explosion of the product in presence of static discharge: No. Risks of explosion of the product in presence of mechanical impact: No.

Fire Fighting Media and Instructions	Not applicable.
Protective Clothing (Fire)	Not applicable.
Special Remarks on Fire Hazards	Not available.
Special Remarks on Explosion Hazards	Not available.

Section 6. Accidental Release Measures

Small Spill and Leak	Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.
Large Spill and Leak	Stop leak if without risk. Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain. Do not get water inside container. Avoid contact with a combustible material (wood, paper, oil, clothing...). Keep substance damp using water spray. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.
Spill Kit Information	The following EM SCIENCE SpillSolv (TM) absorbent is recommended for this product: SX1310 Acid Treatment Kit

Section 7. Handling and Storage

Handling	Handle and open container with care. Avoid contact with combustible materials. Do not breathe vapor or mist. Do not ingest. Do not get in eyes, on skin or clothing. After handling, always wash hands thoroughly with soap and water.
Storage	Keep container tightly closed. Handle and open container with care. Keep container in a cool, well-ventilated area. Separate from acids, alkalis, reducing agents and combustibles.

+ Section 8. Exposure Controls/Personal Protection

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.
Personal Protection	
Eyes	Face shield.
Body	Full suit.
Respiratory	Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.
Hands	Gloves.

Feet Boots.

Personal Protection in Case of a Large Spill Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Product Name Exposure Limits

NITRIC ACID

ACGIH (United States, 1994).
STEL: 10 mg/m³
STEL: 4 ppm
TWA: 5.2 mg/m³
TWA: 2 ppm

NIOSH REL (United States, 1994).
STEL: 10 mg/m³
STEL: 4 ppm
TWA: 5 mg/m³ Period: 10 hour(s).
TWA: 2 ppm Period: 10 hour(s).

OSHA Final Rule (United States, 1989).
STEL: 10 mg/m³
STEL: 4 ppm
TWA: 5 mg/m³
TWA: 2 ppm

National Authority for Occupational Safety/Health (Ireland, 1999).
STEL: 10 mg/m³
STEL: 4 ppm
OEL: 5 mg/m³
OEL: 2 ppm

± Section 9. Physical and Chemical Properties

Odor ACRID; SUFFOCATING

Color Colorless to light yellow.

Physical State and Appearance Liquid. (Yellowish.)

Molecular Weight 63.02 g/mole

Molecular Formula H-N-O₃

pH Not available.

Boiling/Condensation Point 83.94°C (183.1°F)

Melting/Freezing Point -41.06°C (-41.9°F)

Teratogenic Effects	Not available.
Mutagenic Effects	Not available.

+ Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Toxicity of the Products of Biodegradation	The products of degradation are less toxic than the product itself.

Section 13. Disposal Considerations

EPA Waste Number	D002 D001
Treatment	Specified technology- Neutralize to pH 6-9. Contact your local permitted waste disposal site (TSD) for permissible treatments sites. ALWAYS CONTACT PERMITTED WASTE DISPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS. ALWAYS CONTACT PERMITTED WASTE DISPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.

Section 14. Transport Information

DOT Classification	Proper Shipping Name: NITRIC ACID Hazard Class: 8 UN number: UN2031 Packing Group: II RQ: 1000 lbs. (453.6 kg)
TDG Classification	Not available.
IMO/MDG Classification	Proper Shipping Name: NITRIC ACID Hazard Class: 8 UN number: UN2031 Packing Group: II RQ: 1000
ICAO/LATA Classification	Not available.

Section 15. Regulatory Information

U.S. Federal Regulations	TSCA 8(b) inventory: NITRIC ACID SARA 302/304/311/312 extremely hazardous substances: NITRIC ACID SARA 302/304 emergency planning and notification: NITRIC ACID
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SARA 302/304/311/312 hazardous chemicals: NITRIC ACID
 SARA 311/312 MSDS distribution - chemical inventory - hazard identification: NITRIC ACID: fire, reactive, immediate health hazard
 SARA 313 toxic chemical notification and release reporting: Nitric Acid
 Clean Water Act (CWA) 307: No products were found.
 Clean Water Act (CWA) 311: Nitric Acid
 Clean air act (CAA) 112 accidental release prevention: Nitric Acid
 Clean air act (CAA) 112 regulated flammable substances: No products were found.
 Clean air act (CAA) 112 regulated toxic substances: Nitric Acid

WHMIS (Canada)

CLASS C: Oxidizing material.
 Class D-1B: Material causing immediate and serious toxic effects (TOXIC).
 CLASS E: Corrosive liquid.
 CEPA DSL: Nitric Acid

This product has been classified in accordance with the hazard criteria of the Controlled Product Regulations and the MSDS contains all required information.

International Regulations

EINECS Nitric Acid 231-714-2
DSCL (EEC) R8- Contact with combustible material may cause fire.
 R35- Causes severe burns.
International Lists Australia (NICNAS): Nitric Acid

Japan (MITI): Nitric Acid
 Korea (TCCL): Nitric Acid
 Philippines (RA6969): Nitric Acid
 China: No products were found.

State Regulations

Pennsylvania RTK: Nitric Acid: (environmental hazard, generic environmental hazard)
 Massachusetts RTK: Nitric Acid
 New Jersey: Nitric Acid
 California prop. 65: No products were found.

Section 16. Other Information

		National Fire	Health	0	Fire Hazard
		Protection		4OXY1	Reactivity
		Association			Specific Hazard
		(U.S.A.)			
Changed Since Last Revision	+				

Notice to Reader

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Material Safety Data Sheet

+ Section 1. Product and Company Identification

Product Name	Sulfuric Acid, GR	Product Code	SX1244
Manufacturer	EM Science A Division of EM Industries P.O. Box 70 480 Democrat Road Gibbstown, N.J. 08027	Effective Date	11/27/2001
For More Information Call		In Case of Emergency Call	
856-423-6300 Technical Service Monday-Friday: 8:00 AM - 5:00 PM		800-424-9300 CHEMTREC (USA) 613-996-6666 CANUTEC (Canada) 24 Hours/Day: 7 Days/Week	
Synonym	OIL OF VITRIOL		
Material Uses	Analytical reagent.		
Chemical Family	Acid.		

Section 2. Composition and Information on Ingredients

Component	CAS #	% by Weight
SULFURIC ACID	7664-93-9	100

+ Section 3. Hazards Identification

Physical State and Appearance	Liquid. (Clear viscous liquid.)
Emergency Overview	DANGER! POISON! MAY BE FATAL IF INHALED OR SWALLOWED. CAUSES SEVERE EYE AND SKIN BURNS. CAUSES RESPIRATORY TRACT BURNS. OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. SUSPECT CANCER HAZARD. MAY CAUSE CANCER. CAUSES DAMAGE TO THE FOLLOWING ORGANS: LUNGS, MUCOUS MEMBRANES,

	RESPIRATORY TRACT, SKIN, EYE, LENS OR CORNEA, TEETH.
Routes of Entry	Absorbed through skin. Eye contact. Inhalation. Ingestion.
Potential Acute Health Effects	
Eyes	Extremely hazardous in case of eye contact (corrosive). Causes severe eye burns.
Skin	Extremely hazardous in case of skin contact (corrosive). Skin contact produces severe burns.
Inhalation	Extremely hazardous in case of inhalation. May be fatal if inhaled. Hazardous in case of inhalation (lung corrosive).
Ingestion	Extremely hazardous in case of ingestion. May be fatal if swallowed.
Potential Chronic Health Effects	
Carcinogenic Effects	Classified A2 (Suspected for human.) by ACGIH.
	Additional information See Toxicological Information (section 11)
Medical Conditions	Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation.
Aggravated by	Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.
Overexposure:	

Section 4. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.
Skin Contact	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Ingestion	If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Section 5. Fire Fighting Measures

Flammability of the Product	Non-flammable.
Auto-ignition Temperature	Not applicable.
Flash Points	Not applicable.
Flammable Limits	Not applicable.
Products of Combustion	Not available.
Fire Hazards in Presence of Various Substances	Flammable in presence of combustible materials
Explosion Hazards in	Risks of explosion of the product in presence of static discharge: No.

Presence of Various Substances	Risks of explosion of the product in presence of mechanical impact: No.
Fire Fighting Media and Instructions	Do not use water or foam.
Protective Clothing (Fire)	Wear MSHA/NIOSH approved self-contained breathing apparatus or equivalent and full protective gear.
Special Remarks on Fire Hazards	Flammable hydrogen gas may be produced on prolonged contact with metals such as aluminum, tin, lead and zinc.
Special Remarks on Explosion Hazards	Not available.

Section 6. Accidental Release Measures

Small Spill and Leak	Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate.
Large Spill and Leak	Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Avoid contact with a combustible material (wood, paper, oil, clothing...). Keep substance damp using water spray. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.
Spill Kit Information	The following EM SCIENCE SpillSolv (TM) absorbent is recommended for this product: SX1310 Acid Treatment Kit

+ Section 7. Handling and Storage

Handling	Store in tightly closed container. Avoid contact with combustible materials. Do not ingest. Do not get in eyes, on skin, or on clothing. Avoid breathing vapors or spray mists.
Storage	Keep container in a cool, well-ventilated area. Separate from acids, alkalis, reducing agents and combustibles.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.
Personal Protection	
Eyes	Face shield.
Body	Full suit.
Respiratory	Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Hands	Gloves.
Feet	Boots.

Personal Protection in Case of a Large Spill Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Product Name

Exposure Limits

SULFURIC ACID

AUVA (Austria, 1995).
 Spitzenbegrenzung: 2 mg/m³ 8 times per shift, Period: 5 minute(s).
 MAK: 1 mg/m³

Belgium Minister of Labour (Belgium, 1998).
 VCD: 3 mg/m³
 VL: 1 mg/m³

BAUA (Germany, 1997).
 Spitzenbegrenzung: 1 mg/m³
 MAK: 1 mg/m³

DK-Arbejdstylnet (Denmark, 1996).
 GV: 1 mg/m³

Tyterveyslaitos (Finland, 1998).
 STEL: 3 mg/m³
 TWA: 1 mg/m³

INRS (France, 1996).
 VLE: 3 mg/m³
 VME: 1 mg/m³

National Authority for Occupational Safety/Health (Ireland, 1999).
 OEL: 1 mg/m³

Arbeidsinspectie (Netherlands, 1999).
 TGG 8 uur: 1 mg/m³

N-Arbejdstylnet (Norway, 1996).
 AN: 1 mg/m³

AFS (Sweden, 1996).
 KTV: 3 mg/m³
 NGV: 1 mg/m³

EH40-OES (United Kingdom (UK), 1997).
 TWA: 1 mg/m³

ACGIH (United States, 1996).
 STEL: 3 mg/m³
 TWA: 1 mg/m³

NIOSH REL (United States, 1994).
 TWA: 1 mg/m³ Period: 10 hour(s).

OSHA Final Rule (United States, 1989).
 TWA: 1 mg/m³

Section 9. Physical and Chemical Properties

Odor	Odorless.
Color	Colorless.
Physical State and Appearance	Liquid. (Clear viscous liquid.)
Molecular Weight	98.08 g/mole
Molecular Formula	H2-O4-S
pH	Acidic.
Boiling/Condensation Point	290.05°C (554.1°F)
Melting/Freezing Point	-10°C (14°F)
Specific Gravity	1.84 (Water = 1)
Vapor Pressure	0.1 kPa (1 mmHg) (@ 20°C)
Vapor Density	Not available.
Odor Threshold	>1 ppm
Evaporation Rate	<1
LogKow	Not available.
Solubility	Soluble in water.

Section 10. Stability and Reactivity

Stability and Reactivity	The product is stable.
Conditions of Instability	Not available.
Incompatibility with Various Substances	Extremely reactive or incompatible with reducing agents, combustible materials, organic materials, metals, acids, alkalis, moisture.
Rem/Incompatibility	Not available.
Hazardous Decomposition Products	Not available.
Hazardous Polymerization	Will not occur.

Section 11. Toxicological Information

RTECS Number:

Sulfuric Acid WS5600000

Toxicity Acute oral toxicity (LD50): 2140 mg/kg [Rat].
Acute toxicity of the vapor (LC50): 320 mg/m³ 2 hour(s) [Mouse].

Chronic Effects on Humans	CARCINOGENIC EFFECTS: Classified A2 (Suspected for human.) by ACGIH.
Acute Effects on Humans	Extremely hazardous in case of eye contact (corrosive). Causes severe eye burns. Extremely hazardous in case of skin contact (corrosive). Skin contact produces severe burns. Extremely hazardous in case of inhalation. May be fatal if inhaled. Hazardous in case of inhalation (lung corrosive). Extremely hazardous in case of ingestion. May be fatal if swallowed.
Synergetic Products (Toxicologically)	Not available.
Irritancy	Draize Test (Rabbit): Eyes: 5 mg/30s. Reaction: Severe.
Sensitization	Not available.
Carcinogenic Effects	Classified A2 (Suspected for human.) by ACGIH.
Toxicity to Reproductive System	Tests on laboratory animals for reproductive effects are cited in Registry of Toxic Effects on Chemical Substances (RTECS).
Teratogenic Effects	Not available.
Mutagenic Effects	Tests on laboratory animals for mutagenic effects are cited in Registry of Toxic Effects of Chemical Substances (RTECS).

Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Toxicity of the Products of Biodegradation	The products of degradation are less toxic than the product itself.

Section 13. Disposal Considerations

EPA Waste Number	D002
Treatment	Specified Technology - Neutralize to pH 6-9. Contact your local permitted waste disposal site (TSD) for permissible treatment sites. Always contact a permitted waste disposal (TSD) to assure compliance with all current local, state, and Federal Regulations.

Section 14. Transport Information

DOT Classification	Not available.
TDG Classification	Not available.
IMO/IMDG Classification	Not available.
ICAO/IATA Classification	Not available.

Section 15. Regulatory Information

U.S. Federal Regulations TSCA 8(b) inventory: SULFURIC ACID

SARA 302/304/311/312 extremely hazardous substances: SULFURIC ACID
SARA 302/304 emergency planning and notification: SULFURIC ACID
SARA 302/304/311/312 hazardous chemicals: SULFURIC ACID
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: SULFURIC ACID: reactive,
Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard
SARA 313 toxic chemical notification and release reporting: SULFURIC ACID

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: SULFURIC ACID

Clean air act (CAA) 112 accidental release prevention: No products were found.

Clean air act (CAA) 112 regulated flammable substances: No products were found.

Clean air act (CAA) 112 regulated toxic substances: No products were found.

WHMIS (Canada) CLASS C: Oxidizing material.
Class D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).
CLASS E: Corrosive liquid.
CEPA DSL: SULFURIC ACID

International Regulations

EINECS SULFURIC ACID 231-639-5

DSCL (EEC) R35- Causes severe burns.

International Lists Australia (NICNAS): SULFURIC ACID

Japan (MITI): SULFURIC ACID

Korea (TCCL): SULFURIC ACID

Philippines (RA6969): SULFURIC ACID
China: No products were found.

State Regulations Pennsylvania RTK: SULFURIC ACID: (environmental hazard, generic environmental hazard)
Massachusetts RTK: SULFURIC ACID
New Jersey: SULFURIC ACID
California prop. 65: No products were found.

Section 16. Other Information

National Fire	Health	0	Fire Hazard
Protection		3 2	Reactivity
Association		W	
(U.S.A.)			Specific Hazard

Changed Since Last +
Revision
Notice to Reader

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Appendix I
Paper Field Forms

DRAINAGE SYSTEM INVENTORY

GENERAL

Date _____ Time _____ ID
 Initial (1) _____ Initial (2): _____
 Photographs: Roll # _____ Picture #'s _____

STRUCTURE TYPE

- Discharging pipe
- Manhole
- Catch Basin
- Culvert Outlet
- Point in Open Channel
- Not Found
- Blind Tie or Tap
- Non-Point Source (circle below)
 - Seepage
 - Overland Flow

Ownership

- Public
- Private
- GCDC
- GCRC
- Other _____

LOCATION (see back side for location sketch)

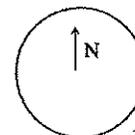
Latitude _____
 Longitude _____
 Offset Description: _____

Receiving Waterbody: _____

Inventory Comments: _____

CONDUIT INFORMATION

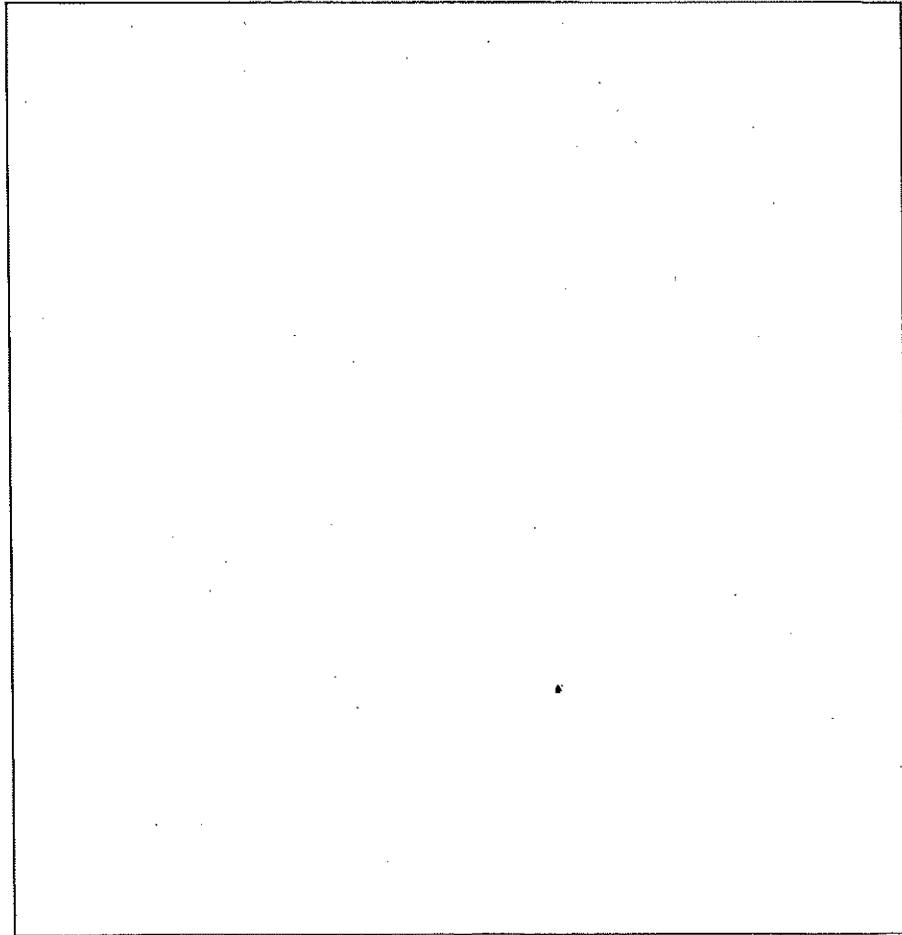
Pipe ID						
Direction from MH						
Shape						
Diameter (in)						
Width (in) (Open Channel)						
Depth (in)						
Measure Down (ft) (Manhole)						
Invert Elevation (ft) (Pipes)						
Conduit Material						
Inlet/Outlet						



LOCATION SKETCH

LOCATION SKETCH CHECK LIST

- Label Street Names
- Indicate North
- Locate manholes by dimensions from property lines, back of curb, or edge of pavement
- Sketch catch basins and connections (no measurements necessary).
- Indicate (if possible) distance to upstream and downstream manholes
- Landmarks/nearest address, if any
- Flow direction
- Sample point
- Special access/traffic control notes
- Between mile markers _____ & _____ or _____ tenths past mile marker _____
- Velocity/depth measure location



DRAINAGE SYSTEM SCREENING

GENERAL

Date _____ Time _____ ID _____

Air Temp _____
Rain Yes No

Crew Initials _____ Chk By: _____
Photographs: Roll # _____ Picture # _____

Clear/Sunny
 Partly Cloudy
 Overcast

DRY WEATHER FLOW PRESENT

- Yes, Dry Weather Flow Present
- Trace, Insufficient
- No Dry Weather Flow Present
- Standing Water
- Submerge
- Inundated
- N/A

FLOW MEASUREMENTS

Pipe Sampled: Size (in) _____ Direction _____

Method:	<input type="checkbox"/> Tt Method	General Data		Travel
	<input type="checkbox"/> Area * Velocity	Depth, (in)	_____	Time Trials
	<input type="checkbox"/> Bucket	Dist Traveled, (ft)	_____	#1 (sec) _____
	<input type="checkbox"/> Manning's	Bucket Vol, (l)	_____	#2 (sec) _____
		Channel Slope (%)	_____	#3 (sec) _____
		Channel Material	_____	Avg (sec) _____
		Channel, n	_____	Vel (fps) _____

- Flow: _____
- Intermittent Not Checked
- Flow Check Left Sand Bag in Channel
 Removed Sand Bag, Intermittent DWF present Yes No
- if possible describe frequency, duration, time of day of flow slugs - put in comments section*

DISCHARGE OBSERVATIONS (if "other" checked fill in description at bottom of page)

- | | | | | | | | |
|-----------------|---------------------------------|-----------------------------------|------------------------------------|--|-------------------------------------|-----------------------------------|--------------------------------|
| Odor | <input type="checkbox"/> None | <input type="checkbox"/> Musty | <input type="checkbox"/> Sewage | <input type="checkbox"/> Rotten | <input type="checkbox"/> Gas | <input type="checkbox"/> Oil | <input type="checkbox"/> Other |
| Floatables | <input type="checkbox"/> None | <input type="checkbox"/> Trash | <input type="checkbox"/> Sewage | <input type="checkbox"/> Bacterial Egg Sheen | <input type="checkbox"/> Oil Sheen | <input type="checkbox"/> Suds | <input type="checkbox"/> Other |
| Deposits/Stains | <input type="checkbox"/> None | <input type="checkbox"/> Mineral | <input type="checkbox"/> Sediment | <input type="checkbox"/> Oily | <input type="checkbox"/> Grease | <input type="checkbox"/> Suds | <input type="checkbox"/> Other |
| Vegetation | <input type="checkbox"/> None | <input type="checkbox"/> Normal | <input type="checkbox"/> Excessive | <input type="checkbox"/> Algae | <input type="checkbox"/> Slime | | <input type="checkbox"/> Other |
| Structural | <input type="checkbox"/> Normal | <input type="checkbox"/> Cracking | <input type="checkbox"/> Spalling | <input type="checkbox"/> Corrosion | <input type="checkbox"/> Settlement | <input type="checkbox"/> Staining | <input type="checkbox"/> Other |
| Color | _____ | Enter # | | | | | |
| Turbidity | _____ | Enter # | | | | | |

Description:

RECEIVING WATER OBSERVATIONS (if "other" checked fill in description at bottom of page)

Odor	<input type="checkbox"/> None	<input type="checkbox"/> Musty	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rotten	<input type="checkbox"/> Gas	<input type="checkbox"/> Oil	<input type="checkbox"/> Other
Floatables	<input type="checkbox"/> None	<input type="checkbox"/> Trash	<input type="checkbox"/> Sewage	<input type="checkbox"/> Bacterial Egg	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Suds	<input type="checkbox"/> Other
Deposits/ Stains	<input type="checkbox"/> None	<input type="checkbox"/> Mineral	<input type="checkbox"/> Sediment	<input type="checkbox"/> Oily	<input type="checkbox"/> Grease	<input type="checkbox"/> Suds	<input type="checkbox"/> Other
Vegetation	<input type="checkbox"/> None	<input type="checkbox"/> Normal	<input type="checkbox"/> Excessive	<input type="checkbox"/> Algae	<input type="checkbox"/> Slime		<input type="checkbox"/> Other
Bank	<input type="checkbox"/> Excessive Vegetation	<input type="checkbox"/> Staining of Banks	<input type="checkbox"/> Erosion	<input type="checkbox"/> Trash			<input type="checkbox"/> Other
Color	_____	Enter #					
Turbidity	_____	Enter #					

Description:

DRAINAGE SYSTEM SCREENING (Continued)

ID

CHEMICAL ANALYSIS
FIELD ANALYSIS

LAB SAMPLE COLLECTED ID _____

Surfactants	_____ mg/L	Temperature	_____
Ammonia	_____ mg/L	pH	_____
Boron	_____ mg/L	Specific Cond.	_____
Potassium	_____ mg/L		
E. Coli	_____ per 100ml		

RESULTS

- Illicit Connection Ruled Out
- Illicit Connection (undocumented connection)
- Pending
- Notify City
- Not a PSD

ACTION

- None Required
- Illicit Removed
- Waiting on Lab Results
- Dye Test
- Televis
- Investigate Further
- Illicit Connection

Comments

Appendix J
Genesee IDEP SOP

Standard Operating Procedure for:	
Genesee County Illicit Discharge Elimination Program	
Purpose of SOP:	<i>To obtain and record inventory information for outfalls including construction material size, Global Positioning System (GPS) location. To conduct field screening of Outfalls to schedule, report, track and enforce the Elimination of illicit discharges. To perform a round of dry-weather screening of county outfalls every 5 years and to track the effectiveness of the IDEP program. To track the disconnection of illicit discharges.</i>

Procedures/Practices:

Suggested Frequency:

Field Screening and Inventory of Existing Outfalls

5 years

- Conduct a field screening and inventory of all existing county outfalls. Outfalls should only be screened in dry weather. (E.g. 72 hours after the last rainfall event that produced more than 0.1 inches of rainfall.)
- Perform a dry-weather screening of each outfall noting dry weather flow, pipe size and material, direction of pipe from manhole, date and time of inspection and GPS location within 1 meter. Note any visual indications of an illicit discharge. Use the IDEP Field Screening and Inventory Form that is included at end of this SOP.
- Take a digital photograph of the outfall pipe or manhole showing the structure and its immediate surroundings.
- Collect sample of any dry weather flow and test for Ammonia, Surfactant, E. coli, pH, and Temperature.
- Conduct a follow-up, upstream investigation on outfalls that fall outside of chemical testing parameters: Ammonia >1Mg/L; Surfactant >0.2Mg/L; E. coli >2000 colonies/100ml; Temperature > ambient air temperature; pH >9 or <6.

Procedures/Practices:

Suggested Frequency:

Field Screening and Inventory of Existing Outfalls



Dry Weather Flow



Outfall Sampling

- Conduct a follow-up, upstream investigation on any outfall that exhibits visual or physical signs of sewage contamination (Smell, sewage bacteria, sanitary debris). Immediately
 - Watch for discharges from Sanitary Sewer Overflows (SSO) and non-point-source discharges and record them on the IDEP Field Screening and Inventory Form.
 - Train field personnel to spot, identify, and report suspected illicit discharges. Annually
- Upstream Tracking and Discharge Verification**
- Trace the suspected illicit discharge upstream through the storm sewer system, sampling any flowing input pipes along the way. Immediately
 - Try to isolate any suspected illicit discharge to a single stretch of sewer or discrete location.
 - Dye test suspected illicit discharge sources (toilets, sinks, sump drains, floor drains, etc.) to isolate the source. As soon as practical
- Reporting of Illicit Discharges**
- Report verbally to MDEQ within 24 hours of time an illicit discharge is confirmed. 24 hours

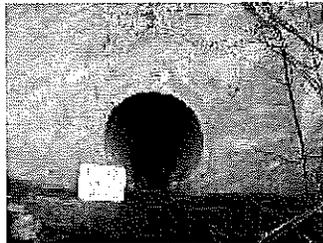
Procedures/Practices:

Suggested Frequency:

Field Screening and Inventory of Existing Outfalls

- Report in writing within 5 days from the time the illicit discharge is confirmed. Include a description of the discharge and cause of noncompliance, the period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and the steps taken to reduce, eliminate and prevent recurrence of the discharge.

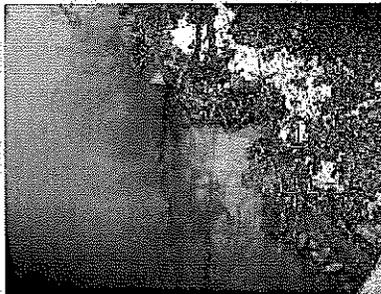
5 days.



Outfall Documentation



Sewage Stain



Positive Dye Test

Field Screening and Inventory of New Outfalls

- Conduct a dry-weather screening and inventory of new outfalls created using the IDEP Field Screening and Inventory Form.
- Perform a dry-weather screening for each new outfall noting dry weather flow, pipe size and material, direction of pipe from manhole,

Ongoing

Procedures/Practices:

Suggested Frequency:

Field Screening and Inventory of Existing Outfalls

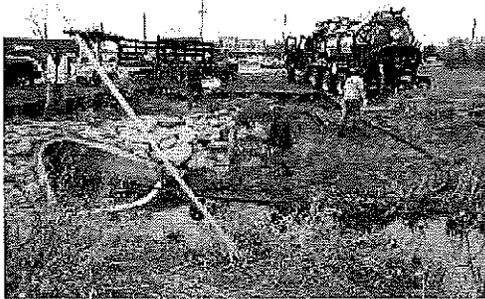
depth of pipe invert relative to manhole rim (if applicable), date and time of inspection and GPS location within 1 meter. Note any visual indications of an illicit discharge. Use the IDEP Field Screening and Inventory Form that is included at end of this SOP.

- Take a digital photograph of the outfall pipe or manhole showing the structure and its immediate surroundings.
- Enter Data from Screening and inventory in the Genesee County IDEP data base.

Tracking and Reporting

- Document the date, time, and screening results of existing outfalls as they are visited. Enter these results in the IDEP database.
- Track the location and resolution of all illicit discharges in the IDEP database. Document upstream follow up investigations including results for any dye testing or sewer TV work.
- Provide documentation of the actions taken to eliminate illicit discharges to MDEQ.
- For significant illicit discharges, provide MDEQ with a list of the pollutants of concern, estimate of the volume and load discharged, and provide locations of the discharges into both the separate storm water sewer system and the receiving water body.
- Report new outfalls to MDEQ.

Ongoing



Emergency Spill

Emergency Spill Response

- In the event the spill or release poses a threat to public safety, call 9-1-1 immediately. **Immediate**
- Report spills or accidental releases immediately to the MDEQ Pollution Emergency Alerting System (PEAS) 24-hour hotline at 1-800-292-4706.
- Within 10 days of the spill or release, submit to the MDEQ a full written explanation as to the cause, discovery, response (clean-up and/or recovery) measures taken, and preventative measures taken or a schedule for completion of measures to be taken to prevent reoccurrence of similar releases.

CHAPTER 62: STORM WATER MANAGEMENT

Article

- I. STORM WATER
- II. STORM WATER PERMITS
- III. STORM WATER SYSTEM
- IV. PROHIBITIONS AND EXEMPTIONS
- V. INSPECTION, MONITORING, REPORTING, AND RECORD KEEPING
- VI. ENFORCEMENT
- VII. STORM WATER EASEMENTS AND MAINTENANCE AGREEMENTS
- VIII. PERFORMANCE AND DESIGN STANDARDS
- IX. OTHER MATTERS

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ARTICLE I: STORM WATER

Section

- 62.101 Title
- 62.102 Findings
- 62.103 Purpose
- 62.104 Applicability
- 62.105 Definitions

§ 62.101 TITLE.

This chapter shall be known as the "City of Clio Storm Water Management" and may be so cited.
(Ord. 475, passed 5-4-15)

§ 62.102 FINDINGS.

The City of Clio finds that:

(A) Water bodies, roadways, structures, and other property within, and downstream of the city are at times subjected to flooding.

(B) Flooding is a danger to the lives and property of the public and is also a danger to the natural resources of the city and the region.

(C) Land development alters the hydrologic response of watersheds, resulting in increased storm water runoff rates and volumes, increased flooding, increased stream channel erosion, and increased sediment transport and deposition.

(D) Storm water runoff produced by land development contributes to increased quantities of water-borne pollutants.

(E) Increases of storm water runoff, soil erosion, and non-point source pollution have occurred as a result of land development, and cause deterioration of the water resources of the city and downstream municipalities.

(F) Storm water runoff, soil erosion, and non-point source pollution, due to land development within the city, have resulted in a deterioration of the water resources of the city and downstream municipalities.

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Clio - Storm Water Management

(G) Increased storm water runoff rates and volumes, and the sediments and pollutants associated with storm water runoff from future development projects within the city will, absent reasonable regulation and control, adversely affect the city's water bodies and water resources, and those of downstream municipalities.

(H) Storm water runoff, soil erosion, and non-point source pollution can be controlled and minimized by the regulation of storm water runoff from development.

(I) Adopting the standards, criteria and procedures contained in this chapter and implementing the same will address many of the deleterious effects of storm water runoff.

(J) Adopting these standards is necessary for the preservation of the public health, safety and welfare. (Ord. 475, passed 5-4-15)

§ 62.103 PURPOSE.

It is the purpose of this chapter to establish minimum storm water management requirements and controls to accomplish, among others, the following objectives:

(A) To reduce artificially induced flood damage.

(B) To minimize increased storm water runoff rates and volumes from identified new land development.

(C) To minimize the deterioration of existing watercourses, culverts and bridges, and other structures.

(D) To encourage water recharge into the ground where geologically favorable conditions exist.

(E) To prevent an increase in non-point source pollution.

(F) To maintain the integrity of stream channels for their biological functions, as well as for drainage and other purposes.

(G) To minimize the impact of development upon stream bank and streambed stability.

(H) To reduce erosion from development or construction projects.

(I) To preserve and protect water supply facilities and water resources by means of controlling increased flood discharges, stream erosion, and runoff pollution.

Storm Water

(J) To reduce storm water runoff rates and volumes, soil erosion, and non-point source pollution, wherever practicable, from lands that were developed without storm water management controls meeting the purposes and standards of this chapter.

(K) To reduce the adverse impact of changing land use on water bodies and, to that end, this chapter establishes minimum standards to protect water bodies from degradation resulting from changing land use where there are insufficient storm water management controls.

(Ord. 475, passed 5-4-15)

§ 62.104 APPLICABILITY.

(A) To prevent an increase in non-point source pollution; this chapter shall apply to any earth-disturbing activities greater than or equal to one acre (\geq one acre) for new development or redevelopment projects or earth disturbing activities less than one acre on parcels with greater than or equal to 50% ($\geq 50\%$) impervious surface which will alter storm water drainage characteristics of the development site.

(B) Typically these developments require approval of a plat, a site development plan, building permit, and other permits to be obtained. However, this chapter shall not apply to the following:

(1) Development on one single-family lot, parcel, or condominium unit where the city determines that due to the size of the development site or other circumstances, the quantity, quality, and or rate of stormwater flow does not materially alter storm water flow from the property in terms of rate and/or volume.

(2) The installation or removal of individual mobile homes within a mobile home park. This exemption shall not be construed to apply to the construction, expansion, or modification of a mobile home park.

(3) Ongoing farm operations such as tilling or plowing. Earth disturbances that are not directly related to farming are not exempt from this chapter.

(4) Plats with preliminary plat approval and other developments with final land use approval prior to the effective date of this chapter, where such approvals remain in effect.

(Ord. 475, passed 5-4-15)

§ 62.105 DEFINITIONS.

For the purpose of this chapter, the following words and phrases shall have the meanings respectively ascribed to them by this section unless the context in which they are used specifically indicates otherwise:

Clio - Storm Water Management

BEST MANAGEMENT PRACTICES (BMPS). A practice, or combination of practices and design criteria that comply with the Michigan Department of Natural Resources and Environment's Guidebook of BMPs for Michigan Watersheds, the Low Impact Development Manual for Michigan, or equivalent practices and design criteria that accomplish the purposes of this chapter (including, but not limited to minimizing storm water runoff and preventing the discharge of pollutants into storm water) as determined by the City Engineer, and, where appropriate, the standards of the Genesee County Drain Commissioner.

BUILDING OPENING. Any opening of a solid wall such as a window or door, through which floodwaters could penetrate.

CITY. City of Clio, Genesee County, Michigan.

CITY ATTORNEY. The attorney appointed by the City Commission.

CITY COMMISSION. The city's legislative body.

CITY ENGINEER. The engineer appointed by the City Commission.

CITY TREASURER. The treasurer appointed by the City Commission.

CONSTRUCTION SITE STORM WATER RUNOFF. Storm water runoff from a development site following an earth change.

DETENTION. A system which is designed to capture storm water and release it over a given period of time through an outlet structure at a controlled rate.

DEVELOPED or DEVELOPMENT. The installation or construction of impervious surfaces on a development site that require, pursuant to state law or local ordinance, the city's approval of a site plan, plat, site condominium, special land use, planned unit development, rezoning of land, land division approval, private road approval or other approvals required for the development of land or the erection of buildings or structures; provided, however, that for purposes of Article II only, ***DEVELOPED*** or ***DEVELOPMENT*** shall not include the actual construction of, or an addition, extension or modification to, an individual single-family or a two-family detached dwelling or appurtenances to the same, if the Zoning Administrator finds that such construction, addition, extension or modification will not result in adverse storm water runoff.

DEVELOPER. Any person proposing or implementing the development of land. ***DEVELOPER*** can also be interpreted to include their designated design representative (e.g. architects and engineers).

DEVELOPMENT SITE. Any land that is being or has been developed, or that a developer proposes for development.

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DISCHARGER. Any person who, or entity that, directly or indirectly discharges storm water from any property. **DISCHARGER** also means any employee, officer, director, partner, contractor, or other person who participates in, or is legally or factually responsible for, any act or omission which is or results in a violation of this chapter.

DRAIN. Any drain as defined in the Drain Code of 1956, as amended, being M.C.L.A. § 280.1 et seq., other than an established county or inter-county drain.

DRAINAGE. The collection, conveyance, or discharge of ground water and/or surface water.

DRAINAGEWAY. The area within which surface water or ground water is carried from one part of a lot or parcel to another part of the lot or parcel or to adjacent land.

EARTH CHANGE. Any human activity which removes ground cover, changes the slope or contours of the land, or exposes the soil surface to the actions of wind and rain. **EARTH CHANGE** includes, but is not limited to, any excavating, surface grading, filling, landscaping, or removal of vegetative roots.

EPA. The United States Environmental Protection Agency.

EROSION. The process by which the ground surface is worn away by action of wind, water, gravity or a combination thereof.

EXEMPTED DISCHARGES. Discharges other than storm water as specified in § 62.104 and § 62.402 of this chapter.

FLOOD or **FLOODING.** A general and temporary condition of partial or complete inundation of normally dry land areas resulting from the overflow of water bodies or the unusual and rapid accumulation of surface water runoff from any source.

FLOODPLAIN. Any land area subject to periodic flooding (\geq two square miles).

FLOOD PROTECTION ELEVATION (FPE). The Base Flood Elevation plus one foot at any given location.

GRADING. Any stripping, excavating, filling, and stockpiling of soil or any combination thereof and the land in its excavated or filled condition.

HAZARDOUS or **TOXIC MATERIAL.** OSHA defines hazardous and toxic substances as those chemicals which are capable of causing harm. In this definition, the term chemical includes dusts, mixtures, and common materials such as paints, fuels, and solvents. OSHA currently regulates exposure to approximately 400 substances and the OSHA Chemical Sampling Information file contains listings for approximately 1,500 substances. Some industrial libraries maintain files of material safety data sheets (MSDS) for more than 100,000 substances.

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ILLICIT CONNECTION. Any method or means for conveying an illicit discharge into water bodies or the city's storm water system.

ILLICIT DISCHARGE. Any discharge to water bodies that does not consist entirely of storm water, discharges pursuant to the terms of an NPDES permit, or exempted discharges as defined in this chapter.

IMPERVIOUS SURFACE. Surface that does not allow storm water runoff to slowly percolate into the ground.

IMPROVEMENTS. Those features and actions associated with a project that are considered necessary by the body or official granting zoning approval to protect natural resources or the health, safety, and welfare of the residents of a local unit of government and future users or inhabitants of the proposed project or project area, including roadways, lighting, utilities, sidewalks, screening, and drainage. Improvements do not include the entire project that is the subject of zoning approval.

MS4. Municipal Separate Storm Water Sewer System.

MDNRE. Michigan Department of Natural Resources and Environment.

NPDES. National Pollution Discharge Elimination System

PERSON. An individual, firm, partnership, association, public or private corporation, public agency, instrumentality, or any other legal entity.

PLANNING COMMISSION. A commission created under the Michigan Zoning Enabling Act, 2006 PA 110, M.C.L.A. § 125.3101 et seq.

POLLUTANT. A substance discharged which includes, but is not limited to the following: any dredged spoil, solid waste, vehicle fluids, yard wastes, animal wastes, agricultural waste products, sediment, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological wastes, radioactive materials, heat, wrecked or discharged equipment, rock, sand, cellar dirt, and industrial, municipal, commercial and agricultural waste, or any other contaminant or other substance defined as a pollutant under the Clean Water Act.

PROPERTY OWNER. Any person having legal or equitable title to property or any person having or exercising care, custody, or control over any property.

RETENTION. A system which is designed to capture storm water and contain it until it infiltrates the soil or evaporates.

RUNOFF. The water flow that occurs when soil is infiltrated to full capacity and excess water from rain, snowmelt, or other sources flows over the land.

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SENSITIVE AREAS. Inland lakes, watercourses and wetlands (> five acres as specified by MDNRE unless a stricter local requirement is specified).

SITE PLAN. A plat, a site development plan, construction drawings, a building permit, and any other permits that need to be obtained before development can occur. These documents and drawings, required by the zoning ordinance, are to insure that a proposed land use or activity is in compliance with local ordinances and state and federal statutes.

SOIL EROSION. The stripping of soil and weathered rock from land creating sediment for transportation by water, wind or ice, and enabling formation of new sedimentary deposits.

STATE OF MICHIGAN WATER QUALITY STANDARDS. All applicable state rules, regulations, and laws pertaining to water quality, including the provisions of Section 3106 of Part 31 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

STORM DRAIN. A system of open or enclosed conduits and appurtenant structures intended to convey or manage storm water runoff, ground water and drainage.

STORM WATER PERMIT. A permit issued pursuant to this chapter.

STORM WATER PLAN. Written narratives, specifications, drawings, sketches, written standards, operating procedures, or any combination of these which contain information pursuant to this chapter.

STORM WATER RUNOFF FACILITY. The method, structure, area, system, or other equipment or measures which are designed to receive, control, store, or convey storm water as well as treat it for pollutants.

STREAM. A river, stream or creek which may or may not be serving as a drain, or any other water body that has definite banks, a bed, and visible evidence of a continued flow or continued occurrence of water.

SURFACE WATERS OF THE STATE. Defined consistent with the Part 4 Rules (Rules 323.1041 through 323.1117 of the Michigan Administrative Code) to mean all of the following, but not including drainage ways and ponds (detention and retention ponds or lagoons) used solely for wastewater conveyance, treatment, or control:

- (1) The Great Lakes and their connecting waters;
- (2) All inland lakes;
- (3) Rivers;
- (4) Streams;

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- (5) Impoundments;
- (6) Open drains; and
- (7) Other surface bodies of water within the confines of the state.

WATERBODY. A river, lake, stream, creek or other watercourse or wetlands.

WATERCOURSE. One that has not been altered artificially.

WETLANDS (REGULATED). Land characterized by the presence of water at a frequency and duration sufficient to support wetland vegetation or aquatic life.

ZONING ADMINISTRATOR. The Zoning Administrator appointed by the City Commission.
(Ord. 475, passed 5-4-15)

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ARTICLE II: STORM WATER PERMITS

Section

- 62.201 Storm water standards
- 62.202 Storm water permit review procedures
- 62.203 Storm water plan
- 62.204 Storm water permit review fees
- 62.205 Financial guarantee
- 62.206 Certificate of occupancy
- 62.207 No change in approved facilities
- 62.208 Terms and conditions of permits

§ 62.201 STORM WATER STANDARDS.

Developments subject to this chapter shall require a storm water permit and a storm water plan, and shall be designed, constructed, and maintained to prevent flooding, minimize stream channel impacts, protect water quality, and achieve the purposes of this chapter, as stated above. The city has adopted the *Genesee County Storm Water and Flood Control Design Standard Requirements* to meet the objectives of managing the quantity and quality of storm water runoff from a site as its city engineering standards.

(Ord. 475, passed 5-4-15)

§ 62.202 STORM WATER PERMIT REVIEW PROCEDURES.

(A) The city shall grant a storm water permit, which may impose terms and conditions in accordance with § 62.208, and which shall be granted only upon compliance with each of the following requirements:

(B) The developer will engage in the following sequence of events:

(1) *Pre-development information gathering.* For all applicable projects, developers will contact representatives from each of the following: the County Road Commission, Health Department, city officials, and Drain Commissioner's Office (Water and Waste Services and Surface Water). The purpose will be to gather information on design standards, development guidelines, and to identify the type of information developers and their representatives must furnish to comply with this chapter. In some instances it may be expedient to hold one conference with all the involved parties.

(2) *Development and review of conceptual site plan.* Review of the conceptual site plan for approval at the county level by the appropriate personnel in Water and Waste Services, soil erosion,

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surface water, the Road Commission and the Health Department. Comments are returned to the owner/client and designer. At this time the design engineer will submit a statement that this site has been reviewed and determined sufficient to accommodate soil erosion and soil conservation measures.

(3) *Coordinated review and approval.* Review of the Storm Water Plan and the proposed BMPs will occur at the same time as the review of the site plan by representatives from the appropriate agencies.

(4) *Municipal review and approval.* Developers shall provide a storm water plan for post-construction management of storm water to the city for review and approval. Guidance will be provided to the Zoning Administrator and Planning Commission on the ordinance and design standards by the City Engineer. The Zoning Administrator and Planning Commission will be provided with a checklist for reference during site plan review. At this stage all necessary permits should have been obtained from federal, state, and county agencies. Once all of the above documents have been obtained a building permit will be issued by the city.

(C) The developer has submitted a storm water plan complying with § 62.203.

(D) The storm water plans contain adequate storm water BMPs to address the requirements laid out in the Genesee County Storm Water Standards and Requirements (GCSWS&R). At a minimum the developer will have to satisfy one of the following conditions:

(1) A permanent on-site storm water system that includes on-site detention of storm water runoff (see *Genesee County Storm Water and Flood Control Design Standard Requirements* for requirements);

(2) A direct connection for all storm water runoff that will be discharged from and through the development site (see *GCSWS&R/BMP Requirement Manual* for requirements); or

(3) The developer provides a permanent on-site storm water system with a restricted outlet designed to result in no net increase in storm water runoff volume or rate onto any adjacent property. (See *GCSWS&R/BMP Requirement Manual* for requirements).

(E) The developer has paid or deposited the storm water permit review fee pursuant to § 62.204.

(F) The developer has paid or posted the applicable financial guarantee pursuant to § 62.205.

(G) The developer provides all easements necessary to implement the approved storm water plan and to otherwise comply with this chapter including, but not limited to, § 62.702. All easements shall be acceptable to the city in form and substance and shall be recorded with the Genesee County Register of Deeds.

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(H) The storm water plan is designed in conformity with the city's design and performance standards for drains and storm water management systems, as set forth in Article VIII.

(I) All storm water runoff facilities shall be designed in accordance with the then-current BMPs.

(J) The developer provides the required maintenance agreement for routine, emergency, and long-term maintenance of all storm water runoff facilities and in compliance with the approved storm water plan and this chapter. The maintenance agreement shall be acceptable to the city in form and substance and at minimum contain the requirements outlined in Article VII.

(Ord. 475, passed 5-4-15)

§ 62.203 STORM WATER PLAN.

(A) The Storm Water Management Plan must be designed to meet the Genesee County Storm Water Standards as set out in the companion document to the Low Impact Development Manual for Michigan.

(B) The county is authorized to establish minimum design standards for storm water discharge release rates and to require dischargers to implement on-site retention, detention or other methods necessary to control the quality, rate and volume of surface water runoff discharged into the storm water drainage system and surface waters of the state. The county water quality and quantity standards are to be achieved through the techniques and methodologies outlined in the Low Impact Development Manual for Michigan (Chapters 6, 7 and 9). The storm water plan shall identify and contain all of the following:

(1) The location of the development site and water bodies that will receive storm water runoff (National Wetland database). Information to consider and include where appropriate should be the drainage district ID, zoning, aerial imagery, soils and floodplain maps, traffic and utility information.

(2) The existing and proposed natural feature of the development site, including the vegetation, topography, and alignment and boundary of the natural drainage courses, with contours having a maximum interval of two feet (using USGS datum). The information shall be superimposed on the pertinent Genesee County soil map.

(3) The development drainage area to each point of discharge from the development.

(4) Calculations for the existing and final peak discharge rates (based on design criteria).

(5) Calculations for any facility or structure size and configuration.

(6) A drawing showing all proposed storm water runoff facilities with existing and final grades, as well as storm water easements.

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(7) The sizes and locations of upstream and downstream culverts serving the major drainage routes flowing into and out of the development site. Any significant off-site and on-site drainage outlet restrictions other than culverts should be noted on the drainage map.

(8) An implementation plan for construction and inspection of all storm water runoff facilities necessary to the overall storm water plan, including a schedule of the estimated dates of completing construction of the storm water runoff facilities shown on the plan and an identification of the proposed inspection procedures to ensure that the storm water runoff facilities are constructed in accordance with the approved storm water plan.

(9) Drawings, profiles, and specifications for the construction of the storm water runoff facilities (BMP) reasonably necessary to ensure that storm water runoff will be drained, stored, or otherwise controlled in accordance with this chapter.

(10) A maintenance agreement, in form and substance acceptable to the city, for ensuring maintenance of any privately-owned storm water runoff facilities. The maintenance agreement shall include the Developer's written commitment to provide routine, emergency, and long-term maintenance of the facilities and, in the event that the facilities are not maintained in accordance with the approved storm water plan, the agreement shall authorize the city to maintain any on-site storm water runoff facility as reasonably necessary, at the Developer's expense (see Article VII).

(11) The name of the engineering firm and the registered professional engineer that designed the storm water plan and that will inspect final construction of the storm water runoff facilities.

(12) All design information must be compatible for conversion to standard GIS shape files.

(13) Any other information necessary for the city to verify that the storm water plan complies with the city's design and performance standards for drains and storm water management systems.

(Ord. 475, passed 5-4-15)

§ 62.204 STORM WATER PERMIT REVIEW FEES.

(A) All expenses and costs incurred by the city directly associated with processing, reviewing and approving or denying a storm water permit application shall be paid (or reimbursed) to the city from the funds in a separate escrow account established by the Developer, as provided in division (B). The city may draw funds from a Developer's escrow account to reimburse the city for out-of-pocket expenses incurred by the city relating to the application. Such reimbursable expenses include, but are not limited to, expenses related to the following:

(1) Services of the City Attorney directly related to the application.

(2) Services of the City Engineer directly related to the application including inspections fees.

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(3) Services of other independent contractors working for the city which are directly related to the application.

(4) Any additional public hearings, required mailings and legal notice requirements necessitated by the application.

(B) At the time a Developer applies for a storm water permit, the Developer shall deposit with the City Treasurer, as an escrow deposit, an initial amount as determined by resolution of the City Commission for such matters and shall provide additional amounts as requested by the city in such increments as are specified in said resolution. Any excess funds remaining in the escrow account after the application has been fully processed, reviewed, and the final city denial or approval and acceptance of the development has occurred will be refunded to the Developer with no interest to be paid on those funds. At no time prior to the city's final decision on an application shall the balance in the escrow account fall below the required initial amount. If the funds in the account are reduced to less than the required initial amount, the Developer shall deposit into the account the additional amount needed to restore the account to the required amount before the application review process will be continued. Additional amounts may be required to be placed in the escrow account by the Developer, at the discretion of the city.

(Ord. 475, passed 5-4-15)

§ 62.205 FINANCIAL GUARANTEE.

(A) The City Engineer shall not approve a storm water permit until the Developer submits to the city, in a form and amount satisfactory to the city, a letter of credit or other financial guarantee for the timely and satisfactory construction of all storm water runoff facilities and site grading in accordance with the approved storm water plan. Upon certification by a registered professional engineer that the storm water runoff facilities have been completed in accordance with the approved storm water plan including, but not limited to, the provisions contained in § 62.203(B)(8), the city may release the letter of credit, or other financial guarantee subject to final city acceptance and approval.

(B) The letter of credit or other financial guarantee may be accessed when:

- (1) Violation of this chapter has occurred as determined by the city;
- (2) Three notifications to the developer detailing the infraction have been issued; and
- (3) No corrective action has being taken by the developer within 30 days of final notification.

(C) Except as provided in division (E), the amount of the financial guarantee shall be as determined by the City Commission in a Resolution of Fees for city services, unless the city determines that a greater amount is appropriate, in which case the basis for such determination shall be provided to the Developer in writing. In determining whether an amount greater than the amount established by

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Resolution of the City Commission is appropriate, the city shall consider the size and type of the development, the size and type of the on-site storm water system, and the nature of the off-site storm water runoff facilities the development will utilize.

(D) The letter of credit or other financial guarantee will not be permitted to expire until any necessary maintenance agreements for storm water facilities established by the developer has been signed.

(E) A maintenance bond shall be provided to the appropriate agency. The maintenance bond shall be provided for a period of two years commencing from the date of the final approval of the storm water plan.

(F) The Zoning Administrator, based on the recommendation of the City Engineer, may reduce or waive the amount of the financial guarantee for a development that will not increase the percentage of impervious surface of the development site by more than 10%.

(G) This chapter shall not be construed or interpreted as relieving a developer of its obligation to pay all costs associated with on-site private storm water runoff facilities as well as those costs arising from the need to make other storm water improvements in order to reduce a development's impact on a drain consistent with adopted design standards.

(Ord. 475, passed 5-4-15)

§ 62.206 CERTIFICATE OF OCCUPANCY.

No certificate of occupancy shall be issued until storm water runoff facilities have been completed in accordance with the approved storm water plan; provided, however, the city may issue a certificate of occupancy if an acceptable letter of credit or other financial guarantee has been submitted to the city, for the timely and satisfactory construction of all storm water runoff facilities and site grading in accordance with the approved storm water plan.

(Ord. 475, passed 5-4-15)

§ 62.207 NO CHANGE IN APPROVED FACILITIES.

(A) Storm water runoff facilities, after construction and approval, shall be maintained in good condition, in accordance with the approved storm water plan, and shall not be subsequently altered, revised or replaced except in accordance with the approved storm water plan, or in accordance with approved amendments or revisions in the plan.

(B) The city has the right to take corrective action if alterations to approved storm water facilities occur and to seek compensation from the responsible party for all costs associated with the corrective action.

(Ord. 475, passed 5-4-15)

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§ 62.208 -TERMS AND CONDITIONS OF PERMITS.

In granting a storm water permit, the city may impose such terms and conditions as are reasonably necessary to implement the purposes of this chapter. A Developer shall comply with such terms and conditions. (Ord. 475, passed 5-4-15)

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ARTICLE III: STORM WATER SYSTEM

Section

- 62.301 Management of and responsibility for storm water system
- 62.302 Storm water system
- 62.303 Floodplain and sensitive area standards
- 62.304 Building openings
- 62.305 Public health, safety or welfare

§ 62.301 MANAGEMENT OF AND RESPONSIBILITY FOR STORM WATER SYSTEM.

The city is not responsible for providing drainage facilities on private property for the management of storm water on said property. It shall be the responsibility of the property owner to provide for, and maintain, private storm water runoff facilities serving the property and to prevent or correct the accumulation of debris that interferes with the drainage function of a water body.

(Ord. 475, passed 5-4-15)

§ 62.302 STORM WATER SYSTEM.

All storm water runoff facilities shall be constructed and maintained in accordance with all applicable federal, state and local ordinances, and rules and regulations.

(Ord. 475, passed 5-4-15)

§ 62.303 FLOODPLAIN AND SENSITIVE AREAS STANDARDS.

(A) All new buildings and substantial improvements to existing buildings shall be protected from flood damage up to the Flood Protection Elevation (FPE) and shall be in accordance with all applicable federal, state and local ordinances, and rules and regulations. Floodway alteration shall be permitted only upon review and approval by the city, in accordance with an approved storm water plan.

(B) A storm water plan providing for the filling or alteration of a floodway may include provisions for maintaining stability of the banks of streams or other water bodies, by means of the establishing of buffer zones and other means of providing protection of the slopes and banks of water bodies.

(C) Within any required buffer zone, no earth change shall take place except in accordance with the approved storm water plan. Such a plan may also include provisions for the replacement of flood plain storage

volume, where such storage volume is lost or diminished as a result of approved development.

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(D) Where appropriate, permanent setbacks based on site slopes and soils will be established in accordance with the specifications outlined in the Genesee County Requirement Manual.
(Ord. 475, passed 5-4-15)

§ 62.304 BUILDING OPENINGS.

(A) No building openings, including basement walkouts, shall be constructed below the following elevations:

- (1) One foot above the 100-year floodplain.
- (2) The building opening established at the time of plat or development approval and on file in the city's property files.
- (3) Three feet above the top of any downstream culvert.
- (4) Four feet above the bottom of any permanent and defined drain.
- (5) One foot above an adjacent detention basin design high water.

(B) A waiver from elevations stated in § 3.06(1a) may be granted by the City Engineer following receipt of a certification from a registered professional engineer demonstrating that the proposed elevation does not pose a risk of flooding.

(C) Upon completion of construction of the structure's foundation and or slab on grade, a registered land surveyor shall certify any minimum building opening elevation specified by this chapter. This certificate shall attest that the building opening elevation complies with the standards of this chapter. The permittee for the building permit shall submit the certificate to the city's building inspector prior to the commencement of framing and/or structural steel placement. If the surveyor should find that the minimum building opening elevation is below the elevation specified in § 79.276(a)(2) or (3), that opening must be raised using a method that meets with the approval of the city. After reconstruction, a registered land surveyor or engineer shall re-certify that the minimum building opening elevation complies with the standards of this chapter prior to the commencement of framing and or structural steel placement.

(Ord. 475, passed 5-4-15)

§ 62.305 PUBLIC HEALTH, SAFETY OR WELFARE.

Protection of the public health, safety or welfare shall be a primary consideration in the design of all storm water runoff facilities.
(Ord. 475, passed 5-4-15)

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ARTICLE IV: PROHIBITIONS AND EXEMPTIONS

Section

- 62.401 Illicit discharges
- 62.402 Exempted discharges
- 62.403 Interference with natural or artificial drainageway
- 62.404 Storage of hazardous or toxic materials in drainageway

§ 62.401 ILLICIT DISCHARGES.

(A) No person shall discharge to a water body, directly or indirectly (i.e. via an illicit connection), any substance other than storm water or an exempted discharge. Any person discharging storm water shall effectively prevent pollutants from being discharged with the storm water, except in accordance with best management practices.

(B) The city is authorized to require dischargers to implement pollution prevention measures, utilizing BMPs, necessary to prevent or reduce the discharge of pollutants into the city's storm water drainage system or surface waters of the state. Discharges to storm drains and waters of the state other than storm water and the exempted discharges listed in § 62.402 is strictly prohibited.

(Ord. 475, passed 5-4-15)

§ 62.402 EXEMPTED DISCHARGES.

The following non-storm water discharges shall be permissible, provided that they do not result in a violation of State of Michigan water quality standards:

- (A) Water supply line flushing.
- (B) Landscape irrigation.
- (C) Diverted stream flows.
- (D) Rising ground water.

(E) Uncontaminated ground water infiltration to storm drains.

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(F) Uncontaminated pumped ground water.

(G) Discharges from potable water sources.

(H) Foundation drains.

(I) Air conditioning condensate.

(J) Individual residential car washing.

(K) Dechlorinated swimming pool waters from single, two, or three family residences.

(L) Residual street wash water.

(M) Discharges or flows from emergency fire fighting activities.

(N) Discharges for which a specific federal or state permit has been issued.

(Ord. 475, passed 5-4-15)

§ 62.403 INTERFERENCE WITH NATURAL OR ARTIFICIAL DRAINAGEWAY.

It shall be unlawful for any person to stop, fill, dam, confine, pave, alter the course of, or otherwise interfere with any natural or constructed drain, or drainage way without first submitting a storm water plan to the city and all appropriate agencies (state, Genesee County Drain Commissioner's office) and receiving approval of that plan. Any deviation from the approved plan is a violation of this chapter. This section shall not prohibit, however, necessary emergency action so as to prevent or mitigate drainage that would be injurious to the environment, the public health, safety, or welfare.

(Ord. 475, passed 5-4-15)

§ 62.404 STORAGE OF HAZARDOUS OR TOXIC MATERIALS IN DRAINAGEWAY.

Except as permitted by law, it shall be unlawful for any person to store or stockpile within a drainageway any hazardous or toxic materials unless adequate protection and/or containment has been provided so as to prevent any such materials from entering a waterway.

(Ord. 475, passed 5-4-15)

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ARTICLE V: INSPECTION, MONITORING, REPORTING AND RECORD KEEPING

Section

- 62.501 Investigate, inspect and monitor suspected illicit discharges
- 62.502 Storm water monitoring facilities
- 62.503 Accidental discharges
- 62.504 Record keeping requirement

§ 62.501 INVESTIGATE, INSPECT AND MONITOR SUSPECTED ILLICIT DISCHARGES.

To investigate potential illicit discharges or connections and to assure compliance with the standards set forth in this chapter, the city may investigate, inspect and/or obtain monitor any discharge. Upon request, the discharger shall allow the city's properly identified representative to enter upon the premises of the discharger at all hours necessary for the purposes of such inspection or sampling. The city shall provide the discharger reasonable advance notice of such inspection and/or sampling. The city or its properly identified representative may place on the discharger's property the equipment or devices used for such sampling, monitoring or inspection.

(Ord. 475, passed 5-4-15)

§ 62.502 STORM WATER MONITORING FACILITIES.

The city may require, in writing, that a discharger of storm water runoff provide and operate equipment or devices for the monitoring of storm water runoff, so as to provide for inspection, sampling, and flow measurement of each discharge to a water body or a storm water runoff facility. The city may require a discharger to provide and operate such equipment and devices if it is necessary or appropriate for the inspection, sampling and flow measurement of discharges in order to determine whether adverse effects from or as a result of such discharges may occur. All such equipment and devices for the inspection, sampling and flow measurement of discharges shall be installed and maintained in accordance with applicable laws, ordinances and regulations. All monitoring results will be made available and reported to the city at an agreed upon time.

(Ord. 475, passed 5-4-15)

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§ 62.503 ACCIDENTAL DISCHARGES.

(A) Any discharger who accidentally discharges into a MS4 or water of the state any substance other than storm water or an exempted discharge shall inform the city within 24 hours of knowledge of the incident. If such information is given orally, a written report concerning the discharge shall be filed with the city within five days. The written report shall specify:

- (1) The composition of the discharge and the cause thereof.
- (2) The exact date, time, and estimated volume of the discharge.
- (3) All measures taken to clean up the accidental discharge, and all measures proposed to be taken to reduce and prevent any recurrence.
- (4) The name and telephone number of the person making the report, and the name of a person who may be contacted for additional information on the matter.

(B) A properly-reported accidental discharge shall be an affirmative defense to a civil infraction proceeding brought under this chapter against a discharger for such discharge. It shall not, however, be a defense to a legal action brought to obtain an injunction, to obtain recovery of costs or to obtain other relief as a result of or arising out of the discharge. A discharge shall be considered properly reported only if the discharger complies with all the requirements of § 5.03(a).

(Ord. 475, passed 5-4-15)

§ 62.504 RECORD KEEPING REQUIREMENT.

Any person subject to this chapter shall retain and preserve for no less than three years any and all books, drawings, plans, prints, documents, memoranda, reports, correspondence and records, including records on magnetic or electronic media and any and all summaries of such records, relating to monitoring, sampling and chemical analysis of any discharge or storm water runoff from any property.

(Ord. 475, passed 5-4-15)

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ARTICLE VI: ENFORCEMENT

Section

- 62.601 Sanctions for violation
- 62.602 Stop work order
- 62.603 Failure to comply; completion
- 62.604 Emergency measures
- 62.605 Cost recovery for damage to storm drain system
- 62.606 Collection of costs; lien
- 62.607 Appeals

§ 62.601 SANCTIONS FOR VIOLATION.

(A) Any person violating any provision of this chapter shall be responsible for a municipal civil infraction and subject to a fine to cover costs, damages, expenses, and other sanctions as authorized under Chapter 87 of the Revised Judicature Act of 1961 and other applicable laws, including, without limitation, equitable relief; provided, however, that the violation stated in § 6.01(b) shall be a misdemeanor. Each day such violation occurs or continues shall be deemed a separate offense and shall make the violator liable for the imposition of a fine for each day. The rights and remedies provided for in this section are cumulative and in addition to any other remedies provided by law. An admission or determination of responsibility shall not exempt the offender from compliance with the requirements of this chapter.

(B) For purposes of this section, *SUBSEQUENT OFFENSE* means a violation of the provisions of this chapter committed by the same person within 12 months of a previous violation of the same provision of this chapter for which said person admitted responsibility or was adjudicated to be responsible.

(C) Police officers of the city are authorized to issue municipal civil infraction citations to any person alleged to be violating any provision of this chapter.

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(D) Any person who neglects or fails to comply with a stop work order issued under § 62.602 shall, upon conviction, be guilty of a misdemeanor, punishable by a fine of not more than \$500 per violation per day or imprisonment in the county jail for not more than 93 days, or both such fine and imprisonment, and such person shall also pay such costs as may be imposed in the discretion of the court.

(E) Any person who aids or abets a person in a violation of this chapter shall be subject to the sanctions provided in this section.

(Ord. 475, passed 5-4-15)

§ 62.602 STOP WORK ORDER.

Where there is work in progress that causes or constitutes in whole or in part, a violation of any provision of this chapter, the city is authorized to issue a Stop Work Order so as to prevent further or continuing violations or adverse effects. All persons to whom the Stop Work Order is directed, or who are involved in any way with the work or matter described in the stop work order shall fully and promptly comply therewith. The city may also undertake or cause to be undertaken, any necessary or advisable protective measures so as to prevent violations of this chapter or to avoid or reduce the effects of noncompliance herewith. The cost of any such protective measures shall be the responsibility of the owner of the property upon which the work is being done and the responsibility of any person carrying out or participating in the work, and such cost shall be a lien upon the property.

(Ord. 475, passed 5-4-15)

§ 62.603 FAILURE TO COMPLY; COMPLETION.

In addition to any other remedies, should any owner fail to comply with the provisions of this chapter, the city may, after the giving of reasonable notice and opportunity for compliance, have the necessary work done, and the owner shall be obligated to promptly reimburse the city for all costs of such work.

(Ord. 475, passed 5-4-15)

§ 62.604 EMERGENCY MEASURES.

When emergency measures are necessary to moderate a nuisance, to protect public safety, health and welfare, and/or to prevent loss of life, injury or damage to property, the city is authorized to carry out or arrange for all such emergency measures. Property owners shall be responsible for the cost of such measures made necessary as a result of a violation of this chapter, and shall promptly reimburse the city for all of such costs.

(Ord. 475, passed 5-4-15)

Enforcement

§ 62.605 COST RECOVERY FOR DAMAGE TO STORM DRAIN SYSTEM.

A discharger shall be liable for all costs incurred by the city as the result of causing a discharge that produces a deposit or obstruction, or causes damage to, or impairs a storm drain, or violates any of the provisions of this chapter. Costs include, but are not limited to, those penalties levied by the Environmental Protection Agency or MDNRE for violation of an National Pollutant Discharge Elimination System permit, attorney fees, and other costs and expenses.

(Ord. 475, passed 5-4-15)

§ 62.606 COLLECTION OF COSTS; LIEN.

Costs incurred by the city pursuant to §§ 62.602 through 62.605 shall be a lien on the premises which shall be enforceable in accordance with Act No. 94 of the Public Acts of 1933, as amended from time to time. Any such charges which are delinquent for six months or more may be certified annually to the City Treasurer who shall enter the lien on the next tax roll against the premises and the costs shall be collected and the lien shall be enforced in the same manner as provided for in the collection of taxes assessed upon the roll and the enforcement of a lien for taxes. In addition to any other lawful enforcement methods, the city shall have all remedies authorized by Act No. 94 of the Public Acts of 1933, as amended, and any other remedies available under applicable law.

(Ord. 475, passed 5-4-15)

§ 62.607 APPEALS.

(A) Any person as to whom any provision of this chapter has been applied may appeal in writing, not later than 30 days after the action or decision being appealed from, to the city Commission the action or decision whereby any such provision was so applied. Such appeal shall identify the matter being appealed, and the basis for the appeal.

(B) The City Commission shall consider the appeal and make a decision whereby it affirms, rejects or modifies the action being appealed. In considering any such appeal, the City Commission may consider the recommendations of the City Engineer and the comments of other persons having knowledge of the matter. In considering any such appeal, the City Commission may grant a variance from the terms of this chapter so as to provide relief, in whole or in part, from the action being appealed, but only upon finding that the following requirements are satisfied:

(1) The application of the ordinance provisions being appealed will present or cause practical difficulties for a development or development site; provided, however, that practical difficulties shall not include the need for the developer to incur additional reasonable expenses in order to comply with the ordinance; and

(2) The granting of the relief requested will not substantially prevent the goals and purposes sought to be accomplished by this chapter, nor result in less effective management of storm water runoff.
(Ord. 475, passed 5-4-15)

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ARTICLE VII: STORM WATER EASEMENTS AND MAINTENANCE AGREEMENTS

Section

- 62.701 Applicability of requirements
- 62.702 Storm water management easements
- 62.703 Maintenance agreements
- 62.704 Establishment of county drains

§ 62.701 APPLICABILITY OF REQUIREMENTS.

The requirements of this article concerning storm water easements and maintenance agreements shall apply to all persons required to submit a storm water and/or storm water plan to the city for review and approval. (Ord. 475, passed 5-4-15)

§ 62.702 STORM WATER MANAGEMENT EASEMENTS.

The Developer shall provide all storm water management easements necessary to implement the approved storm water plan and to otherwise comply with this chapter in form and substance required by the city and shall record such easements as directed by the city. The easements shall assure access for proper inspection and maintenance of storm water runoff facilities and shall provide adequate emergency overland flow-ways. (Ord. 475, passed 5-4-15)

§ 62.703 MAINTENANCE AGREEMENTS.

(A) *Purpose of maintenance agreement.* The purpose of the maintenance agreement is to provide the means and assurance that maintenance of stormwater BMPs shall be undertaken.

(B) *Maintenance agreement required.*

(1) A maintenance agreement shall be submitted to the city, for review by the Zoning Administrator and his/her designee and the City Attorney, for all development, and shall be subject to approval in accordance with Stormwater Plan. A formal maintenance plan shall be included in the maintenance agreement.

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(2) Maintenance agreements shall be approved by the City Commission prior to final subdivision plat or condominium approval, as applicable, and prior to construction approval in other cases.

(3) A maintenance agreement is not required to be submitted to the city for "Chapter 18: Drains" that will be maintained by the Genesee County Drain Commission.

(C) *Maintenance agreement provisions.*

(1) The maintenance agreement shall include a plan for routine, emergency, and long-term maintenance of all stormwater BMPs, with a detailed annual estimated budget for the initial three years, and a clear statement that only future maintenance activities in accordance with the maintenance agreement plan shall be permitted without the necessity of securing new permits. Written notice of the intent to proceed with maintenance shall be provided by the party responsible for maintenance to the city at least 14 days in advance of commencing work.

(2) The maintenance agreement shall be binding on all subsequent owners of land served by the stormwater BMPs and shall be recorded in the office of the Genesee County Register of Deeds prior to the effectiveness of the approval of the City Commission.

(3) If it has been found by the City Commission, following notice and an opportunity to be heard by the property owner, that there has been a material failure or refusal to undertake maintenance as required under this chapter and/or as required in the approved maintenance agreement as required hereunder, the city shall then be authorized, but not required, to hire an entity with qualifications and experience in the subject matter to undertake the monitoring and maintenance as so required, in which event the property owner shall be obligated to advance or reimburse payment (as determined by the city) for all costs and expenses associated with such monitoring and maintenance, together with a reasonable administrative fee. The maintenance agreement required under this chapter shall contain a provision spelling out this requirement and, if the applicant objects in any respect to such provision or the underlying rights and obligations, such objection shall be resolved prior to the commencement of construction of the proposed development on the property.

(Ord. 475, passed 5-4-15)

Prior to final approval, all storm water management facilities for platted subdivisions shall be established as county drains, as authorized in Section 433, Chapter 18 of the Michigan Drain Code (PA 40 of 1956, as amended) for long-term maintenance.
(Ord. 475, passed 5-4-15)

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ARTICLE VIII: PERFORMANCE AND DESIGN STANDARDS

Section

- 62.801 Reference to Requirement Manual
- 62.802 Requirement Manual
- 62.803 Changes to standards and specifications
- 62.804 Amendments to Requirement Manual
- 62.805 Conflict of laws
- 62.806 Private agreements
- 62.807 Violations continue

§ 62.801 REFERENCE TO REQUIREMENT MANUAL.

(A) The city or its designate shall use the policy, criteria, and information, including technical specifications and standards, in the Genesee County Requirement Manual as the basis for decisions about storm water permits and about the design, implementation and performance of structural and non-structural storm water BMPs.

(B) The State LID Manual includes a list of storm water treatment practices, including the specific design criteria for each them. Storm water treatment practices that are designed and constructed in accordance with these design and sizing criteria should meet the minimum water quality and channel protection performance standards outlined in the Genesee County Storm Water and Flood Control Design Standard Requirements and the

federal Phase II Storm Water Rules. Calculations to demonstrate that BMP designs will perform to meet required water quality, channel protection and flood control standards are to be submitted to the appropriate reviewing agency. Failure to construct storm water treatment practices in accordance with these standards may subject the violator to a civil penalty as described in Article VI of this chapter.
(Ord. 475, passed 5-4-15)

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§ 62.802 REQUIREMENT MANUAL.

If the specifications or guidelines of the Genesee County Storm Water and Flood Control Design Standard Requirements are more restrictive or apply a higher standard than other laws or regulations, that fact shall not prevent application of the specifications or guidelines in the Requirement Manual.
(Ord. 475, passed 5-4-15)

§ 62.803 CHANGES TO STANDARDS AND SPECIFICATIONS.

Standards, specifications, guidelines, policies, criteria, or other information in the Requirement Manual in affect at the time of acceptance of a complete application shall control and shall be utilized in reviewing the application and in implementing this chapter with regard to the application.
(Ord. 475, passed 5-4-15)

§ 62.804 AMENDMENTS TO REQUIREMENT MANUAL.

The Requirement Manual may be updated and expanded from time to time, based on advancements in technology and engineering, improved knowledge of local conditions, or local monitoring or maintenance experience. Prior to amending or updating the Requirement Manual, proposed changes shall be generally publicized and made available for review, and an opportunity for comment by interested persons shall be provided.
(Ord. 475, passed 5-4-15)

§ 62.805 CONFLICT OF LAWS.

This chapter is not intended to modify or repeal any other ordinance, rule, regulation or other provision of

law. The requirements of this chapter are in addition to the requirements of any other ordinance, rule, regulation or other provision of law, and where any provision of this chapter imposes restrictions different from those imposed by any other ordinance, rule, regulation or other provision of law, whichever provision is more restrictive or imposes higher protective standards for human or environmental health, safety, and welfare, shall control.

(Ord. 475, passed 5-4-15)

§ 62.806 PRIVATE AGREEMENTS.

This chapter is not intended to revoke or repeal any easement, covenant, or other private agreement. However, where the regulations of this chapter are more restrictive or impose higher standards or requirements than such easement, covenant, or other private agreement, then the requirements of this chapter shall govern. Nothing in this chapter shall modify or repeal any private covenant or deed

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restriction, but such covenant or restriction shall not legitimize any failure to comply with this chapter. In no case shall the county or city be obligated to enforce the provisions of any easements, covenants, or agreements between private parties.

(Ord. 475, passed 5-4-15)

§ 62.807 VIOLATIONS CONTINUE.

Any violation of the provisions of this chapter existing as of the effective date of this chapter shall continue to be a violation under this chapter and be subject to penalties and enforcement unless the use, development, construction, or other activity complies with the provisions of this chapter.

(Ord. 475, passed 5-4-15)

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ARTICLE IX: OTHER MATTERS

Section

62.901 Interpretation

§ 62.901 INTERPRETATION.

Words and phrases in this chapter shall be construed according to their common and accepted meanings, except that words and phrases defined in § 62.105 shall be construed according to the respective definitions given in that section. Technical words and technical phrases that are not defined in this chapter but which have acquired particular meanings in law or in technical usage shall be construed according to such meanings.

(Ord. 475, passed 5-4-15)

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**Genesee County
Storm Water and Flood Control
Design Standard Requirements**



Effective date: _____

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INTRODUCTION

The intent of this document is to provide information specific to Genesee County Drain Commissioner's design standards to address storm water quantity and quality. This manual will provide the policy framework, implementation procedures and design standards for storm water controls. **Note:** additional standards and requirements not in this document are required for storm systems that are to be dedicated to this office as public.

This document outlines design requirements for storm water quantity and storm water quality. The Drain Commissioner's office has adopted the *State's Low Impact Development (LID) Manual for Michigan* to guide the design of proposed Best Management Practices (BMPs) for water quality that target the standards provided in this document.

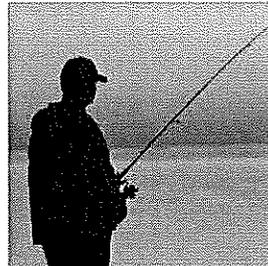
This edition of the design standards and requirements of the Genesee County Drain Commissioner reflects a storm water management philosophy that considers not only flood control, but also stream channel protection and storm water quality management. These revisions are based upon the most current State Permit requirements concerning storm water management. This manual will be updated periodically as additional BMPs are developed and/or as requirements change.

The following section outlines basic ideas and principals of storm water management, and provides a conceptual foundation for the design standards contained in this document.

THE ROLE OF THE GENESEE COUNTY DRAIN COMMISSIONER

The Office of the Drain Commissioner will review all plans submitted to the standards outlined in this document. Those sites that must submit to this office for review are listed on page 3. This office exercises authority over permitted activities of structural facilities that convey and treat storm water runoff that will be generated from a site as a result of its design. The Drain Commissioner's Rules will govern the design of such management facilities with the following objectives:

- Incorporate design standards to control both water quantity and quality.
- Encourage innovative storm water management practices that meet the criteria contained within these rules.
- Ensure future maintenance of facilities by planning for it as a part of system design.
- Make the safety of facilities a priority.
- Strengthen the protection of natural features.
- Encourage more effective soil erosion and sedimentation control measures.



The preferred hierarchy discussed above and summarized in Table 1, below, provides a comprehensive framework for evaluating the place and function of individual BMPs within a storm water management system. While the most important BMPs are source controls that preserve and protect the natural environment, the Genesee County Drain Commissioner cannot mandate these. We must look to the staff and officials of local governments, as well as to developers and their design engineers and planners, to implement source reduction approaches.

Table 1: Hierarchy of Preferred Best Management Practices (BMPs)

Non-Structural (Source) Controls	Structural (Site) Controls
<ol style="list-style-type: none"> 1. Preservation of the natural environment 2. Minimization of impervious surfaces 3. Use of vegetated swales and natural storage 	<ol style="list-style-type: none"> 1. Infiltration of runoff on-site (trenches, etc.) 2. Structural (Site) Controls 3. Storm water detention structures 4. Storm water retention ponds * 5. Conveyance off-site 6. Proper maintenance

*Storm water retention is allowed when no acceptable outlet is available and soil conditions allow.

APPLICABILITY

To prevent an increase in non-point source pollution, these Standards requirements shall apply to any earth-disturbing activities greater than or equal to 1-acre (≥ 1 ac.) on new development or redevelopment projects. Earth disturbing activities less than 1-acre but are a part of a larger plan or development apply because the earth disturbance activities are considered cumulative. For those individual parcels with earth disturbing activities less than 1-acre but have more than > 0.5 acres of impervious surface shall apply.



Typically these sites require approval of a plat, a site development plan, building permit, and other permits to be obtained. The aforementioned requirements will include storm water plans that shall be designed, constructed, and maintained to prevent flooding, minimize stream channel impacts, protect water quality, and achieve the purposes of each local community's storm water ordinance for managing the quantity and quality of storm water runoff.

DESIGN MANUAL AND STANDARD DETAILS

Local communities may furnish additional policy, criteria and information, for the proper implementation of their own local ordinance. This document together with the State Low Impact Development manual (State LID manual) (Chapter 5 through 9 with relevant appendices) will provide information on water quality and quantity standards as well a list of acceptable storm water treatment practices, including the specific design criteria for each storm water practice. This document and the State LID manual may be updated and expanded from time to time based on federal and state requirements, improvements in engineering, science, monitoring, and local maintenance experience. Storm water treatment practices that are designed and constructed in accordance with these design and sizing criteria contained in the State LID manual should meet the minimum water quality and channel protection performance standards outlined in this document. Calculations to demonstrate that BMP designs will perform to meet required water quality, channel protection and flood control standards are to be submitted to the appropriate reviewing agency. Failure to construct storm water treatment practices in accordance with these standards may subject the violator to a civil penalty as described in section 6 of the storm water ordinance.

STORM WATER PLAN Submittal Requirements

These requirements have been developed in the context of plat submittal under Act 288 of the Public Acts of 1967, as amended, the Michigan Land Division Act. However, they shall also be followed for all other categories of development, including site condominiums and site plans.

The following developments will be submitted to the Genesee County Drain Commissioner's Office for review and approval:

1. Plats submitted under Act 288 of the Public Acts of 1967, as amended, the Michigan Land Division Act
2. Applications for permits to discharge to or perform work on a county drain under P.A. 40 of 1956, as amended. Permits are required for any work done to a drain, work within the drain easement or work done that will increase flow to a county drain.
3. All new and redevelopment projects undertaken by Genesee County that disturb one (1) acre or more, including projects less than one (1) acre that are part of a larger common plan of development or sale that would disturb one (1) acre or more. This includes Genesee County Road Commission plans that include changes to the storm water system that serves the road.
4. Review of storm water system plans in other classes of developments or redevelopments, when required by local municipalities.
5. Site Condominium plans prepared under Act 59, P.A. 1978, as amended, where local government ordinances require.
6. Mobile home plans prepared under Act 96, PA. 1987.

The developer will describe the mechanism to be established for long-term maintenance of the development's private storm water management system, including maintenance schedule and enforcement. County enforcement of private development is limited to permitted actives. (See Requirement E)

Should the proprietor plan to subdivide or develop a given area but wishes to begin with only a portion of the total area, the original preliminary plan will include the proposed general layout for the entire area. The first phase of the subdivision will be superimposed upon the overall plan in order to illustrate clearly the method of development that the proprietor intends to follow. Each subsequent plat or phase will follow the same procedure until the entire area controlled by the proprietor is developed.

Final acceptance by the Drain Commissioner of only one portion or phase of the development does not ensure final acceptance of any subsequent phases or the overall general plat for the entire area; nor does it mandate that the overall general plat or plan be followed as originally proposed, if deviations or modifications acceptable to the Drain Commissioner are proposed.

Preliminary plan approval shall remain in effect for one year. Extensions must be requested in writing.

SUBMITTAL PROCESS

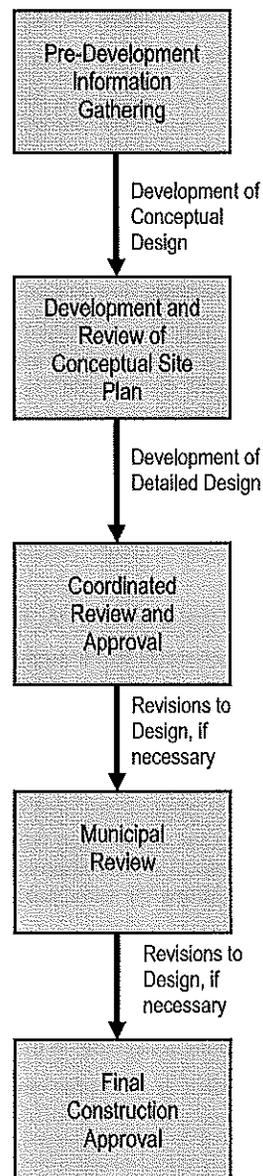
STEP 1: Pre Development Information Gathering - For all applicable projects, developers (or their designated design representatives) will contact representatives from each of the following: the County Road Commission, Health Department, municipal officials (zoning, planner, engineer, DPW, building official), and Drain Commissioner's office (Water and Waste Services and Surface Water). The purpose will be to gather information on design standards, development guidelines, and to identify the type of information developers and their representatives must furnish to comply with this ordinance. In some instances it may be expedient to hold one conference with all the involved parties. Communication between the project designer and developer, as well as the relevant local officials and developer, are two key components of this framework.

STEP 2: Development and Review of Conceptual Site Plan - Review of the conceptual site plan for approval at the County level by the appropriate personnel in Water & Waste Services, soil erosion, surface water, the Road Commission and the Health Department. Comments are returned to the owner/client and designer. **At this time the developer will have his design engineer submit a statement that their site has been reviewed to determine if it's size is capable of accommodating soil erosion and soil conservation measures during construction.**

STEP 3: Coordinated Review and Approval: Review of the Storm Water Plan and the proposed BMPs will occur at the same time as the review of the site plan by representatives from the appropriate agencies. All required documentation should be submitted two weeks prior to the meeting.

STEP 4: Municipal Review and Approval - Developers shall provide a storm water plan for post-construction management of storm water to the Municipality for review and approval. Guidance will be provided to zoning administrators and local planning commission members on the ordinance and design standards and they will be provided with a checklist for reference during site plan review. At this stage all necessary permits should have been obtained from Federal, State, and County agencies. Once all of the above documents have been obtained construction approval will be given by the municipality.

Figure 1:
Submittal Process Flow Chart



GENERAL INFORMATION REQUIREMENTS

All preliminary plans will include the following information:

1. The location of the proposed development by means of a small location map.
2. The township, city, or village in which the parcel is situated.
3. The section and part of section in which the parcel is situated.
4. The number of acres to be developed.
5. Contours, at 2-foot intervals or less, shown in a U.S.G.S. datum that is marked on prints.
6. The proposed drainage system for the development.
7. The proposed street, alley and lot layouts and approximate dimensions.
8. The location and description of all on-site and adjacent off-site features that may be relevant in determining the overall requirements for the development. These features may include, but are not limited to, the following:
 - Adjoining roads, subdivisions, and other developments
 - Schools, parks, and cemeteries
 - Drains, sewers, water mains, septic fields and wells
 - High tension power lines, underground transmission lines, gas mains, pipelines, or other utilities
 - Railroads
 - Existing and proposed easements
 - Natural and artificial watercourses, wetlands and wetland boundaries, floodplains, lakes, bays, and lagoons
 - Designated natural areas
 - Soils description in accordance with the USDA NRCS standard soils criteria
 - Any proposed environmental mitigation features
9. Soil borings, may be required at various locations including the sites of proposed retention/detention facilities, and in areas where high ground water tables exist.



STORM WATER MASTER PLAN INFORMATION REQUIREMENTS

All plans will include the following storm water management information:

A. Stormwater Plan Preparation

The Stormwater Plan shall be prepared by a registered civil engineer. Other persons and professionals may assist in the preparation of the plan.

B. Scale for Mapping

The Stormwater Plan shall be drawn at an appropriate scale to be legible

C. Required Information

1. The Stormwater Plan must be sufficiently detailed to specify the type, location, and size of stormwater management facilities, using preliminary calculations. Detailed construction drawings are not required at the Stormwater Plan review stage.
2. The storm water management plan for the proposed development will indicate and where the drainage will outlet.
3. If it is proposed to develop a parcel in two or more phases, the Stormwater Plan shall be prepared and submitted for the total project.
4. The location by means of a small location map, drawn to a scale no less than 1" = 2000'.
5. Zoning classification of petitioner's parcel and all abutting parcels.

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6. The location and description of all on-site features and all adjacent off-site features within 50 feet, and all other off-site features that may be impacted in determining the overall requirements for the development. This includes:
- (a) Existing site topography with contours at two-foot intervals or less based on the NAVD88 datum
 - (b) Adjoining roads and developments
 - (c) Railroads
 - (d) High tension power lines or underground transmission lines
 - (e) Cemeteries
 - (f) Parks
 - (g) Natural and artificial watercourses, wetlands and wetland boundaries, environmental feature boundaries,
 - (h) floodplains, lakes, bays, existing stormwater storage facilities, conveyance swales (natural or artificial) with identification of permanent water elevations
 - (i) Information supporting that the outlet is acceptable. An acceptable outlet is a natural watercourse under regulation of Act 451 part 301 Inland Lake and Stream, county drain, county road ditch, or a regulated wetland with an acceptable outlet. The development may discharge across a neighboring private property with the appropriate written approvals/easements.
 - (j) Location of woodlands
 - (k) Designated natural areas
 - (l) Any proposed environmental mitigation features
 - (m) Drains, sewers, and water mains
 - (n) Existing and proposed easements
 - (o) A map, at the U.S.G.S. scale, showing the drainage boundary of the proposed development and its relationship with existing drainage patterns
 - (p) Boundaries of any off-site drainage area contributing flow to the development
 - (q) Any watercourse passing through the development, along with the following:
 - (i) Area of upstream watershed and current zoning
 - (ii) Calculations of runoff from the upstream area for both the 100-year and two-year 24-hour design storms, for fully developed conditions according to the current land use plan for the area.
 - (iii) A description of how drainage, which originates outside of the development boundaries and flows onto or across the development, will be managed.
 - (r) Soil borings may be required at various locations including the sites of proposed retention/detention and infiltration facilities, and as needed in areas where high groundwater tables or bedrock near the surface exist
 - (s) Proposed site improvements including lot divisions and building footprints
 - (t) Stormwater BMP information including:
 - (i) Location of all stormwater BMPs

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-
- (ii) Identification of stormwater quality and quantity treatment facilities and method of stormwater conveyance
 - (iii) Sizing calculations for stormwater quality and quantity, including preliminary estimates of runoff volume captured by BMPs, (e.g., infiltration losses,) for treatment facilities
 - (iv) Tributary area map for all stormwater management facilities indicating total size and average runoff coefficient for each subarea
 - (v) Analysis of existing soil conditions and groundwater elevation and bedrock depth (including submission of soil boring logs) as required for proposed retention and infiltration facilities

D. Landscaping plan for stormwater BMPs

E. Easements for stormwater management facilities

F. Required natural features setbacks

G. Drinking water wells, public wellheads, Wellhead Protection Areas (WHPAs), underground storage tanks, and brownfields

Proposed drainage for the development will conform to any established County drainage districts. Proposed drainage should complement any local storm water management plans that may exist and/or comply with any ordinance in effect in the municipality/ies where the proposed development is located.

GENESEE COUNTY DESIGN CRITERIA

In an effort to standardize design procedures for storm sewers and open channels in Genesee County, the Genesee County Drain Commissioner has developed these standards. It is hoped that these standards will facilitate planning from both the position of the design and reviewing engineer.



It is recognized that design conditions vary and there is no substitute for the professional judgment of an experienced engineer. In all cases this judgment should be applied.

The development shall meet the following storm water *design requirements*:

- A A minimum treatment volume standard to minimize water quality impacts.*
- B Channel protection criteria to prevent resource impairment resulting from flow volumes and rates.*
- C Flood Control*
- D Operation and maintenance requirements.*
- E Enforcement mechanisms with recordkeeping procedures.*

EXPLANATION OF REQUIREMENTS

Requirement A: “A minimum treatment volume standard to minimize water quality impacts.”

There are several different ways to calculate a minimum treatment volume (commonly referred to as first flush). The developers design representative shall determine the minimum treatment volume for water quality by one of the following methods:

- using 1” of runoff from the entire site
- the statewide analysis by region for the 90-percent annual non-exceedance storms that is summarized in the March 24 2006 MDEQ memo. (Genesee County is considered to be part of the Detroit Metro Area for calculating runoff) A copy of this memo is available on the Drain Commissioner’s website. www.gdcswm.com

Treatment methods shall be designed on a site-specific basis to achieve the following:

- A minimum of 80 percent removal of total suspended solids (TSS), as compared with uncontrolled runoff, or
- Discharge concentrations of TSS not to exceed 80 milligrams per liter (mg/l).

A minimum treatment volume standard is not required where site conditions are such that TSS concentrations in storm water discharges will not exceed 80 mg/l.

Sites are in compliance with this permit requirement if the minimum treatment volume from the site is treated by properly designed BMPs that achieve either 80% removal of total suspended solids, or discharge 80 mg/l or less of total suspended solids according to accepted literature. It is also important to note that new development will often be in compliance with this permit requirement if the volume control specified in the channel protection requirement of this permit is achieved.

Compliance may be shown through calculation or through direct measurement. Calculations or measurements must show reductions to the calculated TSS concentration in uncontrolled runoff using the data provided here or another acceptable literature source. Table 7.1 (pp. 122) in the State LID Manual summarizes the potential application and the quantity and quality function for most BMPs. When designed correctly, either individually or as a suite of BMPs, the treatments listed in Table 7 will meet the permit’s stormwater requirements.

Requirement B: "Channel protection criteria to prevent resource impairment resulting from flow volumes and rates."

The channel protection criteria established in the NPDES Ph II permit is necessary to maintain post-development site runoff volume and peak flow rate at or below existing levels for all storms up to the **2-year, 24-hour event**.

"Existing levels" means the runoff flow volume and rate for the last land use prior to the planned new development or redevelopment.

An acceptable source of rainfall data for calculating runoff volume and peak flow rate is: *Rainfall Frequency Atlas of the Midwest*, Huff & Angel, NOAA Midwest Climate Center and Illinois State Water Survey, 1992. A copy of this is available on the Drain Commissioner's website. www.gdcswm.com

Methods for estimating pre-development and post-development runoff shall follow curve number evaluations. Any of the following methods are allowed:

- Computing Flood Discharges for Small Ungaged Watersheds
- TR55
- Hec-Raz
- Hec-HMS
- SWIM

Requirement C: "Flood Control Requirements"

Flood Control requirements are for all storms events between the **2-year, 24-hour event** and the **100-year 24-hour event**.

Many streams located in this county do not have stream gauging data available or the period of record is not of sufficient length to allow the design engineer to estimate flood flows by using flood-frequency analysis as developed by U.S.G.S. Prior to design of any storm drain improvement or enclosure, the developer or their designated design representative shall investigate any gauging station, partial record gauging station, or crest stage gages on the drainage basin for available pertinent data on flood flows.

Where insufficient data is available to develop basin hydrology by the above method, the developer shall determine flows along the watercourse by the S.C.S. method, the rational method, the brater method, or a combination of these methods. The basin hydrology shall be approved by the Genesee County Drain Commissioner's office prior to proceeding with the final design of a given project.

Implementing stormwater control BMPs can reduce the frequency and intensity of flooding even on C and D soils. And while the State LID manual does provide guidance on designing BMPs to address flooding the standard is more restrictive than Genesee County standards. Therefore, developments/Flood controls shall be developed in accordance with the following flood frequencies. For each of the frequency categories below:

- A. The following basin development projects are to be designed to the 100 year storm:
 1. Culverts or bridges crossing state highways or expressways where the upstream drainage area is in excess of 2 square miles;
 2. Detention ponds;
 3. Drainage enclosures in excess of 100 feet where the upstream drainage area is in excess of 2 square miles.
- B. The following basin development projects are to be designed to the 25 year storm:
 1. County road cross culverts and bridges.
 2. Open channel development or improvement (flow to be contained within the channel).
 3. Drain enclosures where the drainage area is greater than 300 acres but less than 2 square miles.
- C. The following basin development projects are to be designed to the 10 year storm:
 1. Open channels, culverts or drain enclosures where the drainage area is not in excess of 300 acres.
 2. Enclosed storm sewers flowing full under gravity conditions in proposed plats/developments.

Flow Estimation: Hydrology:

Many different methods of arriving at a given flow (cfs) for a selected spot in a drainage outlet have been developed over the years. Because of its general recognition and wide use within the county, the drain commissioner will accept the rational method for flow computation where the drainage area is less than 100 acres. Engineers electing to use this method for larger drainage area will be requested to also use an alternate method for comparison.

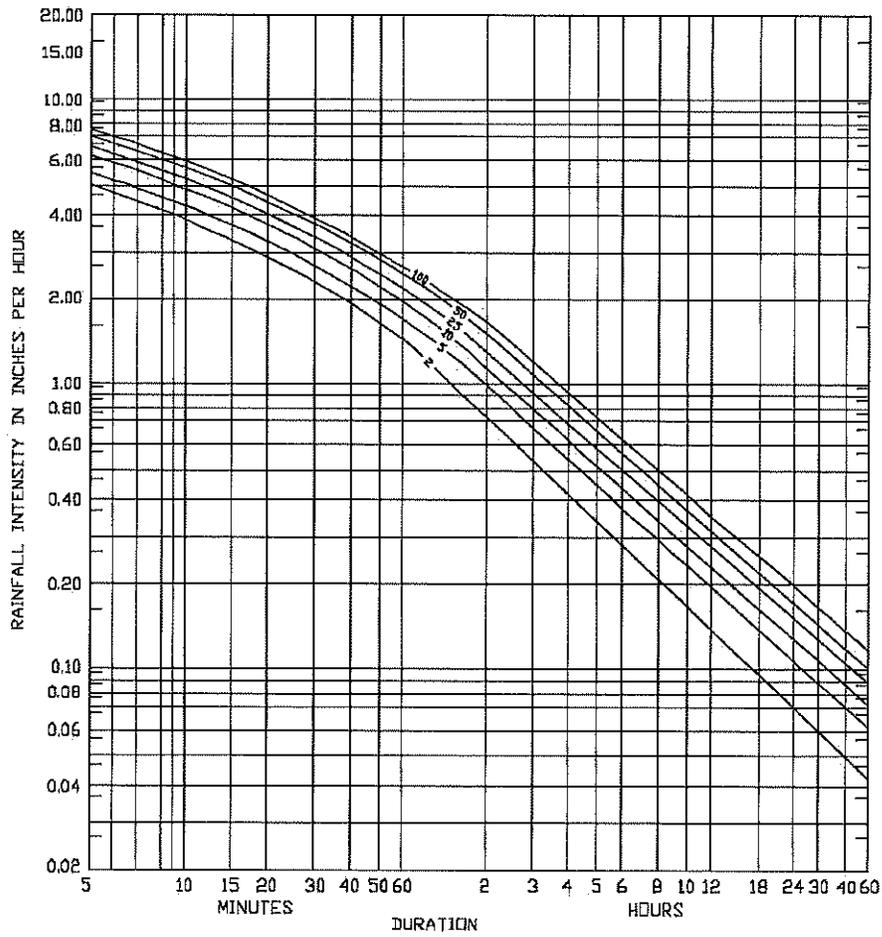
The following criteria shall be used in determining the variables of the rational formula $Q=CIA$.

1. Runoff coefficient - the runoff coefficient must be determined on the basis of this projected development using the following:

	C-factor
- Flat undeveloped lands, farms, non-wooded	0.25
- Woodlands & sloped undeveloped land	0.30
- Parks, cemeteries, playgrounds, disturbed ground*	0.35
- Residential*	0.40
- Apartments, condominiums or light manufacturing*	0.50
- Commercial and industrial*	0.70
- Impervious areas (parking, roof, etc.)	0.95
- Open water	1.00

*These are average C-factors for typical types of development. A C-weighted value may be calculated to more accurately reflect the site conditions.

2. Intensity - the rainfall intensity - Computation of an accurate time of concentration is critical to the use of these curves. For urban storm sewers time of concentration shall be the summation of the inlet time plus the time of flow in the sewer. For urbanized area a minimum initial time of 20 minutes, plus time of travel, shall be acceptable for design and for average rural basins an initial time of concentration of 30 minutes, plus time of travel, will present an adequate time for storm flows to peak. The flow time in an enclosed system shall be calculated by standard design charts. For channel velocity the standard manning equation $v=1.486 r^{2/3} s^{1/2}$ shall be accepted. A chart based on *Technical Paper 40* listing accepted N values for storm sewer design is located on page 12 for use in design analysis.
3. Area - the area of a basin or sub-basin shall be determined by use of 2' contour maps available at the county GIS department with an appropriate field check or by use of established county drain maps on file at the Drain Office, 4608 Beecher Road.



RAINFALL INTENSITY - DURATION - FREQUENCY CURVES
 FOR FLINT, MI
 BASED ON U.S. DEPARTMENT OF COMMERCE TECHNICAL PAPER 40

Outlet conditions:

All storm systems shall be designed to exit into an outlet with sufficient carrying capacity to carry the additional design flow. The maximum velocity allowable for an outlet to open ditch is 5 ft/s. Maximum velocity may be reduced based on poor soil conditions.

The designer engineer shall analyze this condition and submit data substantiating his conclusions. This information shall be submitted to the drain commissioner along with the required design forms.

In the event the design engineer does not have sufficient capacity in the outlet the following criteria shall apply:

1. The system shall be designed to outlet only existing runoff. Existing runoff shall consist of all water presently contributed to the drainage district. This shall mean the 2-year storm under existing conditions using agricultural land ($c= 0.25$). All excess shall be retained on site for duration of time necessary to pass the design storm without downstream flooding. The outlet discharge shall not exceed 0.2 cfs/acre under any event.
2. The township shall petition the drain commissioner to improve the outlet to the required size to pass the additional water at the design storm. In the event this petition is not successful criteria #1 above shall apply.

Requirement D: “Operation and maintenance requirements.”

All structural and vegetative BMPs installed shall include a plan for maintaining maximum design performance through long-term operation and maintenance (O&M). The O&M plans will ensure that the BMP continues to meet the **water quality treatment, channel protection & flood controls** outlined in this manual.

O&M maintenance agreements that are required under a municipal storm water ordinance will be between the property owner and the Municipality, and contain within the maintenance agreement, at the minimum, the following factors;

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- Operating instructions for the outlet component;
- Vegetation maintenance schedule;
- Responsible party designation;
- Inspection checklists;
- Maintenance checklists; and
- Tracking requirements.
- As-builts showing the storm maintenance plan was built to design.

An example of a storm water maintenance agreement can be found in Appendix G (pgs 455 – 461 of the LID Manual for Michigan).

For projects located within communities that do not have a storm water ordinance, but do drain into a Road System or County Drain and would require a Genesee County Road Commission permit or Drain Commissioner’s Office – SWM permit have to provide a maintenance plan that would provide the same above information as in a maintenance agreement. If it is found that a site is not being maintained and violates the County permit issued, the Drain Commissioner’s Office and/or Road Commission will revoke the permit allowing discharge to their system and refer the violator to the local municipality.

Requirement E: “Enforcement mechanisms with record keeping procedures.”

Enforcement of the NPDES requirements will be achieved through a combination of County agencies (the Drain Commissioner and Road Commission) and local municipalities that have a storm water ordinance. Any municipality may adopt the storm water ordinance. It is assumed that each permitted municipality will adopt a storm water ordinance (a state requirement) that supports the Genesee County storm water requirements or its own storm water requirements. The individual municipality will retain records.

Post Construction authority for the Road Commission’s and Drain Commissioner’s Office begins and ends at the right of ways or easements. If the site violates the permit the GCRC or GCDC has the right to block or deny the site access to an outlet. The laws do not give either agency the right to enter the site or do any work outside our right of ways or easements. For non-Phase II communities, where the site drains to a wetland, water of the state (not a drain or road ditch) or MDOT drainage system, the County does not have any post construction authority.

The BMP/owner operator must track and record, and if required by the permittee, report all field inspection findings to ensure proper O&M occurs for the life of the BMP.

As per the ordinance, the BMP/owner operator must maintain inspection and maintenance information for the life of the BMP and make this information available to Municipality (permittee) staff during an inspection.

Municipality will maintain records of site plan process, approvals, any post construction inspection reports and non-compliance issues and resolution.

APPEAL PROCEDURES

Developments are reviewed based on the standards and requirements in this document. Approval cannot be given for developments that do not meet these requirements.

If the proprietor wishes to appeal a decision made by the Genesee County Drain Commissioner's office, a written appeal may be filed. If an appeal is filed with the Genesee County Drain Commissioner's office, an informal hearing will be scheduled.

The informational hearing will allow the proprietor an opportunity to submit additional information or re-emphasize previously submitted data. The Drain Commissioner will then review the information and make a final decision within 21 days of the informal hearing. This final decision will be forwarded to the proprietor by first class mail.

PERMITS AND FEES FOR THE GENESEE COUNTY DRAIN COMMISSIONER

A permit will be required for all activities crossing, modifying, or discharging to a county drain, or any work within a county drain easement. Submittals shall include all the following information:

3. A fully completed permit application including appropriate signatures.
4. A drawing including the following information, at a minimum:
 - a. Location of County Drain easements on the property.
 - b. Descriptions of all construction activity within drain easement.
 - c. Dimensions and elevations of all facilities being proposed for construction within the drain easement.
 - d. Type of material used for construction of facilities within drain easement.
 - e. Soil erosion and sedimentation control measures.
 - f. Any required BMP's.
5. Note: Currently there are no permit fees for permitted activities.

Inspection Fees for the Genesee County Drain Commissioner:

Inspection fees are not charged for private development. Drains that are constructed and that will be designated as a County Drain will follow the inspection fee schedule for a public storm sewer.

Example

A developer owns a 3-acre parcel. They want to place a shopping center and parking lot on a currently vacant parcel. Between the building and parking lot they would add 2.61 acres of impervious. The entire parcel drains to the road and the ground has a hydraulic soil group B. The

Requirement A

Using the 90- percent annual non-exceedance storms methodology:

$P = 0.90$ -inches [the rainfall for the "Detroit Metro" area]
The site will be 87% impervious
 $R_v = 0.05 + 0.009 (87\%)$ [Volumetric runoff coefficient]
 $R_v = 0.83$

$WQV = P * R_v = 0.9 * 0.83 = 0.75$ watershed inches [Water quality volume]
Convert to cubic feet
 $WQV = 0.75'' (1\text{ft}/12'') (3 \text{ acres}) (43560\text{ft}^2/\text{acre}) = 8,168 \text{ ft}^3$

Requirement B

Using TR-55

2-year rainfall = 2.26"
The CN = 58 undeveloped
 $Q = 0.17$ inches of runoff
 $V = 0.17 \text{ inches } (1\text{ft}/12'') (3 \text{ acres}) (43560\text{ft}^2/\text{acre}) = 1851.3 \text{ ft}^3$
 $T_c = 0.45$
 $Q_{\text{peak}} = q_u * A * WQV = (2.45\text{cfs}/\text{inch of runoff}) (0.17 \text{ inch}) = 0.42 \text{ cfs undeveloped}$

the CN = 92 developed
 $Q = 1.59$ inches of runoff
 $V = 1.59 (1\text{ft}/12'') (3 \text{ acres}) (43560\text{ft}^2/\text{acre}) = 17,315.1 \text{ ft}^3$
 $T_c = 0.37$ hours
 $Q_p = q_u * A * WQV = (4.1\text{cfs}/\text{inch of runoff}) (1.59 \text{ inch}) = 6.52 \text{ cfs developed}$

Requirement C

$Q_{\text{out}} = 0.2 \text{ cfs}/\text{acre} * 3 \text{ acres} = 0.6 \text{ cfs max discharge}$
 $C_w = (2.61 * .95 + .39 * .25) / 3 = .86$
 $T_c = 160$ minutes for maximum volume
 $V_{\text{req}} = ((0.86 * 1.4 * 3.0) - 0.6) * 160 * 60 = 28,916 \text{ ft}^3$

- Instead of conveying the water through a pipe the parking lot is able to be sloped to a 700 long bioswale. That is able to treat 9,000 ft³ before overflowing into the detention basin.
- The proposed detention basin is over dug by 17,315-1,851= 15,464 ft³. this will hold the additional runoff volume for the 2-year storm, with a discharge rate 0.42 cfs.
- For storms above the 2-year the additional 28,916 ft³ in the pond will detain the necessary flow for up to the 100-year storm, with a discharge of 0.60 cfs.

**CITY OF CLIO
ORDINANCE NO: 497**

**AN ORDINANCE ADOPTING CHAPTER 63: STORM WATER ILLICIT
DISCHARGE AND CONNECTION OF THE CITY OF CLIO CODE OF
ORDINANCES**

THE CITY OF CLIO ORDAINS:

That the City of Clio Code of Ordinances Chapter 63: Storm Water Illicit Discharge and Connection be adopted to read as follows:

Section

63.101 Purpose.

63.106 Definition.

63.111 Applicability.

63.116 Responsibility for Administration.

63.121 Ultimate Responsibility.

63.126 Discharge Prohibitions.

63.131 Suspension of MS4 Access.

63.136 Industrial or Construction Activity Discharges.

63.141 Monitoring of Discharges.

63.146 Requirement to Prevent, Control, and Rescue Storm Water Pollutants by the Use of Best Management Practices.

63.151 Watercourse Protection.

63.156 Notification of Spills.

63.161 Enforcement.

63.166 Appeal of Notice of Violation.

63.171 Enforcement Measures after Appeal.

63.176 Cost of Abatement of the Violation.

63.181 Injunctive Relief.

63.186 Compensatory Action.

63.191 Violations Deemed a Public Nuisance.

63.196 Penalty.

Section 63.101 Purpose.

The purpose of this ordinance is to provide for the health, safety, and general welfare of the public through the regulation of non-storm water discharges to the storm drainage system to the maximum extent practicable as required by federal and state law. This ordinance establishes methods for controlling the introduction of pollutants into the MS4 in order to comply with requirements of the NPDES permit process. The objectives of this ordinance are:

- (1) To regulate the contribution of pollutants to the municipal separate MS4 by storm water discharges by any user
- (2) To prohibit illicit connections and discharges to the municipal separate storm sewer system
- (3) To establish legal authority to carry out all inspection, surveillance and monitoring procedures necessary to ensure compliance with this ordinance

Section 63.106. Definitions.

For the purposes of this chapter, the following shall mean:

Best Management Practices (BMPs). Schedules of activities, prohibitions of practices, general good housekeeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to storm water, receiving waters, or storm water conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

Clean Water Act. The federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.), and any subsequent amendments thereto.

Code Official. The City Administrator or their designee.

Construction Activity. Activities subject to NPDES Construction Permits. Currently these include construction projects resulting in land disturbance of 5 acres or more. Beginning in March 2003, NPDES Storm Water Phase II permits will be required for construction projects resulting in land disturbance of 1 acre or

more. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.

EPA. Environmental Protection Agency or its successor.

Hazardous Materials. Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Illegal Discharge. Any direct or indirect non-storm water discharge to the storm drain system, except as exempted in Section X of this ordinance.

Illicit Connections. An illicit connection is defined as either of the following:

- (1) Any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the storm drain system including but not limited to any conveyances which allow any non-storm water discharge including sewage, process wastewater, and wash water to enter the storm drain system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by an authorized enforcement agency or,
- (2) Any drain or conveyance connected from a commercial or industrial land use to the storm drain system which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

Industrial Activity. Activities subject to NPDES Industrial Permits as defined in 40 CFR, Section 122.26 (b) (14).

MDEQ. Michigan Department of Environmental Quality or its successor.

MS4. municipal separate storm sewer system.

Discharge Permit. A permit issued by EPA (or by a State under authority delegated pursuant to 33 USC § 1342(b)) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

Non-Storm Water Discharge. Any discharge to the storm drain system that is not composed entirely of storm water.

NPDES. National Pollutant Discharge Elimination System

Person. Any individual, association, organization, partnership, firm, corporation or other entity recognized by law and acting as either the owner or as the owner's agent.

Pollutant. Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordinances, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

Premises. Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

Storm Drainage System. Publicly-owned facilities by which storm water is collected and/or conveyed, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, and other drainage structures.

Storm Water. Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation and resulting from such precipitation.

Storm Water Pollution Prevention Plan. A document which describes the Best Management Practices and activities to be implemented by a person or business to identify sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to storm water, storm water conveyance systems, and/or receiving waters to the maximum extent practicable.

Wastewater. Any water or other liquid, other than uncontaminated storm water, discharged from a facility.

Section 63.111 Applicability.

This chapter shall apply to all water entering the storm drain system generated on any developed and undeveloped lands unless explicitly exempted by an authorized enforcement agency.

Section 63.116 Responsibility for Administration.

The code official or their designee shall administer, implement, and enforce the provisions of this ordinance. Any powers granted or duties imposed upon the

authorized enforcement agency may be delegated in writing by the director of the authorized enforcement agency to persons or entities acting in the beneficial interest of or in the employ of the agency.

Section 63.121 Ultimate Responsibility.

The standards set forth herein and promulgated pursuant to this chapter are minimum standards; therefore, this chapter does not intend nor imply that compliance by any person will ensure that there will be no contamination, pollution, nor unauthorized discharge of pollutants.

Section 63.126 Discharge Prohibitions.

(1) Prohibition of Illegal Discharges.

No person shall discharge or cause to be discharged into the municipal storm drain system or watercourses any materials, including but not limited to pollutants or waters containing any pollutants that cause or contribute to a violation of applicable water quality standards, other than storm water.

The commencement, conduct or continuance of any non-authorized discharge to the storm drain system is prohibited except as described as follows:

- a. The following discharges are exempt from discharge prohibitions established by this chapter: water line flushing or other potable water sources; landscape irrigation or lawn watering, and irrigation waters; diverted stream flows and flows from riparian habitats and wetlands; rising ground water and springs; uncontaminated ground water infiltration and seepage; uncontaminated pumped ground water except for groundwater cleanups specifically authorized by NPDES permits; foundation drains, water from crawl space pumps, footing drains and basement sump pumps (not including active groundwater dewatering systems); air conditioning condensation; waters from non-commercial washing of vehicles; street wash water; dechlorinated swimming pool water from single, two, or three family residences; firefighting activities; and any other water source not containing pollutants.
- b. Dye testing done under the authorization of the MDEQ (general Rule 97) is an allowable discharge but requires a complete Notice of Intent to the MDEQ prior to the time of the test.
- c. The prohibition shall not apply to any non-storm water discharge

permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the EPA, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drain system.

- (2) Prohibition of Illicit Connections.
 - a. The construction, use, maintenance or continued existence of illicit connections to the storm drain system is prohibited.
 - b. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.
 - c. A person is considered to be in violation of this ordinance if the person connects a line conveying sewage to the MS4 or allows such a connection to continue.

Section 63.131 Suspension of MS4 Access.

- (1) Suspension due to Illicit Discharges in Emergency Situations

The code official or their designee may, without prior notice, suspend MS4 discharge access to a person when such suspension is necessary to stop an actual or threatened discharge which presents or may present imminent and substantial danger to the environment, or to the health or welfare of persons, or to the MS4 or Waters of the United States. If the violator fails to comply with a suspension order issued in an emergency, the authorized enforcement agency may take such steps as deemed necessary to prevent or minimize damage to the MS4 or Waters of the United States, or to minimize danger to persons.

- (2) Suspension due to the Detection of Illicit Discharge

Any person discharging to the MS4 in violation of this ordinance may have their MS4 access terminated if such termination would abate or reduce an illicit discharge. The authorized enforcement agency will notify a violator of the proposed termination of its MS4 access. The violator may petition the authorized enforcement agency for a reconsideration and hearing.

A person commits an offense if the person reinstates MS4 access to premises terminated pursuant to this Section, without the prior approval of the authorized enforcement agency.

Section 63.136 Industrial or Construction Activity Discharges.

Any person subject to an industrial or construction activity NPDES storm water discharge permit shall comply with all provisions of such permit. Proof of compliance with said permit may be required in a form acceptable to the code official prior to the allowing of discharges to the MS4.

Section 63.141 Monitoring of Discharges.

(1) Applicability.

This section applies to all facilities that have storm water discharges associated with industrial activity, including construction activity.

(2) Access to Facilities.

- a. The code official or their designee shall be permitted to enter and inspect facilities subject to regulation under this ordinance as often as may be necessary to determine compliance with this chapter. If a discharger has security measures in force which require proper identification and clearance before entry into its premises, the discharger shall make the necessary arrangements to allow access to representatives of the authorized enforcement agency.
- b. Facility operators shall allow the code official or their designee ready access to all parts of the premises for the purposes of inspection, sampling, examination and copying of records that must be kept under the conditions of an NPDES permit to discharge storm water, and the performance of any additional duties as defined by state and federal law.
- c. The code official or their designee shall have the right to set up on any permitted facility such devices as are necessary in the opinion of the authorized enforcement agency to conduct monitoring and/or sampling of the facility's storm water discharge.
- d. The code official or their designee has the right to require the discharger to install monitoring equipment as necessary. The facility's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the discharger at its own expense. All devices used to measure storm water flow

and quality shall be calibrated to ensure their accuracy.

- e. Any temporary or permanent obstruction to safe and easy access to the facility to be inspected and/or sampled shall be promptly removed by the operator at the written or oral request of the code official or their designee and shall not be replaced. The costs of clearing such access shall be borne by the operator.
- f. Unreasonable delays in allowing the code official or their designee access to a permitted facility is a violation of a storm water discharge permit and of this ordinance. A person who is the operator of a facility with a NPDES permit to discharge storm water associated with industrial activity commits an offense if the person denies the authorized enforcement agency reasonable access to the permitted facility for the purpose of conducting any activity authorized or required by this ordinance.
- g. If the code official or their designee has been refused access to any part of the premises from which storm water is discharged, and he/she is able to demonstrate probable cause to believe that there may be a violation of this ordinance, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designed to verify compliance with this ordinance or any order issued hereunder, or to protect the overall public health, safety, and welfare of the community, then the authorized enforcement agency may seek issuance of a search warrant from any court of competent jurisdiction.

Section 63.146 Requirement to Prevent, Control, and Rescue Storm Water Pollutants by the Use of Best Management Practices.

The City Commission will adopt requirements identifying BMPs for any activity, operation, or facility which may cause or contribute to pollution or contamination of storm water, the storm drain system, or waters of the United States. The owner or operator of a commercial or industrial establishment shall provide, at their own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the municipal storm drain system or watercourses through the use of these structural and non-structural BMPs. Further, any person responsible for a property or premise, which is, or may be, the source of an illicit discharge, may be required to implement, at said person's expense, additional structural and non-structural BMPs to prevent the further discharge of pollutants to the municipal separate storm sewer system. Compliance with all

terms and conditions of a valid NPDES permit authorizing the discharge of storm water associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this section. These BMPs shall be part of a storm water pollution prevention plan (SWPP) as necessary for compliance with requirements of the NPDES permit.

Section 63.151 Watercourse Protection.

Every person owning property through which a watercourse passes, or such person's lessee, shall keep and maintain that part of the watercourse within the property free of trash, debris, excessive vegetation, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner or lessee shall maintain existing privately-owned structures within or adjacent to a watercourse, so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse.

Section 63.156 Notification of Spills.

Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into storm water, the storm drain system, or water of the U.S. said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the authorized enforcement agency in person or by phone or facsimile no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the City within three business days of the phone notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

Section 63.161 Enforcement.

Whenever the code official or their designee finds that a person has violated a prohibition or failed to meet a requirement of this chapter, the authorized enforcement agency may order compliance by written notice of violation to the responsible person. Such notice may require without limitation:

- (1) The performance of monitoring, analyses, and reporting;
- (2) The elimination of illicit connections or discharges;
- (3) That violating discharges, practices, or operations shall cease and desist;
- (4) The abatement or remediation of storm water pollution or contamination hazards and the restoration of any affected property; and
- (5) Payment of a fine to cover administrative and remediation costs; and
- (6) The implementation of source control or treatment BMPs.

If abatement of a violation and/or restoration of affected property is required, the notice shall set forth a deadline within which such remediation or restoration must be completed. Said notice shall further advise that, should the violator fail to remediate or restore within the established deadline, the work will be done by a designated governmental agency or a contractor and the expense thereof shall be charged to the violator.

Section 63.166 Appeal of Notice of Violation.

Any person receiving a written notice of violation may appeal the determination of the authorized enforcement agency. The notice of appeal must be received within twenty (20) days from the date of the notice. Hearing on the appeal before the City Commission shall take place at their next regular meeting, but not less than fifteen (15) days from the date of receipt of the notice of appeal. The decision of the City Commission shall be final.

Section 63.171 Enforcement Measures after Appeal.

If the violation has not been corrected pursuant to the requirements set forth in the written notice of violation or, in the event of an appeal, within thirty (30) days of the decision of the City Commission upholding the decision of the authorized enforcement agency, then representatives of the authorized enforcement agency shall enter upon the subject private property and are authorized to take any and all measures necessary to abate the violation and/or restore the property. It shall be unlawful for any person, owner, agent or person in possession of any premises to refuse to allow the government agency or designated contractor to enter upon the premises for the purposes set forth above.

Section 63.176 Cost of Abatement of the Violation.

Within thirty (30) days after abatement of the violation, the owner of the property will be notified of the cost of abatement, including administrative costs. The property owner may file a written protest objecting to the amount of the

assessment within ten (10) days. If the amount due is not paid within a timely manner as determined by the decision of the municipal authority or by the expiration of the time in which to file an appeal, the charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment.

Any person violating any of the provisions of this chapter shall become liable to the City by reason of such violation.

Section 63.181 Injunctive Relief.

It shall be unlawful for any person to violate any provision or fail to comply with any of the requirements of this chapter. If a person has violated or continues to violate the provisions of this chapter, the authorized enforcement agency may petition for a preliminary or permanent injunction restraining the person from activities which would create further violations or compelling the person to perform abatement or remediation of the violation.

Section 63.186 Compensatory Action.

In lieu of enforcement proceedings, penalties, and remedies authorized by this chapter, the authorized enforcement agency may impose upon a violator alternative compensatory actions, such as storm drain stenciling, attendance at compliance workshops, creek cleanup, etc.

Section 63.191 Violations Deemed a Public Nuisance.

In addition to the enforcement processes and penalties provided, any condition caused or permitted to exist in violation of any of the provisions of this chapter is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily abated or restored at the violator's expense, and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken.

Section 63.196 Penalty

Any person violating any provisions of this article shall be responsible for a municipal civil infraction and subject to the penalties and sanctions provided by this Code. The authorized enforcement agency may recover all attorney's fees court costs and other expenses associated with enforcement of this ordinance, including sampling and monitoring expenses.

The remedies listed in this chapter are not exclusive of any other remedies available under any applicable federal, state or local law and it is within the discretion of the authorized enforcement agency to seek cumulative remedies.

Attachment 5 - City of Clio
To MDEQ Stormwater Discharge Permit Application
(Construction Stormwater Runoff Control)

Attachment 5 to MDEQ Stormwater Discharge Permit Application
Construction Stormwater Runoff Control

Within Genesee County, the County Enforcing Agency (CEA) for SESC is the Genesee County Drain Commissioner's Office- Water and Waste Services (GCDC-WWS), except for the City of Burton who is a Municipal Enforcing Agency (MEA).

28. Provide the procedure with the process for notifying the Part 91 Agency or appropriate staff when soil or sediment is discharged to the applicant's MS4 from a construction activity. The procedure shall allow for the receipt and consideration of complaints or other information submitted by the public or identified internally as it relates to construction stormwater runoff control. For non-Part 91 agencies, consideration of complaints may include referring the complaint to the qualifying local Soil Erosion and Sedimentation Control Program as appropriate. Construction activity is defined pursuant to Part 21, Wastewater Discharge Permits, Rule 323.2102 (K). The applicant may consider as part of their procedure when and under what circumstances the Part 91 Agency or appropriate staff will be contacted.

The City of Clio will notify the Genesee County Drain Commissioner's Office – Water and Waste Services should the public report or staff witness soil or sediment being discharged from a construction site. The Genesee County Drain Commissioner's Office – Water and Waste Services may be contacted by phone, but in all instances a written report will be mailed with supporting documentation to this agency with five working days.

This policy applies to ANY SESC event within the City's jurisdiction.

29. Provide the procedure for when to notify the MDEQ when soil, sediment, or other pollutants are discharged to the applicant's MS4 from a construction activity. Other pollutants include pesticides, petroleum derivatives, construction chemicals, and solid wastes that may become mobilized when land surfaces are disturbed. The applicant may consider as part of their procedure when and under what circumstances the MDEQ will be contacted.

The City may contact the MDEQ by phone whose current number is (800) 292-4706, but in all instances a written report will be mailed within five working days to include supporting documentation to the MDEQ should any pollutants from construction activity be discharged to the City's MS4.

30. Provide the procedure for ensuring that construction activity one acre or greater in total earth disturbance with the potential to discharge to the applicant's MS4 obtains a Part 91 permit, or is conducted by an approved Authorized Public Agency as appropriate. Note: For applicants that conduct site plan review, the procedure must be triggered at the site plan review stage.

The City requires the applicant of a site plan review to obtain a soil erosion permit or waiver prior to, or as a condition of, approval.

31. Provide the procedure to advise the landowner or recorded easement holder of the property where the construction activity will occur of the State of Michigan Permit by Rule (Rule 323.2190).

Applicants for a site plan review or a zoning permit will be informed in writing that they may need to meet the requirements of Rule 323.2190.

Attachment 6 – City of Clio
To MDEQ Stormwater Discharge Permit Application

(City of Clio Ordinance Number: 475)
(Procedure for Post Construction Stormwater Runoff
Program)

Procedure for Post Construction Stormwater Runoff Program
Attachment 6 to MDEQ Stormwater Discharge Permit Application

The City of Clio adopted City of Clio Ordinance Number 475, An Ordinance to amend the Code of Ordinances for the City of Clio, Michigan, by adding a new Chapter 62: Storm Water, to Regulate Storm Water Control; to Provide for Storm Water Permits and for Payment of Reimbursement of Costs Incurred by the City due to Storm Water Permits; and to Provide Penalties for Violations on May 4, 2015.

41. Provide the procedure for reviewing the use of infiltration BMPs to meet the water quality treatment and channel protection standards for new development or redevelopment projects in areas of soil or groundwater contamination in a manner that does not exacerbate existing conditions. The procedure shall include the process for coordinating with MDEQ staff as appropriate

Our above mechanism requires development and redevelopment draining to our MS4's to be approved by the GCDC-SWM office to the standards in this permit. The GCDC-SWM procedure for the use of infiltration BMPs in areas of soil or groundwater contamination in a manner that does not exacerbate existing conditions is:

GCDC-SWM procedure: Those plans that are required to submit and be reviewed (pursuant Design Manual and Standards, page 3) are required to submit soil conditions and other indications of potential soil or ground water contamination (prior land use). GCDC-SWM will rely on information given by developer and his engineer to determine if soil or ground water contamination is suspected. If soil or ground water contamination are suspected on a site the reviewing agency (GCDC_SWM) will contact the MDEQ Remediation and Redevelopment Division (RRD) who oversees 201 sites, Leaking Underground Storage Tanks Program, Superfund Program, Brownfield Program, and provide them the site information and an opportunity to comment. Approval will not be given until the Developer's Engineer can demonstrate that the BMP practices (See chapter 8 of State LID manual) implemented will not exacerbate existing (soil or groundwater contamination) conditions. Note: The GCDC-SWM does not have authority to require a site owner to clean up the existing pollutants. If proposed land use has the potential for significant pollutant loading such as gas stations, commercial vehicle maintenance and repair, auto recyclers, recycling centers, and scrap yards (Hot Spots) additional BMPs may be required to address the associated pollutants. If the potential exists for pollutants due to an industrial use on a site the reviewing agency (GCDC_SWM) will contact the MDEQ Industrial Program and provide them the site information and an opportunity to comment.

REFERENCE:

- Genesee Co Storm Water & Flood Control Design Standard Requirements (Design Manual and Standards), page 2, Design Manual and Standards: This document together with the State Low Impact Development manual (State LID manual) (Chapter 5 through 9 with relevant appendices) will provide information on water quality and quantity standards as well a list of acceptable storm water treatment practices, including the specific design criteria for each storm water practice. This

document and the State LID manual may be updated and expanded from time to time based on federal and state requirements, improvements in engineering, science, monitoring, and local maintenance experience. Storm water treatment practices that are designed and constructed in accordance with these design and sizing criteria contained in the State LID manual should meet the minimum water quality and channel protection performance standards outlined in this document.

- Design Manual and Standards, page 7, Storm water master plan info requirements, C.6.t.v: Analysis of existing soil conditions and groundwater elevation and bedrock depth (including submission of soil boring logs) as required for proposed retention and infiltration facilities
- Design Manual and Standards, page 7, Storm water master plan info requirements, G: Drinking water wells, public **wellheads, Wellhead Protection Areas (WHPAs), underground storage tanks, and brownfields**
- State LID manual, Page 54, Step 3, Contaminated sites have followed state “due care” requirements for soil and groundwater?
- State LID manual, Page 135 talks about bioretention and contaminated soils
- State LID manual, Page 348-355 talks about Implementing LID on Brownfield (contaminated) Sites and Implementing LID in High Risk Areas.

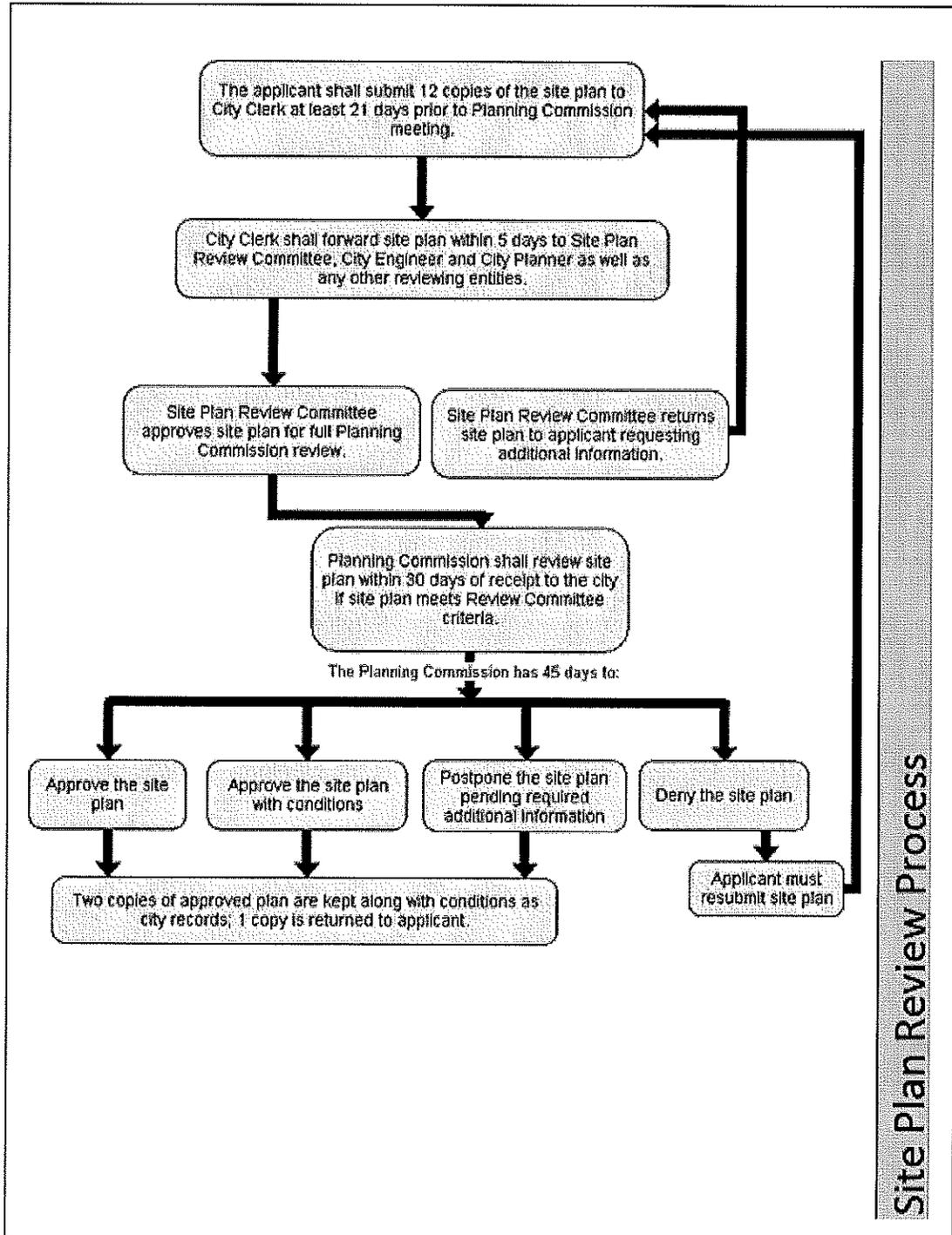
42. Does the ordinance or other regulatory mechanism require BMPs to address the associated pollutants in potential hot spots as part of meeting the water quality treatment and channel protection standards for new development or redevelopment projects? Hot spots include areas with the potential for significant pollutant loading such as gas stations, commercial vehicle maintenance and repair, auto recyclers, recycling centers, and scrap yards. Hot spots also include areas with the potential for contaminating public water supply intakes.

Our above mechanism requires development and redevelopment draining to our MS4's to be approved by the GCDC-SWM office to the standards in this permit. The GCDC-SWM procedure for requiring BMPs to address the associated pollutants in potential Hot Spots as defined in question 42 is as stated above in the answer to question 41.

53. Does the ordinance or other regulatory mechanism include a requirement to submit a site plan for review and approval of post-construction stormwater runoff BMPs?

Yes, *City of Clio Ordinance Number 475 and Genesee County Storm Water and Flood Control Design Standard Requirements.*

54. Provide the procedure for site plan review and approval.



55. Provide the reference in the site plan review and approval procedure to the process for determining how the developer meets the performance standards and ensures long-term operation and maintenance of BMPs.

City of Clio Ordinance Number 475 and Genesee County Storm Water and Flood Control Design Standard Requirements.:

- Article II. Storm Water Permits, *City of Clio Ordinance Number 475*,
“Developments subject to this ordinance shall require a storm water permit and a storm water plan, and shall be designed, constructed, and maintained to prevent flooding, minimize stream channel impacts, protect water quality, and achieve the purposes of this Ordinance, as stated above. The city has adopted the Genesee County Storm Water and Flood Control Design Standard Requirements (Design Manual and Standards) to meet the objectives of managing the quantity and quality of storm water runoff from a site as its municipality engineering standards.
- Section 62.207 No Change in Approved Facilities, *City of Clio Ordinance 475.Ordinance.*
- Storm water runoff facilities, after construction and approval, shall be maintained in good condition, in accordance with the approved storm water plan, and shall not be subsequently altered, revised or replaced except in accordance with the approved storm water plan, or in accordance with approved amendments or revisions in the plan.
- The municipality has the right to take corrective action if alterations to approved storm water facilities occur and to seek compensation from the responsible party for all costs associated with the corrective action.
- Article V. Inspection, Monitoring, Reporting and Recordkeeping, *City of Clio Ordinance Number 475.*
- Article VI. Enforcement, *City of Clio Ordinance Number 475.*
- Article VII. Storm Water Easements and Maintenance Agreements, *City of Clio Ordinance Number 475.*
- State LID manual, Appendix F: Maintenance Inspection Checklist.
- State LID manual, Appendix G: Stormwater Management Practices Maintenance Agreements.

56. Does the ordinance or other regulatory mechanism require the long-term operation and maintenance of all structural and vegetative BMPs installed and implemented to meet the performance standards in perpetuity?

City of Clio Ordinance Number 475

- 62.207 No Change in Approved Facilities, *City of Clio Ordinance Number 475.*
 1. Storm water runoff facilities, after construction and approval, shall be maintained in good condition, in accordance with the approved storm water

plan, and shall not be subsequently altered, revised or replaced except in accordance with the approved storm water plan, or in accordance with approved amendments or revisions in the plan.

2. The municipality has the right to take corrective action if alterations to approved storm water facilities occur and to seek compensation from the responsible party for all costs associated with the corrective action.

- Article V. Inspection, Monitoring, Reporting and Recordkeeping, City of Clio Ordinance Number 475.
- Article VI. Enforcement, City of Clio Ordinance Number 475.
- Article VII. Storm Water Easements and Maintenance Agreements, City of Clio Ordinance Number 475.
- State LID manual, Appendix F: Maintenance Inspection Checklist
- State LID manual, Appendix G: Stormwater Management Practices Maintenance Agreements

57. Does the ordinance or other regulatory mechanism require a maintenance agreement between the applicant and owners or operators responsible for the long-term operation and maintenance of structural and vegetative BMPs installed and implemented to meet the performance standards?

The answer for question 57 is the same for question 56 above.

Date of Publication: _____, 2018

CERTIFICATE OF ADOPTION

I certify that the above is a true and complete copy of the Ordinance passed at a meeting of the City of Clio Commission held on the ___ day of _____, 2018.

Linda Kingston, Clerk

Calculations for Stormwater Runoff Volume Control

SITE NAME: _____



Total Site Disturbed Area: _____ acres

2-Year, 24-Hour Rainfall): _____ in (See Rainfall Tab for regional rainfall value or site specific rainfall event may be substituted with DNRE approval)

Pre-Development Conditions

Cover Type	Soil Type	Area (sf)	Area (ac)	CN (from TR-55)	S	Q Runoff ¹ (in)	Runoff Volume ² (ft ³)
					$\frac{1000}{CN} - 10$	$\frac{(P - 0.2S)^2}{(P - 0.8S)}$	$Q \times 1/12 \times A$
Woods / Meadow	A	0		30	23.3	1.166666667	0
Open Space	A	0		39	15.6	0.782051282	0
Woods	B	0		55	8.2	0.409090909	0
Meadow	B	0		58	7.2	0.362068966	0
Open Space	B	0		61	6.4	0.319672131	0
Woods	C	0		70	4.3	0.214285714	0
Meadow	C	0		71	4.1	0.204225352	0
Open Space	C	0		74	3.5	0.175675676	0
Woods	D	0		77	3.0	0.149350649	0
Meadow	D	0		78	2.8	0.141025641	0
Open Space	D	0		80	2.5	0.125	0
Impervious	N/A	0		98	0.20	0.010204082	0
Other:		0				NA	NA
TOTAL:	N/A	0.0	0.0	N/A	N/A	N/A	0

Post-Development Conditions

Cover Type	Soil Type	Area (sf)	Area (ac)	CN*	S	Q Runoff ¹ (in)	Runoff Volume ² (ft ³)
Impervious	N/A	0		98	0.2	0.010204082	0
		0			0.0	0	0
		0			0.0	0	0
		0			0.0	0	0
TOTAL:	N/A		0.0	N/A	N/A	N/A	0

Runoff Volume Increase (ft³): 0

Runoff Volume Increase = (Post-Dev. Runoff Volume) MINUS (Pre-Dev. Runoff Volume)

1. Runoff (in) = $Q = (P - Ia)^2 / (P - Ia) + S$

Ia = 0.2S therefore;

Runoff (in) = $Q = (P - 0.2S)^2 / (P + 0.8S)$

2. Runoff Volume (ft³) = $Q \times 1/12 \times Area$

Where: P = 2-Year, 24-Hour Rainfall (in)

S = $1000 / CN - 10$

CN = Curve Number

Q = Runoff (in)

Area = Area of specific land cover (ft²)

* Runoff Volume must be calculated separately for pervious and impervious areas (without using a weighted CN)

**POLLUTION PREVENTION/GOOD HOUSEKEEPING
FOR MUNICIPAL OPERATIONS:
MANUAL
OF
BEST MANAGEMENT PRACTICES**



**Genesee County Drain Commissioner
Surface Water Management**

November 2010

**POLLUTION PREVENTION/GOOD HOUSEKEEPING
FOR MUNICIPAL OPERATIONS:
A GUIDANCE DOCUMENT OF BEST MANAGEMENT PRACTICES**

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Introduction

This Manual of Pollution Prevention/Good Housekeeping Best Management Practices is intended to minimize the effects that municipal operations have on stormwater (see Table 1 and 2). The information contained in the manual is intended as guidance material for implementing measures to comply with a Stormwater Phase II Municipal Separate Storm Sewer System (MS4) Permit and is not designed to be comprehensive in all aspects of each topic. Municipalities should be “flexible” in their use of this information as pertains to their own unique municipal operations.

Glossary of Terms

Biochemical oxygen demand – Depletion of dissolved oxygen in water caused by decomposition of biologic matter or chemical oxidation.

Catch Basin – A unit that is installed to capture and retain debris, particulate matter, or other solid materials, but allows stormwater to “flow through” to its discharge location

Drip Irrigation – irrigation via a perforated device (i.e. hose) that allows for a slow watering method with reduced evaporation and runoff losses

Hydraulic – Referring to water

(IPM) Integrated Pesticide Management – An environmentally sensitive approach to pest management (**not** elimination) that uses the least toxic control method – a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools.

Loading – Term used in conjunction with *sediment* and *hydraulic* to describe excessive amounts (of the term that is described)

Naturescaping – An alternative landscaping technique that incorporates native plants and creates beneficial wildlife habitat – also conserves water and energy, reduces soil/water pollution.

Oil/Water Separator – A unit that is installed “in line” to a wastewater discharge pipe which is devised to capture petroleum derived materials that float on water

Pesticides – Products that are toxic and are used to kill pests - can be classified as insecticides, rodenticides, biocides, aquacides.

POTW – Publicly Owned Treatment Works -- a municipal wastewater treatment plant

Scupper – an opening (in a bridge deck) to allow water drainage – it does not capture debris, particulate matter, or other solid materials

Sediments - Small particles of matter that settle to the bottom of a body of water

Silt – Material consisting of mineral soil particles ranging in diameter from 0.02 millimeters to 0.002 millimeters

Stormwater -rainwater runoff or snow melt waters – these waters can interact with different types of materials, transporting contaminants to surface waters (i.e. streams, creeks, rivers)

Toxicity –The relative degree of being poisonous

Xeriscaping – An alternative landscaping technique that conserves water and protects the environment through planting native vegetation.

Zero input, low input (lawns) - minimal need for care (i.e. addition of fertilizers/pesticides, water)

1.0 Pollution Prevention through BMPs

What are BMPs?

BMPs are the practices, procedures, policies, prohibitions, schedules of activities, structures or devices that are implemented to prevent or minimize pollutants coming in contact with precipitation, storm water runoff, or non-storm water flows. Table 1 illustrates the pollutants associated with Municipal *facilities* while Table 2 presents the pollutants associated with municipal *activities*. BMPs are also structures or devices that remove pollutants from storm water runoff before the runoff enters a storm water drainage system or surface water. Therefore, BMPs are often categorized as either “source control” BMPs or “treatment control” BMPs.

Source control BMPs include all types of measures designed to prevent pollution at the source, that is, to keep storm water from contacting pollutants in the first place. Source control BMPs are generally simple, low-maintenance, cost-effective and are broadly applicable. They may be categorized as either non-structural or structural. Good housekeeping is an example of a non-structural source control BMP; a canopy is an example of a structural source control BMP. Preventative maintenance may be required for both non-structural and treatment controls.

Treatment control BMPs are methods of treating storm water runoff to remove pollutants and are frequently more costly to design, install, and operate than source control BMPs. More importantly, treatment control BMPs are typically not as effective as source control BMPs, and the effectiveness is highly dependent on regular maintenance. Nevertheless, they can be appropriate and effective under certain conditions. However, treatment controls typically do not remove all pollutants from storm water runoff and should not be regarded as disposal systems.

The Manual is divided into two sections: 1) Good Housekeeping and 2) preventative maintenance of Treatment Controls.

1.2 Pollutants Associated with Municipal Facilities

Table 0-1: Potential pollutants likely associated with specific municipal facilities

Municipality Facility Activity	Potential Pollutants								
	Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics	Pesticides	Oxygen Demanding
Building and Grounds Maintenance and Repair	X	X	X	X	X	X	X	X	X
Parking/Storage Area Maintenance	X	X	X	X	X	X	X		X
Waste Handling and Disposal	X	X	X	X	X	X	X	X	X
Vehicle and Equipment Fueling			X	X		X	X		
Vehicle and Equipment Maintenance and Repair				X		X	X		
Vehicle and Equipment Washing and Steam Cleaning	X	X	X	X		X	X		
Outdoor Loading and Unloading of Materials	X	X	X	X		X	X	X	X
Outdoor Container Storage of Liquids		X		X		X	X	X	X
Outdoor Storage of Raw Materials	X	X	X			X	X	X	X
Outdoor Process Equipment	X		X	X		X	X		
Overwater Activities			X	X	X	X	X	X	X
Landscape Maintenance	X	X	X		X			X	X

Table 0-2: Potential pollutants likely associated with municipal activities

Municipal Program	Activities	Potential Pollutants								
		Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics	Pesticides	Oxygen Demanding
Roads, Streets, and Highways Operation and Maintenance	Sweeping and Cleaning	X		X	X		X			X
	Street Repair, Maintenance, and Striping/Painting	X		X	X		X	X		
	Bridge and Structure Maintenance	X		X	X		X	X		
Plaza, Sidewalk, and Parking Lot Maintenance and Cleaning	Surface Cleaning	X	X			X	X			X
	Graffiti Cleaning	X	X		X			X		
	Sidewalk Repair	X		X						
	Controlling Litter	X		X		X	X			X
Fountains, Pools, Lakes, & Lagoons Maintenance	Fountain and Pool Draining		X					X		
	Lake and Lagoon Maintenance	X	X	X		X			X	X
Landscape Maintenance	Mowing/Trinoming/Planting	X	X	X		X			X	X
	Fertilizer & Pesticide Management	X	X						X	
	Managing Landscape Wastes			X					X	X
	Erosion Control	X	X							
Drainage System Operation and Maintenance	Inspection/and Cleaning of Stormwater Conveyance Structures	X	X	X		X		X		X
	Controlling Illicit Connections and Discharges	X	X	X	X	X	X	X	X	X
	Controlling Illegal Dumping	X	X	X	X	X	X	X	X	X
	Maintenance of Inlet and Outlet Structures	X		X	X		X			X
Waste Handling and Disposal	Solid Waste Collection		X	X	X	X	X	X		X
	Waste Reduction and Recycling			X	X					X
	Household Hazardous Waste Collection			X	X		X	X	X	
	Controlling Litter			X	X	X		X		X
	Controlling Illegal Dumping	X		X		X	X		X	X
Water and Sewer Utility Operation and Maintenance	Water Line Maintenance	X				X	X			
	Sanitary Sewer Maintenance	X				X	X			X
	Spill/Leak/Overflow Control, Response, and Containment	X	X			X		X		X

Source: California Stormwater BMP Handbook (<http://www.cabmphandbooks.com/>)

2.0 Good Housekeeping

Good housekeeping practices include activities that are intended to maintain a clean site and keep equipment in good working order to prevent storm water quality problems from occurring. Daily cleanup and inspections are the most effective means of achieving good housekeeping. For the most part, good housekeeping is a day-to-day activity that does not require a large expenditure of time or expense, and should be implemented on an ongoing basis. Examples of good housekeeping practices are:

- Tools and materials should be returned to designated storage areas after use;
- Waste materials should be collected and properly disposed after the completion of each job, shift, or day as appropriate;
- Indoor work areas should be neat, uncluttered, and well-ventilated to discourage outdoor work and to allow leaks and spills to be quickly detected and controlled;
- Outdoor work areas should be swept regularly (not hosed) and kept neat and clean;
- Occasionally outdoor work areas may need cleaning beyond sweeping. In such cases, all wash waters should be contained, collected, and properly disposed; and
- Outdoor waste or trash receptacles should be covered and emptied regularly and the adjacent areas inspected for misplaced or wind-blown litter.

Preventive Maintenance

Preventive Maintenance BMPs include regular inspections and maintenance intended to minimize storm water pollution by performing maintenance activities before problems arise. The NPDES Storm Water permit stipulates that municipalities must implement maintenance schedules for municipal sites and practices aimed at reducing the introduction of pollutants to waterways. Therefore, in addition to your good housekeeping practices it is necessary to periodically inspect the facilities and sites themselves. For example, an annual inspection of maintenance sheds for potential sources of pollutants is warranted as is inspection of municipal properties (e.g. city parks) to determine if BMPs are being kept up on site.

2.1 Landscaping and Lawn Care

- 1. Identify Impacts to/on Stormwater/Receiving Waters (Surface Waters)**
 - Nutrient loading (nitrogen and phosphorous) from fertilizer runoff can cause excessive aquatic plant growth
- 2. Problem Evaluation: Assess Impact on Receiving Waters, Prioritize**
 - Biochemical Oxygen Demand
- 3. Identify (and choose appropriate) Solutions (BMP's)**
 - Purchase only enough lawn care products necessary for one year – store properly to avoid waste generation (spills, leaks)
 - Use slow release or naturally derived (organic) fertilizers
 - Train employees in the proper application of lawn care products
 - Develop zero input/low input lawns
 - Consider alternative landscape techniques (i.e. naturescaping, xeriscaping)
 - Plant trees away from sewer lines or other underground utilities
 - Use drip irrigation techniques for landscaping
- 4. Inspection Procedures**
 - Routinely monitor lawns to identify problems during their early stages
 - Identify nutrient/water needs of plants, inspect for problems by testing soils
- 5. Maintenance Procedures**
 - Minimize/eliminate fertilizer application. Either conduct soil tests to justify the use of Phosphorous fertilizer or use no-Phosphorous fertilizer.
 - Leave grass clippings on lawn, or mulch clippings into lawn
 - Limit watering as necessary to supplement rainwater (1 inch/week is adequate)
 - Mow with sharpened blades set high (3 inches) – remove only the top 1/3 of the leaves
 - Water plants in the early A.M.
- 6. Advisory**
 - Refer to Landscaping for Water Quality, and other resources at DEQ's NPS webpage: www.michigan.gov/deqnonpointsourcepollution, choose Information and Education.
 - If contracting lawn care services, request the "Healthy Lawn Care Program for Watershed Protection", currently endorsed by the Michigan Green Industry Association (www.landscape.org).

2.2 Spill Response and Prevention

For spills, the old saying, “an ounce of prevention is worth a pound of cure” is appropriate. Spill clean-up can be labor-intensive and costly involving expenses to contain the spill, collecting the spilled substance, proper disposal of spill materials, and report filing to regulatory agencies, not to mention possible monetary fines. Spills and leaks are some of the most significant sources of water pollution and are, in most cases, avoidable.

Spill prevention and control procedures include:

- Placing bollards, berms and containment features around structures or areas where fluids are stored, so releases can be prevented, easily detected, and controlled;
- Using drip pans for maintenance operations involving fluids and under leaking vehicles and equipment waiting repair;
- Placing spill kits in areas where fluids are stored or in areas where activities may result in a spill;
- Providing training for proper use of materials and equipment used during operations and maintenance activities;
- Providing training for proper use of spill response equipment and supplies; and
- Conducting outdoor maintenance activities on paved surfaces to allow for easy detection, control, and cleanup of spills.

Spill prevention, control, and cleanup applies to all materials and wastes—not only hazardous substances. The toxic water quality effects from spills of hazardous substances (e.g., acids, oils, greases, fuels, solvents, pesticides) are commonly understood. However, non-hazardous materials—for example, sand, litter, corn oil, sweeteners, soaps, and milk, among others—can also greatly impact water quality.

Identify Materials That Impact Stormwater/Receiving Waters (Surface Waters)

- Liquids associated with vehicle/equipment maintenance products (oils, fuels, antifreeze, etc.)
- Rock salt
- Chemicals (fertilizers, pesticides)

2. Problem Evaluation: Assess Impact on Receiving Waters, Prioritize

- Toxicity
- Biochemical oxygen demand

3. Identify (and choose appropriate) Solutions (BMP's)

- Keep all materials properly stored in closed, labeled containment systems
- Use secondary containment systems where appropriate
- Obtain spill recovery materials for immediate response to a spill

4. Inspection Procedures

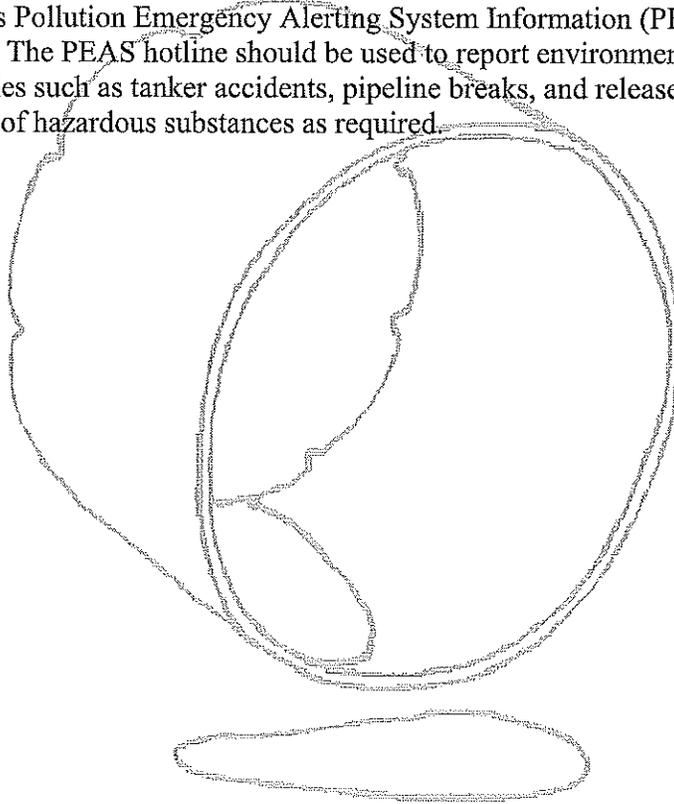
- Inspect secondary containment systems, oil/water separators periodically
- Inspect containers for leaks, areas near storm receiver inlets and outlets, floor drains for indications of spills

5. Maintenance Procedures

- Pump out oil water separators as needed
- Protect drains with oil absorbent materials
- Clean out receivers on regular schedule
- Remove spilled salt from salt loading area

6. Advisory

- Report petroleum spills to 911
- If the problems are related to sanitary please contact the Genesee County Health Department at (810) 257-3612.
- MDNRE's Pollution Emergency Alerting System Information (PEAS) hotline 1-800-292-4706. The PEAS hotline should be used to report environmental pollution emergencies such as tanker accidents, pipeline breaks, and releases of reportable quantities of hazardous substances as required.



2.3 Pest Control

1. Identify Impacts to/on Stormwater/Receiving Waters (Surface Waters)

- Runoff of pesticides may harm aquatic life, may contaminate water/sediment

2. Problem Evaluation: Assess Impact on Receiving Waters, Prioritize

- Toxicity to aquatic plants and animals

3. Identify (and choose appropriate) Solutions (BMP's)

- Purchase only enough pesticides necessary for one year – store properly to avoid waste generation (spills, leaks, product deterioration)
- Minimize/eliminate pesticide application, use lowest toxicity pesticides
- Do not apply pesticides immediately prior to or during rain events
- Ensure that employees are properly trained and certified in pesticide application techniques and safety
- Develop zero input, low input lawns
- Eliminate food, water, and shelter for pests
- Adopt integrated pest management (IPM) techniques
- Adopt alternatives to pesticides options (use physical, mechanical, or biological controls)

4. Inspection Procedures

- Identify pests – are levels acceptable or must action be taken to control pests?
- Inspect pesticide inventory – properly dispose of out-of-date pesticide materials

5. Maintenance Procedures

- Inspect pest traps (i.e. bait boxes) regularly – remove (and properly dispose of) dead pests
- Block/eliminate access to buildings/structures for pests
- Remove pests (insects) by hand

6. Advisory

- Refer to MSU's Integrated Pest Management site: IPM: www.ipm.msu.edu

2.4 Pet Waste Collection

- 1. Identify Impacts To/On Stormwater/Receiving Waters (Surface Waters)**
 - Municipal animal shelters
- 2. Problem Evaluation: Assess Impact on Receiving Waters, Prioritize**
 - Biochemical oxygen demand
 - Solids loading
- 3. Identify (and choose appropriate) Solutions (BMP's)**
 - House all animals in an enclosed, roofed structure
 - ID/utilize "permitted" waste disposal facilities for animal wastes
- 4. Inspection Procedures**
 - Inspect shelter regularly for necessary cleanup/removal of wastes
- 5. Maintenance Procedures**
 - Remove spilled food, animal wastes on a regular basis
- 6. Advisory**
 - None

2.5 Septic System Management

1. Identify Impacts to/on Stormwater/Receiving Waters (Surface Waters)

- Ponding of improperly treated wastewaters (on the surface of a leach field or a sand filter system) can increase the biochemical oxygen demand of receiving waters.
- Excessive amounts of disinfectant (i.e. chlorine) applied to a wastewater discharge from a sand filter system can cause toxicity to aquatic plants and animals

2. Problem Evaluation: Assess Impact on Receiving Waters, Prioritize

- Biochemical oxygen demand

3. Identify (and choose appropriate) Solutions (BMP's)

- Divert stormwater runoff (i.e. from roof drains) away from septic system
- Divert groundwater (sump pump) discharges away from septic system
- Locate swimming pools away from the septic system (at least 20' from the septic tank, at least 35' from the closest edge of the leach field or sand filter system)
- Prevent problems caused by vegetation – growth of woody plants on the system
- Prevent hydraulic loading – “Spread out” the use of devices which use large volumes of water across the entire day – clothes washing, dish washing, bathing, repair leaky fixtures
- Minimize water usage by using flow restrictors on potable water distribution devices (i.e. shower heads, water faucets)

4. Inspection Procedures

- Physical evidence of problems:
 - “back up” of wastewater in sewer lines
 - sewage odors
 - leach field/sand filter - wetness/ponding on surface
 - overflow of wastes from system components
 - heavy vegetation (woody plants) growth on system components

5. Maintenance Procedures

- “Pump out” the septic tank as needed (recommended once/year)
- Mow surface vegetation regularly
- Prevent “heavy equipment” from driving on top of the system components

6. Advisory

- Obtain site plan/site sketch of system, and retain for reference.

2.6 Vehicle/Equipment Maintenance

1. Identify Impacts to/on Stormwater/Receiving Waters (Surface Waters)

- Trace amounts of metals/hydrocarbons are found in materials (e.g. fuels, antifreeze, batteries, motor oils, grease, parts cleaning solvents) that are typically used in maintenance operations

2. Problem Evaluation: Assess Impact On Receiving Waters, Prioritize

- Toxicity
- Biochemical oxygen demand

3. Identify (and choose appropriate) Solutions (BMP's)

- Conduct maintenance work indoors – if work must be performed outside, guard against spillage of materials that could discharge to storm receivers
- Seal floor drains that discharge directly to the environment, if possible
- Initiate single purpose use of vehicle bays – dedicate one (or more) bays that have no (or sealed) floor drains for repairs/maintenance
- Clean up spilled materials immediately, using “dry” methods
- Install pretreatment systems (oil/water separators) where necessary in sewer lines to capture contaminants (oil, grit), and maintain as needed
- Never leave vehicles unattended while refueling
- Identify appropriate recycling/disposal options for wastes

4. Inspection Procedures

- Inspect (for maintenance purposes) floor drain systems, oil/water separators
- Monitor “parked” vehicles/equipment for leaks

5. Maintenance Procedures

- Maintain a clean work area – remove contaminants from floors, drains, catch basins, using “dry” methods
- Use non-hazardous cleaners. Use non chlorinated solvents instead of chlorinated solvents
- Repair or replace any leaking containers
- Use steam cleaning /pressure washing instead of solvent for parts cleaning
- Store waste fluids in properly capped, labeled storage containers
- Store batteries in leak-proof, compatible (i.e. non reactive) containers
- Rinse grass from lawn care equipment on permeable (grassed) areas
- Protect against pollution if outside maintenance is necessary (cover storm receivers, use secondary containment vessels, etc.)

6. Advisory

- Report petroleum spills to 911

- MDNRE's Pollution Emergency Alerting System Information (PEAS) hotline 1-800-292-4706. The PEAS hotline should be used to report environmental pollution emergencies such as tanker accidents, pipeline breaks, and releases of reportable quantities of hazardous substances as required.
- See MDNRE for http://www.michigan.gov/deq/0,1607,7-135-3313_3682_3716-24366--,00.html (Pollution Prevention and Good Housekeeping Activities) and http://www.michigan.gov/documents/deq/wb-sw-FleetMaintenance_Guidance_304720_7.pdf additional information.



2.7 Vehicle/Equipment Washing

- 1. Identify Impacts to/on Stormwater/Receiving Waters (Surface Waters)**
 - Nutrients (biodegradable soaps)
 - Metals
 - Hydrocarbons
- 2. Problem Evaluation: Assess Impact On Receiving Waters, Prioritize**
 - Biochemical oxygen demand from nutrient sources
 - Toxicity
 - Hydraulic loading
- 3. Identify (and choose appropriate) Solutions (BMP's)**
 - Initiate single purpose use of vehicle bays - dedicate only one bay for washing (with floor drain system)
 - Rinse with hoses that are equipped with automatic shutoff devices and spray nozzles
 - Steam clean (without soap) where wastes can be captured for proper disposal (i.e. oil/water separator)
- 4. Inspection Procedures**
 - Inspect floor drain systems regularly - use only those that discharge to a sanitary sewer, identify the need for cleaning of catch basins, oil/water separators
- 5. Maintenance Procedures**
 - Map storm drain locations accurately to avoid illegal discharges
 - Perform steam cleaning or pressure washing where wastes can be captured for proper disposal
 - Take precautions against excess use of/spillage of detergents
- 6. Advisory**
 - Require all facilities to connect floor drain systems to sanitary sewers (if available)
 - See MDNRE for http://www.michigan.gov/deq/0,1607,7-135-3313_3682_3716-24366--00.html and http://www.michigan.gov/documents/deq/wb-sw-FleetMaintenance_Guidance_304720_7.pdf additional information.

2.8 Roadway and Bridge Maintenance

1. Identify Impacts to/on Stormwater/Receiving Waters (Surface Waters)

- Road salt components - sodium, calcium, and chlorides
- Hydrocarbons
- Particulates – such as dry paint or abrasive compounds
- Debris

2. Problem Evaluation: Assess Impact On Receiving Waters, Prioritize

- Particulate matter
- Toxicity

3. Identify (and choose appropriate) Solutions (BMP's)

- Incorporate preventive maintenance and planning for regular operations & maintenance activities
- Pave in dry weather only.
- Stage road operations and maintenance activity (patching, potholes) to reduce spillage. Cover catch basins and manholes during this activity.
- Clean up fluid leaks or spills from paving equipment/materials immediately
- Restrict the use of herbicides/pesticide application to roadside vegetation
- Sweep and vacuum paved roads and shoulders to remove debris and particulate matter
- Maintain roadside vegetation; select vegetation with a high tolerance to road salt
- Control particulate wastes from bridge sandblasting operations
- Use calcium magnesium acetate for deicing around bridges to minimize corrosion
- Clean out bridge scuppers and catch basins regularly
- Direct water from bridge scuppers to vegetated areas
- Mechanically remove (i.e. sweep) debris from bridge deck and structure prior to washing

4. Inspection Procedures

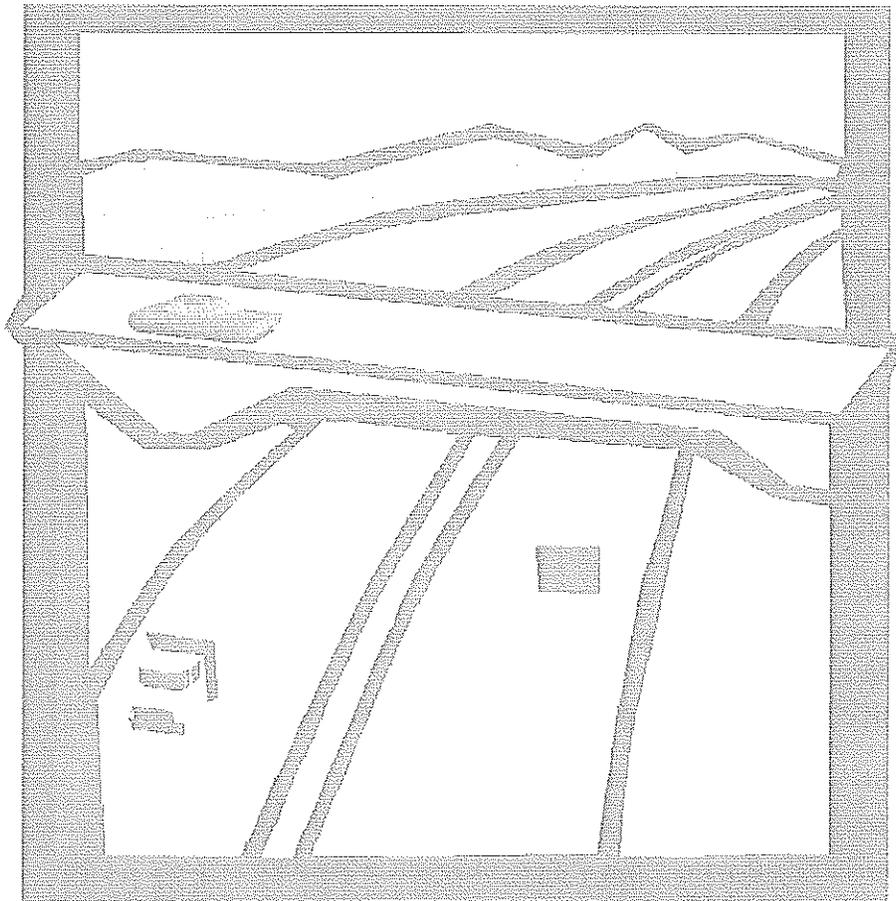
- Inspect paving, sweeping, vacuuming, and all other maintenance vehicles/equipment as appropriate
- Inspect roads and bridges for implementation of applicable BMP's

5. Maintenance Procedures

- Clean bridge scuppers routinely and keep free of debris
- Direct runoff water from bridges to vegetated areas
- Install catch basins in place of bridge scuppers
- Use tarps, booms, and vacuums during painting or blasting activities (refer to reference information to control/capture particulate matter)
- Repair leaking/defective containers or equipment on paving equipment

6. Advisory

- See MDNRE for http://www.michigan.gov/deq/0,1607,7-135-3313_3682_3716-24366--_00.html (Pollution Prevention and Good Housekeeping Activities) and http://www.michigan.gov/documents/deq/wb-sw-FleetMaintenance_Guidance_304720_7.pdf additional information.



2.9 Hazardous and Waste Materials Management

1. Identify Impacts to/on Stormwater/Receiving Waters (Surface Waters)

- Lube oils
- Coatings and their compatible solvents (paints, thinners, etc.)
- Anti freeze
- Cleaning agents
- Fuels (gas, diesel, kerosene)

2. Problem Evaluation: Assess Impact on Receiving Waters, Prioritize

- Biochemical oxygen demand
- Toxicity to aquatic plants and wildlife
- Particulate loading

3. Identify (and choose appropriate) Solutions (BMP's)

- Ensure that all materials are stored in closed, labeled containers – if stored outside, drums should be placed on pallets, away from storm receivers – inside storage areas should be located away from floor drains
- Eliminate floor drain systems that discharge to storm drains, if possible
- Use a pretreatment system to remove contaminants prior to discharge
- Reduce stock of materials “on hand” – use “first in/first out” management technique
- Use the least toxic material (i.e. non hazardous) to perform the work
- Install/use secondary containment devices where appropriate
- Eliminate wastes by reincorporating coating/solvent mixtures into the original coating material for reuse
- Recycle materials if possible, or ensure proper disposal of wastes

4. Inspection Procedures

- Physical on-site verification of sealed floor drains (or redirected to sanitary sewer)
- Regular inspection of material storage areas (inside and outside)
- Regular inspection and cleaning of oil/water separators by qualified contractor
- Inspect stormwater discharge locations regularly (for contaminants, soil staining, plugged discharge lines)

5. Maintenance Procedures

- Repair or replace any leaking/defective containers, and replace labels as necessary
- Maintain caps and/or covers on containers
- Maintain aisle space for inspection of products/wastes

6. Advisory

- None

2.10 Operational By-products/Wastes

1. Identify Impacts to/on Stormwater/Receiving Waters (Surface Waters)

- Potential for leaching of toxic and biologic contaminants to receiving waters

2. Problem Evaluation: Assess Impact on Receiving Waters, Prioritize

- Toxicity
- Biochemical oxygen demand

3. Identify (and choose appropriate) Solutions (BMP's)

- Post “no dumping” signs
- Illuminate area if possible
- Prevent access – erect barriers
- Identify the by products/wastes that should be recycled (i.e. paper, cardboard) or can be legally disposed of on municipal lands (i.e. deer carcasses).

4. Inspection Procedures

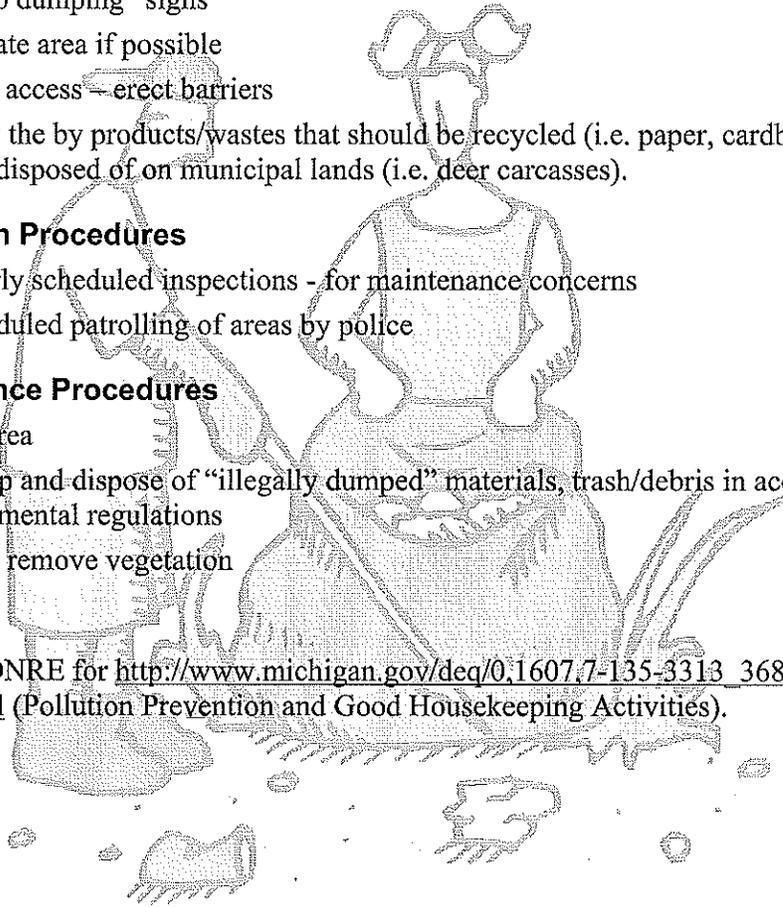
- Regularly scheduled inspections - for maintenance concerns
- Unscheduled patrolling of areas by police

5. Maintenance Procedures

- Clean area
- Clean up and dispose of “illegally dumped” materials, trash/debris in accordance with environmental regulations
- Cut and remove vegetation

6. Advisory

- See MDNRE for http://www.michigan.gov/deq/0,1607,7-135-3313_3682_3716-24366--,00.html (Pollution Prevention and Good Housekeeping Activities).



2.11 Catch Basin and Storm Drain System Cleaning

1. Identify Impacts to/on Stormwater/Receiving Waters (Surface Waters)

- **Catch basins** capture grit and debris, which, if not removed in a timely fashion, can discharge toxic and biological pollutants during rain and/or snow melt events
- **Storm drainage** systems, while not designed for capture of solid materials, can perform in the same manner with similar results.
- **Storm ditches**, if stripped of vegetation during cleaning, can result in silt deposition in receiving waters

2. Problem Evaluation: Assess Impact on Receiving Waters, Prioritize

- Toxicity – heavy metals, organic compounds, etc.
- Biochemical oxygen demand
- Sediment loading

3. Identify (and choose appropriate) Solutions (BMP's)

- Address:
 - storm drain receivers and (below grade) storm sewer systems
 - parking lot receivers
 - open ditches
 - catch basins and floor drain systems inside of buildings should be either:
 - sealed to prevent discharge
 - “permitted” by if required
 - discharged to sanitary sewers
- Contaminated wastewaters should not be discharged to a catch basin/street receiver
- Increase frequency of cleaning, as necessary
- Repair/replace storm drain receiver and catch basin receiver grates as necessary

4. Inspection Procedures

- Physical inspection – prioritize storm drain systems and catch basins – catch basins on steep grades may need more frequent cleaning
- Clean catch basin when depth of deposits are $>1/3$ the depth from the bottom of the basin to the invert of the lowest pipe/opening into or out of basin – Institute temporary street parking bans to facilitate access to catch basins
- Ditch inspections – ID problems while traveling to job site
- Storm event inspection – identify pollution problems (i.e. sediments) to determine the need for additional protective measures
- Post storm event inspection – ID problems (i.e. blockages)

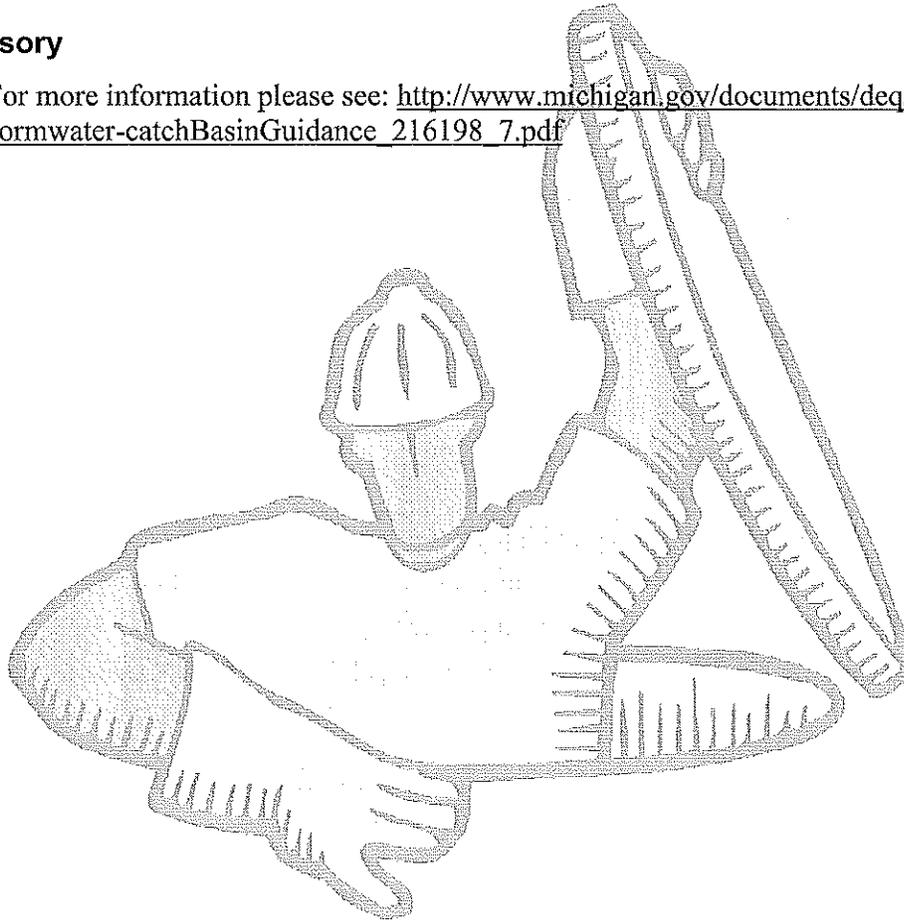
5. Maintenance Procedures

- Catch basins/storm sewer pipe – cleaning in spring to remove sand/grit/salt from winter road maintenance, cleaning in fall to remove leaves/silt/debris

- Established ditch:
 - Maintain proper slope
 - Maintain vegetation by cutting (to capture sediment) – Do not allow vegetation to grow to a height that would impair sight lines of drivers of motor vehicles
 - Remove obstacles/ debris – (i.e. trash, tree branches, brush, cut vegetation)
 - Excavation/ditch scraping – if necessary, use devices (i.e. hay bales, silt fence) to capture sediment prior to stormwater discharge into receiving waters, reseed ditch
- New installation – capture particulate matter – install sediment basins/other devices in ditch
- Proper disposal of debris

6. Advisory

- For more information please see: http://www.michigan.gov/documents/deq/wb-stormwater-catchBasinGuidance_216198_7.pdf



2.12 Street Cleaning and Maintenance

1. Identify Impacts to/on Stormwater/Receiving Water (Surface Waters)

- Poorly maintained streets allow for a “build up” of trash, grit, and debris, from which sediment and toxic/biological pollutants can be “washed out” during rain and/or snow melt events.
- Street repair/paving processes use materials that can contaminate receiving waters if they interact with stormwater.

2. Problem Evaluation: Assess Impact on Receiving Waters, Prioritize

- Particulate matter – can cause sediment loading
- Biochemical oxygen demand
- Toxicity to aquatic plants and wildlife

3. Identify (and choose appropriate) Solutions (BMP's)

- Street sweeping/vacuuming - at regular intervals, and “as needed”
- Perform operations such as paving in dry weather only.
- Prior to road reconstruction, consider the use of “shouldered roads” instead of “curbed roads”
- Maintain roadside vegetation; select plants/trees that can withstand the action of road salt and direct runoff to these areas.

4. Inspection Procedures

- Inspect streets, and plan (as needed) for maintenance/repairs
- Prioritize – some streets (i.e. those on flat grades/with many trees) may need more frequent cleaning

5. Maintenance Procedures

- Spring sweeping/vacuuming – remove salt/sand residues
- Fall sweeping, collection of leaves at appropriate time intervals
- Dry sweep or vacuum streets during dry weather
- Initiate temporary street by street parking bans to allow access for cleaning
- Maintain equipment - check for/repair fluid leaks
- Stage road operations and maintenance activity (patching, potholes) to reduce spillage of materials. Cover catch basins and manholes during activity

6. Advisory

- Also see: http://www.michigan.gov/deq/0,1607,7-135-3313_3682_3716-24366--,00.html (Total Suspended Solids Reductions for Roadways, Parking Lots, and Bridges (Draft)).

2.13 Road Salt Storage and Application

1. Identify Impacts to/on Stormwater/Receiving Waters (Surface Waters)

- In high concentrations it can have a harmful effect on plants and aquatic life.

2. Problem Evaluation: Assess Impact on Receiving Waters, Prioritize

- Toxicity

3. Identify (and choose appropriate) Solutions (BMP's)

- Require covered facility for salt storage (prevents lumping and run-off loss), and size properly for seasonal needs
- Store salt on highest ground elevation to mitigate contact with stormwater
- Calibrate salt spreaders as necessary
- Consider alternative deicing materials (i.e. calcium chloride, magnesium chloride)
- Use a wetting agent with salt to minimize “bouncing” during application
- Cover salt loading area, or build into storage shed
- Unload salt deliveries directly into storage facility, or move inside immediately

4. Inspection Procedures

- Look for physical evidence of problems:
 - inspect salt storage shed for leaks, other problems
 - inspect salt piles for proper coverage, tarps for leaks or tears
 - inspect salt application equipment
 - inspect salt regularly for lumping or water contamination
 - inspect surface areas for evidence of runoff – salt stains on ground near and
 - around salt shelters, loading areas, or downslopes - inspect for excessive amounts of salt

5. Maintenance Procedures

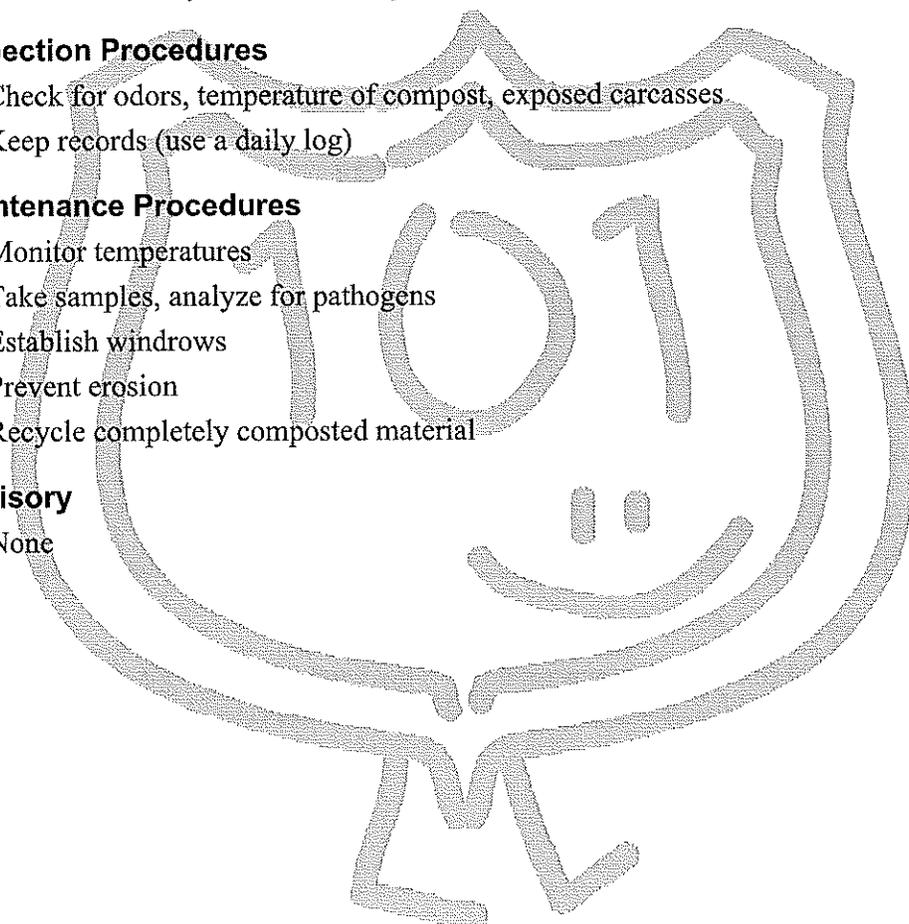
- Service trucks and calibrate spreaders regularly to ensure accurate, efficient distribution
- Educate and train operators on hazards of over-salting to roads and environment
- Repair salt storage shed (leaks)
- Repair/replace tarps

6. Advisory

- See MDNRE for http://www.michigan.gov/deq/0,1607,7-135-3313_3682_3716-24366--_00.html (Pollution Prevention and Good Housekeeping Activities).

2.14 Road Kill/Composting Operations

1. **Identify Impacts to/on Stormwater/Receiving Waters (Surface Waters)**
 - Potential for leaching of biologic contaminants to receiving waters
2. **Problem Evaluation: Assess Impact on Receiving Waters, Prioritize**
 - Biochemical oxygen demand
 - Bateria
3. **Identify (and choose appropriate) Solutions (BMP's)**
 - Establish compost pile/windrow on a well drained, impervious surface that has minimal slope – segregate from other operations
 - Identify the proper types of materials that should be composted
 - Locate compost piles at least 200 ft. from receiving waters or wetlands
 - Prevent access by vermin/scavengers – erect barriers (i.e. snow fence) around pile
4. **Inspection Procedures**
 - Check for odors, temperature of compost, exposed carcasses
 - Keep records (use a daily log)
5. **Maintenance Procedures**
 - Monitor temperatures
 - Take samples, analyze for pathogens
 - Establish windrows
 - Prevent erosion
 - Recycle completely composted material
6. **Advisory**
 - None



2.15 Construction and Land Disturbance

1. Identify Impacts to/on Stormwater/Receiving Waters (Surface Waters)

- Sediment runoff (i.e. silt, debris) can affect fish reproduction and habitat
- Removal of shade trees from stream banks can increase water temperature which can result in reduced dissolved oxygen content in streams

2. Problem Evaluation: Assess Impact on Receiving Waters, Prioritize

- Particulate matter – can cause sediment loading
- Biochemical oxygen demand – increases with temperature, depletes oxygen

3. Identify (and choose appropriate) Solutions (BMP's)

- Plan the construction and/or land clearing activities so that soil is not exposed for long periods of time
- Minimize compaction of soils and impervious cover
- Maximize opportunities for infiltration
- Install sediment control devices before disturbing soil
- Limit grading to small areas
- Stabilize site to protect against sediment runoff
- Protect against sediment flowing into storm drains
- Maintain native vegetation (especially near waterways)
- Install sediment barriers on slopes or divert stormwater

4. Inspection Procedures

- Regularly scheduled inspections (of erosion safeguards)
- Inspect during storm or snow melt events

5. Maintenance Procedures

- Check/repair all devices that have been installed to ensure protection against erosion

6. Advisory

- See MDNRE for http://www.michigan.gov/deq/0,1607,7-135-3313_3682_3716-24366--,00.html (Construction Storm Water Runoff Control (Draft)).

2.16 Marina Operations

1. Identify Impacts to/on Stormwater/Receiving Waters (Surface Waters)

- Liquids associated with boat maintenance products (oils, fuels, antifreeze, wood preservatives, etc.) and particulate matter (i.e. boat bottom paint from hull sanding) can contain toxics
- Boat sewage can contain pathogenic bacteria that contribute increased biochemical oxygen demand to waterways
- Barren soils can contribute to sedimentation

2. Problem Evaluation: Assess Impact on Receiving Waters, Prioritize

- Biochemical oxygen demand
- Toxicity
- Sediment loading

3. Identify (and choose appropriate) Solutions (BMP's)

- Construct and maintain pump out stations (for sanitary wastes)
- Build and maintain fish cleaning stations
- Stabilize shoreline
- Designate locations for boat maintenance away from the water
- Minimize impervious areas – install vegetated buffer strips (i.e. grass, shrubs)
- Provide spill clean up kits at fueling stations, covered trash receptacles
- Educate (posters, signage) boaters and other marina users of potential problems

4. Inspection Procedures

- Identify areas of runoff that lack vegetation
- Regularly inspect fueling stations (including tanks and piping), maintenance areas for spills, other potential sources of pollution
- Regularly check (empty as necessary) fish cleaning stations, sewage pump out stations, trash cans

5. Maintenance Procedures

- Empty trash cans and pump out stations as needed
- Maintain vegetated areas between the water and work areas
- Replace spill clean up kits as necessary

6. Advisory

- Refer to: Shipshape Shores and Waters: A Handbook for Marina Operators and Recreational Boaters -<http://www.epa.gov/owow/nps/marinashdbk2003.pdf>

2.17 Calculating TSS Reductions

The simplest way to meet the 25% TSS reduction goal is to implement controls that are expected to provide that reduction. Most structural practices listed in the Center for Watershed Protection's National Pollutant Removal Performance Database perform better than 25% removal. The watershed general permit stipulates that permittees must reduce TSS from municipal sites to the maximum extent practicable.

Some permittees may not be able to implement BMPs at all sites, or use additional BMPs at some facilities. In this case, to show the reduction over the entire system, a simple calculation can be done. Calculations need to be understood in order to make the best decisions regarding BMPs to add, change, or upgrade so the TSS load reduction goal may be met. In addition, these calculations need to be reported to the Department.

It should be noted that removal efficiencies assume the controls are being utilized according to design criteria, or product specifications, and are adequately maintained.

To calculate TSS load(s):

1. Determine the uncontrolled load -- with the following formula -- for each facility. Annual precipitation can be found in the LID manual, Chp 3, pg 16) and Mean TSS values in the Table below.

$$\text{Gallons} \times \text{MG} \times 3.785 \text{ L} \times 1 \text{ Pound}$$

Example: First figure out the annual precipitation (runoff) in gallons from the facility's paved areas. If the Impervious area is 1,000,000 ft² and precipitation is 2.5 ft per year (calculate: area X precipitation X 7.48 gallons per ft³) -- then total rainfall is 18,700,000 gallons/year.

Plug the rest of the numbers into the formula above. Using 77 mg/l TSS from the table below, the result (in bold) is the uncontrolled load for this site.

$$18,700,000 \text{ g/y} \times 77\text{mg/l} \times 3.785\text{l/g} \times 1\text{lb}/453600\text{mg} = \mathbf{12,015 \text{ lbs/year}}$$

Mean TSS runoff values for several land uses.

Land Use Category	% Imperviousness	Mean TSS (mg/l)
Forest/Rural Open	2	51
Urban Open	11	51
Agricultural /Pasture	2	145
Low Density Residential	19	70
Medium Density Residential	38	70
High Density Residential	51	97
Commercial	56	77
Industrial	76	149
Highways	53	141
Water/Wetlands	51	6

Taken from "Rouge River Wet Weather Demonstration Project, Selection of Stormwater Pollutant Loading Factors", RPO-MOD-TM34.00, October 1994, Table 3-13. (Another way to convert mg/l to lbs/ft³ is to multiply the mg/l by 6.243 X 10).

2. Add up the uncontrolled load for each site that discharges to the same waterbody. This is the TSS loading for that system.

3. Select BMPs for each site (that are already in place or that you are considering) and calculate the TSS load, after implementation, for each site based on the chosen BMPs. The following references are approved for use in calculating reduction efficiencies for TSS load reduction controls:

- The National Pollutant Removal Performance Database, at:
www.cwp.org/Resource_Library/Center_Docs/SW/NPRPD_ver3.mdb
The technical memo is at:
www.cwp.org/Resource_Library/Center_Docs/SW/bmpwriteup_092007_v3.pdf
- The Environmental Protection Agency’s database of BMPs at:
<http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm>
- The Environmental Protection Agency’s Urban BMP effectiveness tool at:
<http://cfpub.epa.gov/npdes/stormwater/urbanbmp/bmpeffectiveness.cfm>

4. Add up the new loads for each site that discharge to the same water body. This is the TSS load for that system after BMPs are implemented.
5. Divide the sum of the TSS loading from the system, after BMPs are applied, by the sum of the loading from the same system, before BMPs are applied.
6. 1- The result, times 100, is the percentage reduction.

$$1 - \frac{TSSLoad1 \times BMPefficiency1 + \dots + TSSLoadN \times BMPefficiencyN}{TSSLoad1 + \dots + TSSLoadN} \times 100 = \%TSS \text{ reduced}$$

Some BMPs may not be listed or detailed in these references. Therefore, the Department agrees that permittees – or their consultants – may use other acceptable literature, or their own studies, provided they are scientifically defensible and submitted to the Department for review.

Example Community

Using 30 inches (2.5 feet) for the annual precipitation for this community, calculate the uncontrolled loading, assuming all listed sites are located in one watershed (one system). Remember, the formula is:

$$\text{Gallons} \times \text{MG} \times 3.785 \text{ L} \times 1 \text{ Pound}$$

Facility	Load rate	Impervious Area	Precipitation/year	lbs of TSS/year
TWP Hall	77 mg/l	150,000 ft2	2,805,000 gallons	1,802 pounds
Police/Fire Station 1	77 mg/l	250,000 ft2	4,675,000 gallons	3,004 pounds
Storage Yard	149 mg/l	150,000 ft2	2,805,000 gallons	3,487 pounds
Athletic Park	51 mg/l	220,000 ft2	4,114,000 gallons	1,751 pounds
Uncontrolled TSS Annual Loading				10,044 pounds

Then calculate the reduction in TSS with current and/or proposed BMP implementation for each site. Add up the TSS from each site.

Facility	Load rate	BMP	Reduction	New rate	lbs TSS/year
TWP Hall	77 mg/l	Detention Pond	35% from the EPA BMP database ¹	50.05 mg/l	1,171 pounds
Police/Fire Station 1	77 mg/l	Sweeping/CB Cleaning	Annual pounds collected = 500	NA	2,504 pounds
Storage Yard	149 mg/l	None	none	149 mg/l	3,487 pounds
Athletic Park	51 mg/l	Vegetated Swale	60% from the EPA BMP database ¹	20.4 mg/l	700 pounds
Controlled TSS Annual Loading					7862 pounds

1. BMP must meet the specifications of that design and for the same purpose, criteria, management, etc. Percent reduction cannot be used from the database simply because it is the best number found.

Using the formula for percent TSS reduction plug in the numbers:

$1 - (7,862/10,044) \times 100 = 22\%$ reduction with the BMPs listed

This will give you the percentage of TSS reduction for all municipal facilities.

2.18 Identifying Illicit Discharges

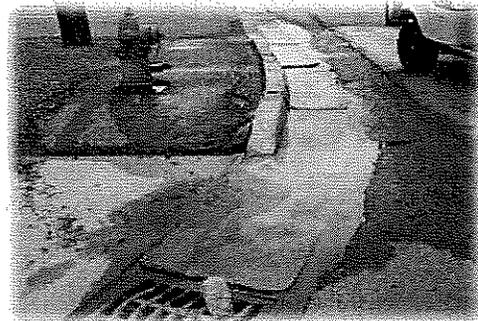
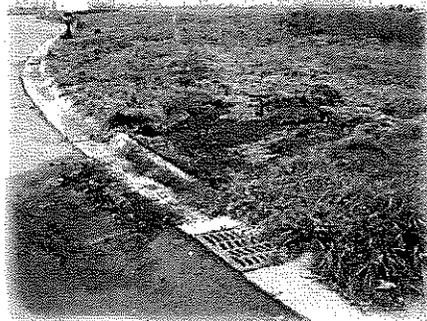
1. Recognize Sources

- Dry Weather Flow (no rain event in the last 72 hours)
- Staining
- Smell – Sanitary, Surfactant, Other
- Pipes to Catch Basin or Drain
- Debris/Waste (e.g. foam, leaks)
- Sediment

2. Typical Examples

- Laundry Connections
- Leaky Dumpsters
- Car Washing
- Equipment Washing
- Construction Sites

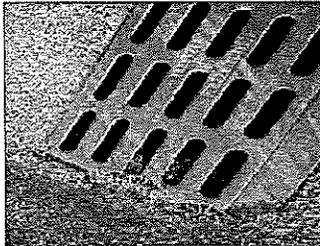
For incident reporting, please use the Illicit Discharge Reporting Sheet.



3.0 Preventive Maintenance of Treatment Controls

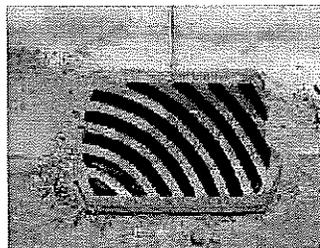
Preventive Maintenance BMPs include regular inspections and maintenance intended to optimize the pollutant removal efficiency of existing treatment controls. Treatment control that fail or function poorly may result in the discharge of pollutants to the storm water drainage system. Therefore, to reduce the likelihood of breakdown or failure, treatment controls should have a preventive maintenance schedule for inspection, repair, or replacement of forebays, vegetation, and revetments. Paved areas and landscaping should not be allowed to degrade to the point where they erode and contribute pollutants to runoff. Cracked pavement and berms, and any other enclosure or structural defects that may impact the quality of storm water runoff should be promptly repaired. Structural BMPs and storm drains within facility boundaries also need to be inspected and maintained regularly.

3.1 Catch Basins



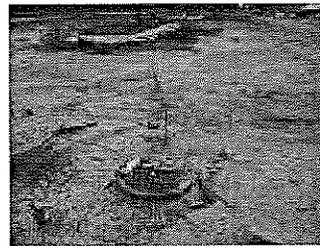
GOOD

Structurally Sound
Grate/Cover Free of Debris
Sump Clean or Less than 50% Full
No Evidence of Illicit Discharge



FAIR

Structure Slightly Damaged
Some Debris On/Around Grate/Cover
Sump Near 50% Full of Sediment
No Evidence of Illicit Discharge
Minor Construction Runoff Entering Sump



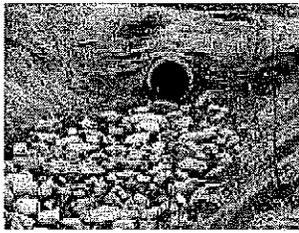
POOR

Surrounding Structure Failing
Not Functioning, Evidence of Flooding
Sump More Than 50% Full
Evidence of Illicit Discharge

Table 3.2: Catch Basins: Typical Maintenance

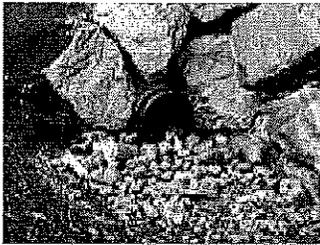
Activity	Schedule
<ul style="list-style-type: none"> • Stabilize Erosion • Repair Broken or Failing Concrete/Asphalt Around Structure • Repair Earth Scouring Around Structure • Replace Broken or Cracked Covers • Report Illicit Discharge • Protect Inlet from Construction Runoff 	As needed
<ul style="list-style-type: none"> • Vactor Sump • Remove Debris 	Semi-annually / Annually

3.2 Culverts



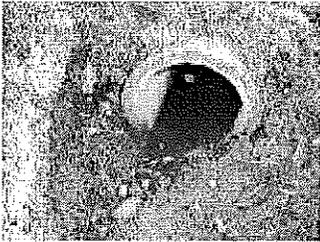
GOOD

- No Erosion**
- Minimal Debris Accumulation**
- No Sedimentation**
- Pipes Structurally Sound**
- Minimal Scour Pool/Channelization**



FAIR

- Slight Erosion**
- Debris or Trash Accumulation**
- Slight Sedimentation**
- Pipe Slightly Crushed or Separated**



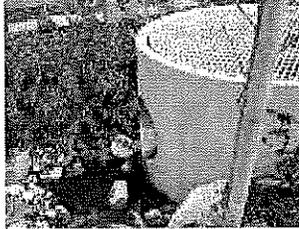
POOR

- Severe Erosion Around Pipe**
- Heavy Debris Accumulation**
- Heavy Sediment Buildup**
- Pipe Crushed, Settled or Separated**

Table 3.2: Culverts: Typical Maintenance

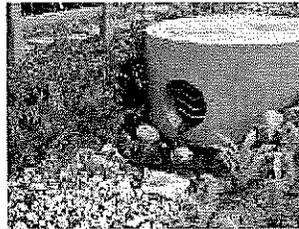
Activity	Schedule
<ul style="list-style-type: none"> • Stabilize Erosion • Replace Crushed/Cracked Pipe • Fortify with Rip Rap • Re-grade Around Outfall and Replant as Needed 	As needed
<ul style="list-style-type: none"> • Clean Up Trash and Debris • Remove Sediment 	Semi-annually / Annually

3.3 Oil/Grit Separator



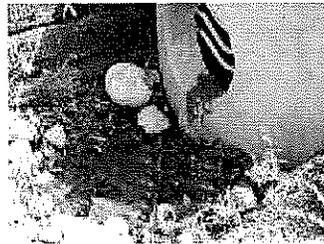
GOOD

Structurally Sound
Clean Outflow
No Trash or Debris Buildup
Unit Less Than 10% Full



FAIR

Structurally Sound
Clean Outflow
Minor Trash/Debris Buildup
Unit Less Than 30% Full



POOR

Structure Compromised
Outflow Carrying Debris or Solids
Excessive Trash/Debris Buildup
Unit More Than 50% Full

Table 3.3: Oil/Grit Separator: Typical Maintenance

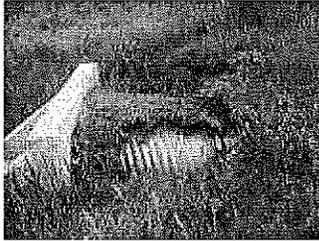
Activity	Schedule
<ul style="list-style-type: none"> • Repair Structural Defects 	As needed
<ul style="list-style-type: none"> • Pump Accumulated Oil • Vacuum Grit/Sediment out of Chamber • Clean up Trash/Debris 	Semi-annually / Annually

3.4 Stormwater Outfalls



GOOD

Structurally Sound
Pipe in Good Condition
No Sedimentation/Debris Buildup
Minimal Erosion



FAIR

Minor Structural Problems
Pipe Damaged but Functional
Minimal Sedimentation/Debris Buildup
Minimal erosion



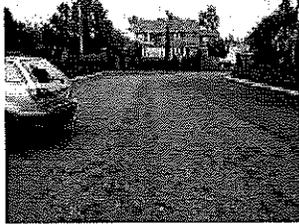
POOR

Structure Severely Compromised
Pipe Crushed or Separated, not Functional
Sediment Constricting More than 30% of Pipe
Heavy Erosion
Deep Scour Pool

Table 3.4: Stormwater Outfall: Typical Maintenance

Activity	Schedule
<ul style="list-style-type: none"> • Reinforce Structure with Rip Rap as Needed • Replace Crushed/Broken Pipes • Repair/Install Energy Dissipater as Needed • Report Suspected illicit Discharges 	As needed
<ul style="list-style-type: none"> • Remove Excess Sediment • Clean Trash Rack, Remove Accumulated Debris 	Annually

3.5 Porous Pavement



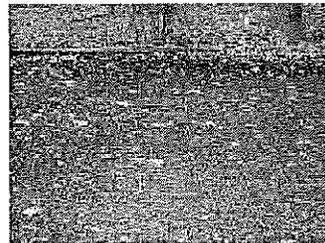
GOOD

- Pavement Clean of Dirt/Organic Debris**
- No Surface Ponding**
- No Settling**
- No Excessive Grass/Moss Growth**



FAIR

- Minor Dirt/Debris Accumulation**
- No Surface Ponding**
- No Settling**
- Moderate Grass/Moss Growth**



POOR

- Excessive Dirt/Debris**
- Surface Ponding or Runoff**
- Pavement/Pavers Settling**
- Excessive Plant Growth**

Table 3.5: Permeable Pavement: Typical Maintenance

Activity	Schedule
<ul style="list-style-type: none"> • Do Not Power Wash • Remove Excessive Grass, Weeds or Moss around Pavers • Clean Up Oil and Grease • Replace Gravel Fill Between Pavers 	As needed
<ul style="list-style-type: none"> • Remove accumulated sediment and particulates from the permeable pavement void spaces with high efficiency vacuum sweepers 	Annually

3.6 Detention Pond



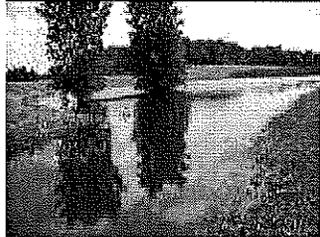
GOOD

Inlets/Outlets clear of Debris and Trash
Minimal Sediment Buildup in Forebay
Minimal Scalping from Mowing
Surrounding Vegetation Healthy
Invasive/Non-Native Plants Absent



FAIR

Some Trash Present
Sediment Buildup in Forebay
Scalping/Improper Mowing
Dead/Dying Vegetation
Some Non-Native Plants Present



POOR

Excessive Trash Present
Forebay full of Sediment
Severe Bank Erosion
Inlets or Outlets Not Functional
Flooding

Table 3.6: Detention Pond: Typical Maintenance

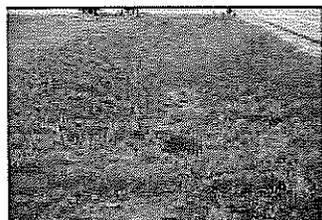
Activity	Schedule
<ul style="list-style-type: none"> • Water plants as necessary during the first growing season • Mow High, Avoid “Scalping” when Mowing • Leave Un-Mowed Buffer Around Water 	As needed
<ul style="list-style-type: none"> • Inspect pretreatment, inlet, and outlet for clogging • Remove Trash • Clean Inlet and Outlet Pipes and Trash Racks • Check and Clear Draw-Down Pipes • Remove Non-Native, Invasive Species • Check for Rodent Damage (Muskrat, Beaver) 	Semi-annually
<ul style="list-style-type: none"> • Inspect device for winter salting damage • Check Weir Integrity • Check Fence and Security Integrity 	Annually

3.7 Infiltration Basin



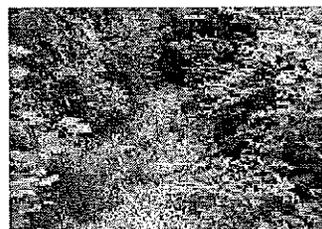
GOOD

Inlets Free From Debris
Vegetation Healthy, Covers Structure
No Scalping from Mowing
No Standing Water 1 Day After Rain
Small Amount of Trash or Debris



FAIR

Debris Around Inlet Pipe
Bare Spots in Vegetation Cover
Mowed Too Low (Scalping)
Limited Standing Water 1 Day After Rain
Small Amount of Erosion
Trash and Debris Present



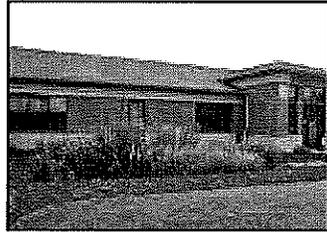
POOR

Inlets Clogged with Debris
Vegetation Mostly Absent
Severe Scalping/Erosion
Evidence of Runoff or Excessive Ponding
Excessive Trash Present

Table 3.7: Infiltration Basin: Typical Maintenance

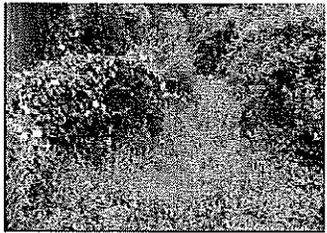
Activity	Schedule
<ul style="list-style-type: none"> • Mow at High Setting (Greater than 6 inches) • Inspect pretreatment area and trench and remove accumulated sediment and debris • Remove Trash • Check for Standing Water 	As needed
<ul style="list-style-type: none"> • Remove Sediment from Inlet 	Semi-annually
<ul style="list-style-type: none"> • Stabilize any eroded areas in pretreatment area • Check Inlet Integrity • Assess Plant Health and Abundance • Check Energy Dissipaters • Check for Channelization and Scouring 	Annually

3.8 Rain Garden (Bioretention)



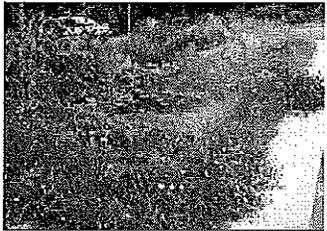
GOOD

- Minimal Trash**
- Mulch Distributed Evenly**
- Vegetation Robust**
- Minimal Weeds**
- Minimal Sedimentation**
- Inlet/Overflow Clean**



FAIR

- Some Trash**
- Bare Spots in Mulch**
- Vegetation Unhealthy / Bare Areas**
- Weedy, Un-kept Appearance**



POOR

- Excessive Trash**
- Mulch Washed Away**
- Vegetation Sparse**
- Excessively Weedy/Wild Appearance**
- Excessive Sedimentation**

Table 3.8: Bioretention: Typical Maintenance

Activity	Schedule
<ul style="list-style-type: none"> • Water plants as necessary during the first growing season • Prune and weed plants and remove and replace unsuccessful or diseased plants • Remove trash and debris • Mulch replacement and/or seeding when erosion is evident 	As needed
<ul style="list-style-type: none"> • Inspect pretreatment, inlet, and outlet for clogging 	Semi-annually
<ul style="list-style-type: none"> • Inspect device for winter salting damage 	Annually
<ul style="list-style-type: none"> • Replace mulch 2 inches thick over entire area 	2 to 3 years

3.9 Filter Strip



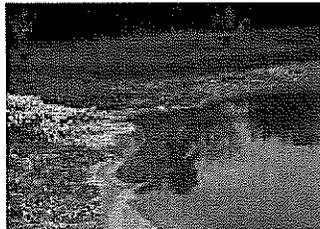
GOOD

Providing Good Filter Buffer Around Water Body

Minimal Sedimentation

Vegetation Healthy

Mowed High or Not at All



FAIR

Some Erosion, Sediment Runoff Reaching Water Body

Vegetation Sparse

Vegetation Mowed Too Low, Scalping

Poorly Protected from Construction



POOR

Severe Erosion, Sediment Reaching Water Body

Vegetation Dead or Missing

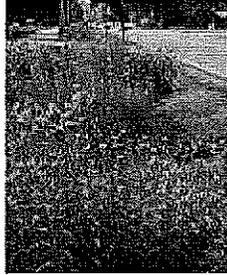
Severe Scalping from Mowing

Protection from Construction Activity Failing or Missing

Table 3.9: Filter Strip: Typical Maintenance

Activity	Schedule
<ul style="list-style-type: none"> • Water vegetation as necessary during establishment period • Repair Eroded Areas • Maintain Gravel Edging if Present • Protect from Construction Activities • Mow grass to 3 or 4 inches in height or do not mow 	As needed
<ul style="list-style-type: none"> • Inspect and remove accumulated sediment from gravel diaphragm • Inspect filter strip for rill and gullies. Reseed or re-sod as needed • Clean Up Trash 	Annually
<ul style="list-style-type: none"> • Remove accumulated sediment at the bottom of the filter strip 	Every 2 to 3 years

3.10 Vegetated Swale



GOOD

Site Free of Trash and Debris
 Tidy Appearance
 Vegetation Healthy
 Mowed to Minimum of 6 Inches
 Minimal Erosion, Scouring and Sedimentation



FAIR

Some Trash or Debris
 Unkempt Appearance
 Some Bare Spots in Vegetation
 Mowed Too Low, Some Scalping
 Some Erosion or Scouring
 Sedimentation
 Compaction from Traffic



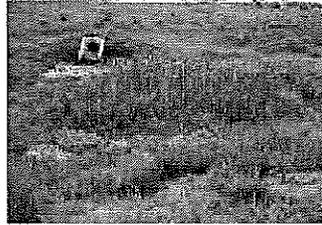
POOR

Excessive Trash or Debris
 Weedy, Overgrown Appearance
 Vegetation Sparse or Missing
 Mowed Too Low, Scalping
 Severe Erosion, Scouring or Sedimentation

Table 3.10: Vegetated swale: Typical Maintenance

Activity	Schedule
<ul style="list-style-type: none"> • Water plants as necessary during plant establishment • Prune and weed plants and remove and replace unsuccessful or diseased plants • Remove trash and debris • Mulch replacement and/or seeding when erosion is evident • If Mowing, Mow High 	As needed
<ul style="list-style-type: none"> • Remove accumulated sediment and debris from the bioswale and its control structures 	Semi-annually
<ul style="list-style-type: none"> • Replenish the mulch layer to maintain design depth • Stabilize any eroded areas within or that drain to the bioswale 	Annually

3.11 Constructed Wetland



GOOD

Healthy Plant Life
Non-Native Plant Species Few or Absent
Minimal Litter or Trash
Inlet/Outlets Clean and free Flowing
Sediment in Forebay More Than one Foot



FAIR

Plants Unhealthy or Sparse
Some Non-Native, Invasive Plant Species
Litter or Trash Present
Inlets/Outlets Contain Sediment Buildup or Debris
Sediment in Forebay More Than one foot



POOR

Plants Dead or Missing
Excessive Non-Native, Invasive Plant Species
Excessive Litter or Trash
Inlets/Outlets Clogged or Not Functioning
Sediment in Forebay Less than One Foot From Water Surface

Table 3.11: Stormwater Wetland: Typical Maintenance

Activity	Schedule
<ul style="list-style-type: none"> • Remove and replace unsuccessful or diseased plants • Remove trash and debris • Inspect Security Fence/Gate and Repair as Necessary • Repair Erosion Damage • Mow Bank on High Setting 	As needed
<ul style="list-style-type: none"> • Remove accumulated sediment and debris from the wetland and its control structures • Remove Debris/Sediment from Forebay 	Annually

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/wdspj. 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

Catch Basin Cleaning

Page 3 of 3

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	WHMD District Office
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

Michigan Department of Environmental Quality – Water Resources Division
STORMWATER DISCHARGE PERMIT APPLICATION

Table 3: Inventory of Applicant Owned or Operated Facilities and storm water structural controls with a discharge of Stormwater to surface waters of the state.

Applicant Owned/ Operated Facility	Address or Parcel ID of Facility	Potential to discharge pollutants to surface waters of the state.	Catch basins	Detention basins	Oil/water separators	Pump Stations	Secondary containment	Constructed wetlands	Infiltration basins and trenches	Porous pavement	Rain gardens	Underground storage vaults or tanks	Vegetated swales	Other structural storm water controls - Provide a description below:
Administration Buildings/ Police	505 West Vienna Street, Clio	L	1											Roof downspout
Public works building	109 Center Street	H												
Public works building	210 Railway Street	H												
Public works yard/ Salt storage facilities	205 Railway Street	H												
Amphitheater	301 Rogers Lodge Drive	L												
Community Building	219 Rogers Lodge Drive	L												
Park (Clio City Park)	402 North Mill Street	L	3											Drain tile
Park (Skate park)	408 Center Street	L												
Park (Smith Street)	284 Smith Street	L												
Trailhead	403 Center Street	L												
Trails		L												
Parking lot (Center Street)	Center Street (100 Block)	L												
Parking lot (north downtown)	Griffes Street (100 Block)	L	1											

Delete Rows that are not Applicable. Add address/ PID, Potential Discharges are Low, medium or High, see Attachment 7 for facility assessment and priority guide, place the number of storm water controls in each box, (Example: your administration bldg has 3 catch basins you would put [3] in the appropriate box) you can put N/A or 0 for those storm water controls that you do not have on those facilities.

Michigan Department of Environmental Quality – Water Resources Division
STORMWATER DISCHARGE PERMIT APPLICATION

Table 3: Inventory of Applicant Owned or Operated Facilities and storm water structural controls with a discharge of Stormwater to surface waters of the state.

Applicant Owned/ Operated Facility	Address or Parcel ID of Facility	Potential to discharge pollutants to surface waters of the state.	Catch basins	Detention basins	Oil/ water separators	Pump Stations	Secondary containment	Constructed wetlands	Infiltration basins and trenches	Porous pavement	Rain gardens	Underground storage vaults or tanks	Vegetated swales	Other structural storm water controls – Provide a description below:
Parking lot (south downtown)	West Young Street (100 Block)	L	4											
Vacant land and open space	Multiple	L												
Street and Highway Storm Water Catch Basins (approximate)	Multiple and Various	L	141											
Other Storm Water Structures and Facilities				0	0	0	0	0	0	0	0	0	0	0

If you have any other facilities not listed above enter here

Other Facility: Streets and allies. Address/ PID: Multiple.

Narrative of storm water controls on other facility.
 Approximately 156 storm water catch basins and manholes.

If you have any other storm water controls not listed above enter here

Delete Rows that are not Applicable. Add address/ PID, Potential Discharges are Low, medium or High, see Attachment 7 for facility assessment and priority guide, place the number of storm water controls in each box, (Example: your administration bldg has 3 catch basins you would put [3] in the appropriate box) you can put N/A or 0 for those storm water controls that you do not have on those facilities.

Michigan Department of Environmental Quality – Water Resources Division
STORMWATER DISCHARGE PERMIT APPLICATION

Table 3: Inventory of Applicant Owned or Operated Facilities and storm water structural controls with a discharge of Stormwater to surface waters of the state.

Storm Water Control: _____

Narrative of storm water controls you have not listed above.

--

Delete Rows that are not Applicable. Add address/ PID, Potential Discharges are Low, medium or High, see Attachment 7 for facility assessment and priority guide, place the number of storm water controls in each box, (Example: your administration bldg has 3 catch basins you would put [3] in the appropriate box) you can put N/A or 0 for those storm water controls that you do not have on those facilities.

Attachment 7 – City of Clio
To MDEQ Stormwater Discharge Permit Application

Pollution Prevention Procedure
Attachment 7 to MDEQ Stormwater Discharge Permit Application
Pollution Prevention and Good Housekeeping Program:

62. Provide the procedure for updating and revising the inventory in Question 59 and map (or maps) identified in Question 60 as facilities and structural stormwater controls are added, removed, or no longer owned or operated by the applicant. A suggested timeframe for updating/revising the inventory and map(s) is 30 days following adding/removing a facility or structural stormwater control.

The updating and revision of the inventory and maps will be completed by the City Administrator, or their designee, normally within 30 days of facilities and stormwater controls being added, removed or no longer owned or operated by the City. Engineered changes to City owned properties or its structural storm water control will be revised with the receipt of as-builts. In addition, the inventory of City owned or operated facilities identified in Table 3 (see "Table 3 Inventory of City of Clio Owned or Operated Facilities.pdf") and mapping will be reviewed annually by the City Administrator and department heads of the City.

63. Provide the procedure for assessing each facility identified in Question 59 for the potential to discharge pollutants to surface waters of the state. The procedure shall include a process for updating and revising the assessment. A recommended timeframe for updating/revising the assessment is 30 days prior to discharging stormwater from a new facility and within 30 days of determining a need to update/revise the facility assessment.

The applicant should consider the following factors when assessing each facility:

- Amount of urban pollutants stored at the site (e.g., sediment, nutrients, metals, hydrocarbons, pesticides, fertilizers, herbicides, chlorides, trash, bacteria, or other site-specific pollutants);
- Identification of improperly stored materials;
- The potential for polluting activities to be conducted outside (e.g., vehicle washing);
- Proximity to waterbodies;
- Poor housekeeping practices; and
- Discharge of pollutants of concern to impaired waters.

The City will utilize *Pollution Prevention/ Good Housekeeping for Municipal Operations: Manual of Best Management Practices* (see "Pollution Prevention and Good Housekeeping for Municipal Operations.pdf").

The City will assess each City owned or operated facility identified in Table 3 (see "Table 3 Inventory of City of Clio Owned or Operated Facilities.pdf") based on its potential to discharge pollutants to surface waters of the State.

Each facility's potential to discharge pollutants is ranked "L," for low, "M" for medium or "H" for high based on the six factors presented in Question 62. Facilities ranked "L" will be assessed every three years, facilities ranked "M" will be released every two years and facilities ranked "H" will be reassessed every year. Notwithstanding rank, any facilities subject to, or undergoing, modification or reconstruction will be assessed at the time of this work.

Furthermore, any complaint or issue tracked to, or with, a facility, notwithstanding its rank, will necessitate an assessment.

77. Provide the procedure with the assessment of the applicant's operation and maintenance activities for the potential to discharge pollutants to surface waters of the state. The assessment shall identify all pollutants that could be discharged from each applicable operation and maintenance activity and the BMPs being implemented or to be implemented to prevent or reduce pollutant runoff. The procedure shall include a process for updating and revising the assessment. A suggested timeframe for updating/revising the assessment is 30 days following adding/removing BMPs to address new and existing operation and maintenance activities.

At a minimum, the procedure shall include assessing the following municipal operation and maintenance activities if applicable:

- Road, parking lot, and sidewalk maintenance (e.g., pothole, sidewalk, and curb and gutter repair)
- Bridge maintenance
- Right-of-way maintenance
- Unpaved road maintenance
- Cold weather operations (e.g., plowing, sanding, application of deicing agents, and snow pile disposal)
- Vehicle washing and maintenance of applicant-owned vehicles (e.g., police, fire, school bus, public works)

Facility or Activity	Possible Pollutants	BMP's	Updating
Streets	Sedimentation, nutrients, trash & debris, metals, bacteria, oil & grease, organics, pesticides, and oxygen depleting substances. Salt during the winter.	<i>Pollution Prevention/ Good Housekeeping for Municipal Operations: Manual of Best Management Practices</i>	Annual review unless otherwise necessitated.
Bridges	Sedimentation, nutrients, trash & debris, metals, bacteria, oil & grease, organics, pesticides, and oxygen depleting substances. Salt during the winter.	<i>Pollution Prevention/ Good Housekeeping for Municipal Operations: Manual of Best Management Practices</i>	Annual review unless otherwise necessitated.
Sidewalk/ Trail	Sedimentation, nutrients, trash & debris, bacteria, organics, pesticides, and oxygen depleting substances. Salt during the winter.	<i>Pollution Prevention/ Good Housekeeping for Municipal Operations: Manual of Best Management Practices</i>	Annual review unless otherwise necessitated.
Right-of-way Maintenance	Sedimentation, nutrients, trash & debris, bacteria, organics, pesticides, and oxygen depleting substances. Salt during the winter.	<i>Pollution Prevention/ Good Housekeeping for Municipal Operations: Manual of Best Management Practices</i>	Annual review unless otherwise necessitated.
Parking Lot	Sedimentation, nutrients, trash & debris, metals, bacteria, oil & grease, organics, pesticides, and oxygen depleting substances. Salt during the winter.	<i>Pollution Prevention/ Good Housekeeping for Municipal Operations: Manual of Best Management Practices</i>	Annual review unless otherwise necessitated.
Potable Water Distribution System	Sedimentation, nutrients, bacteria, oil & grease, organics, and oxygen depleting substances.	<i>Pollution Prevention/ Good Housekeeping for Municipal Operations: Manual of Best Management Practices</i>	Annual review unless otherwise necessitated.

Facility or Activity	Possible Pollutants	BMP's	Updating
Storm Water/ Drainage System	Sedimentation, nutrients, trash & debris, metals, bacteria, oil & grease, organics, pesticides, and oxygen depleting substances. Salt during the winter.	<i>Pollution Prevention/ Good Housekeeping for Municipal Operations: Manual of Best Management Practices and Catch Basin Cleaning Activities Guidance Document.</i>	Annual review unless otherwise necessitated.
Waste Water Collection System	Sedimentation, nutrients, bacteria, oil & grease, organics, and oxygen depleting substances.	<i>Pollution Prevention/ Good Housekeeping for Municipal Operations: Manual of Best Management Practices</i>	Annual review unless otherwise necessitated.
Building and Grounds Maintenance	Sedimentation, nutrients, trash & debris, organics, pesticides, and oxygen depleting substances.	<i>Pollution Prevention/ Good Housekeeping for Municipal Operations: Manual of Best Management Practices</i>	Annual review unless otherwise necessitated.
Vehicle & Equipment Maintenance and Repair	Sedimentation, trash and debris, metals, bacteria, oil & grease, organics, pesticides and oxygen depleting substances. Salt during the winter.	<i>Pollution Prevention/ Good Housekeeping for Municipal Operations: Manual of Best Management Practices</i>	Annual review unless otherwise necessitated.
Vehicle & Equipment Washing	Sedimentation, trash and debris, metals, bacteria, oil & grease, organics, pesticides and oxygen depleting substances. Salt during the winter.	<i>Pollution Prevention/ Good Housekeeping for Municipal Operations: Manual of Best Management Practices</i>	Annual review unless otherwise necessitated.

78. Provide the procedure for prioritizing applicant-owned or operated streets, parking lots, and other impervious infrastructure for street sweeping based on the potential to discharge pollutants to surface waters of the state. The procedure shall include assigning a priority level for each parking lot and street and the associated cleaning schedule (i.e., sweeping frequency and timing) based on preventing or reducing pollutant runoff. The procedure shall include a process for updating/revising the priority level giving consideration to street sweeping findings and citizen complaints. A recommended timeframe for updating/revising the prioritization is 30 days following the construction of a new street, parking lot, or other applicant-owned or operated impervious surface or within 30 days of identifying a need to revise a priority level.

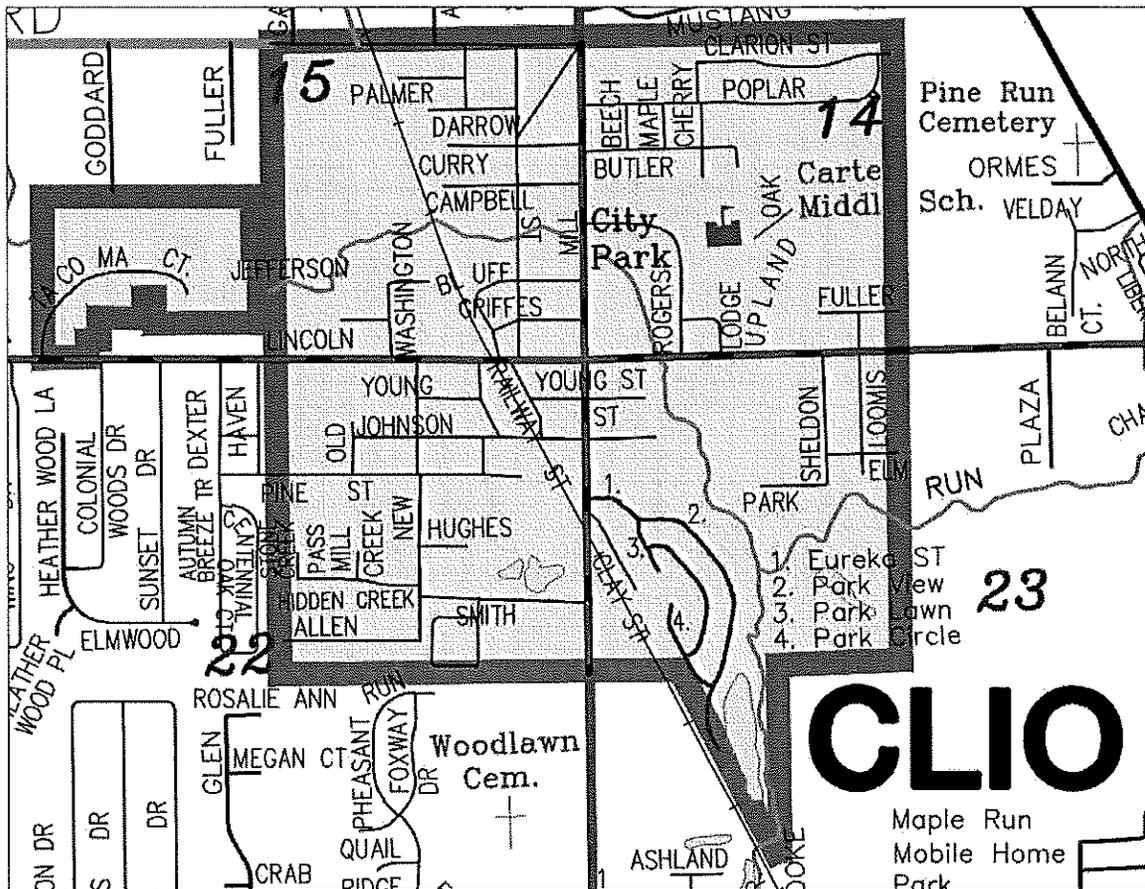
All City streets and parking lots are rated, "H," high for their potential to discharge pollutants to surface waters of the state. Within this rating, these facilities are prioritized, as follows:

1. The City of Clio's Act 51 classified Major Streets are prioritized first for street sweeping based on the potential to discharge pollutants to surface waters of the State. These are generally higher trafficked streets also subject to more truck or commercial vehicles.
2. The City's Act 51 classified Local Streets follow in progression.
All City streets are swept monthly during the fair-weather months generally extending from May to November or as otherwise needed.
3. The City's downtown parking lots (Center Street, north downtown, south downtown) parking lots are prioritized after streets for street sweeping based on the potential to discharge pollutants to surface water of the State.
4. The parking lots at the Clio City Hall and the City's parks follow in follow in prioritization.

All City parking lots are swept annually or as otherwise needed.

This procedure is reviewed annually.

79. Provide the geographic location of the streets, parking lots, and other impervious surfaces in each priority level using either a narrative description or map.



Parking lots:

Center Street, 100 block of Center Street;

Clio City Hall parking lot, 505 West Vienna Street;

Clio City Park parking lots:

- 403 Center Street,
- 408 Center Street,
- 402 North Mill Street,
- 219 Rogers Lodge Drive, and
- 284 Smith Street;

Department of Public Service parking lot, 109 Center Street;

North Downtown, 100 block of Griffes Street; and

South Downtown, 100 block of West Young Street.

84. Provide the reference to the employee training program submitted above to train employees involved in implementing or overseeing the pollution prevention and good housekeeping program. The program shall include the training schedule. At a minimum, existing staff shall be trained once during the permit cycle and within the first year of hire for new staff.

Annual in-house training in conjunction with the several reviews identified in this application. Otherwise, the City Administrator, Department of Public Service Superintendent and employees within the City's Department of Public Service will enroll and participate in training opportunities subject to availability and scheduling.

Table 1: Light Snow Storm
Michigan Department of Transportation

Pavement Condition		Initial Operation			Subsequent Operations		Comments
Temperature	Surface Condition	Maintenance Action	Chemical Spread Rate		Maintenance Action	Subsequent Operations	
			Liquid	Prewet Salt	Dry Salt	Prewet Salt	Dry Salt
Above 32°F Pavement Temperature Steady or Rising	Dry, Wet, Slush or Light Snow Cover	None; See Comments					
Above 32°F Pavement Temperature is falling to near 32°F	Dry	Anti-Ice	Anti-Ice app. Rates depend on chemical used			50-75 lbs/lane mile	100 lbs/lane mile
15°F to 32°F Pavement Temperature Remaining in Range	Dry	Anti-Ice	Anti-Ice app. Rates depend on chemical used			50-75 lbs/lane mile	100 lbs/lane mile
10°F to 15°F Pavement Temperature Remaining in Range	Wet or Slush or Light Snow Cover	Apply dry salt		50-75 lbs/lane mile	100 lbs/lane mile	100-150 lbs/lane mile	200 lbs/lane mile
Below 10°F Pavement Temperature Steady or Falling	Dry, Wet, Slush or Light Snow Cover	Blade as needed				200 lbs/lane mile down to 0°F	

Notes:

- 1) Time initial applications to prevent deteriorating conditions or the development of packed and banded snow
- 2) Apply liquid or salt ahead of traffic rush periods occurring during a storm
- 3) If needed, blade before salt applications so that excess snow, slush, or ice is removed.
- 4) Abrasives will adhere to the road surface better if they are prewetted.

Table 2: Light Snow Storm With Periods of Moderate to Heavy Snows

Michigan Department of Transportation

Pavement Condition		Maintenance Action	Initial Operation			Subsequent Operations		Comments
Temperature	Surface Condition		Liquid	Prewet Salt	Dry Salt	Maintenance Action	Salt Spread Rate	
Above 32°F Pavement Temperature Steady or Rising	Dry, Wet, Slush or light snow cover	None; See Comments				Light Snow	Heavy Snow	1) Monitor pavement temperature closely. 2) Treat icy patches with dry salt at 100 lbs/lane mile or prewet salt at 50-75 lbs/lane mile, blade if needed.
Above 32°F Pavement Temperature is falling to near 32°F	Dry	Anti-ice	Anti-ice app. Rates depend on chemical used			Dry Salt: 100 lbs/EM Prewet Salt: 50-75 lbs/EM	Dry Salt: 200 lbs/EM Prewet Salt: 100-150 lbs/EM	1) Application will need to be more frequent at lower temperatures and higher snowfall rates. If the blade/treatment frequency cannot be maintained, the spread rate can be increased to 150 lbs/lane mile of dry salt or 75-100 lbs/lane mile of prewet salt.
15°F to 32°F Pavement Temperature Remaining in Range	Dry	Anti-ice	Anti-ice app. Rates depend on chemical used		50-75 lbs/lane mile	Dry Salt: 100 lbs/EM Prewet Salt: 50-75 lbs/EM	Dry Salt: 200 lbs/EM Prewet Salt: 100-150 lbs/EM	
10°F to 15°F Pavement Temperature Remaining in Range	Wet or Slush Light snow cover	Apply dry salt or prewet salt			100 lbs/lane mile	Dry Salt: 200 lbs/EM Prewet Salt: 100-150 lbs/EM	Dry Salt: 200 lbs/EM Prewet Salt: 100-150 lbs/EM	
Below 10°F Pavement Temperature Steady or Falling	Dry, Wet, Slush or light snow cover Dry or Light Snow Cover	Apply dry salt or prewet salt			200 lbs/lane mile	Dry Salt: 200 lbs/EM Prewet Salt: 100-150 lbs/EM	Dry Salt: 200 lbs/EM Prewet Salt: 100-150 lbs/EM	1) It is not recommended that dry salt or prewetted salt be applied in this temperature range. 2) Abrasives can be applied to enhance traction (5)

Notes:

- 1) Time initial applications to prevent deteriorating conditions or the development of packed and bonded snow
- 2) Apply liquid or salt ahead of traffic rush periods occurring during a storm
- 3) If needed, blade before salt applications so that excess snow, slush, or ice is removed.
- 4) Abrasives will adhere to the road surface better if they are prewetted.

Table 3: Moderate or Heavy Snow Storm

Michigan Department of Transportation

Pavement Temperature	Surface Condition	Maintenance Action	Initial Operation			Subsequent Operations		Comments
			Chemical Spread Rate		Maintenance Action	Subsequent Operations		
			Liquid	Prewet Salt			Dry Salt	
Above 32°F	Dry, Wet, Slush or light snow cover	None. See Comments						1) Monitor pavement temperature closely.
Pavement temperature is falling to near 32°F	Dry	Anti-Ice	Anti-ice app. Rates depend on chemical used				100 lbs/lane	2) Treat icy patches with dry salt at 100 lbs/lane mile or 50-75 lbs/lane mile for prewet salt, blade if needed.
Above 32°F	Dry	Anti-Ice	Anti-ice app. Rates depend on chemical used				100 lbs/lane	1) If desired blade/treatment frequency cannot be maintained, the spread rate can be increased to 200 lbs/lane for dry salt or 100-150 lbs/lane mile for prewet salt mile to accommodate longer operational cycles.
30°F to 32°F	Dry	Anti-Ice	Anti-ice app. Rates depend on chemical used				100 lbs/lane	2) Do not apply liquid salt onto heavy sn
Pavement temperature Remaining in Range	Wet or Slush	Apply Dry Salt		50-75 lbs/lane mile			100 lbs/lane	
15°F to 30°F	light snow cover	Apply Prewetted Salt					100-150 lbs/lane mile	
15°F to 30°F	Dry	Anti-Ice	Anti-ice app. Rates depend on chemical used				200 lbs/lane	1) If the recommended treatment frequency is not keeping up with the storm, the spread rate can be increased to 400 lbs/lane mile for dry salt or 200-300 lbs/lane mile for prewet salt to accommodate longer operational cycles
Pavement temperature Remaining in Range	Wet or Slush	Apply Dry Salt		75-150 lbs/lane mile			200 lbs/lane	2) Do not apply liquid salt o
10°F to 15°F	Dry, Wet, Slush or light snow cover	Apply dry salt or prewetted salt		100-150 lbs/lane mile			200 lbs/lane	1) If the recommended treatment frequency is not keeping up with the storm, the spread rate can be increased to 400 lbs/lane mile for dry salt or 200-300 lbs/lane mile of prewet salt to accommodate longer operational cycles
Below 10°F	Dry or light Snow Cover	Blade as needed					200 lbs/lane down to 0	1) It is not recommended that dry salt or prewetted salt be applied in this temperature range. 2) Abrasives can be applied to enhance traction (5)

Notes: 1) Time initial applications to prevent deteriorating conditions or the development of packed and bonded snow

2) Apply liquid or salt ahead of traffic rush periods occurring during a storm

3) If needed, blade before salt applications so that excess snow, slush, or ice is removed.

4) Abrasives will adhere to the road surface better if they are prewetted.

Table 4: Frost
Michigan Department of Transportation

Pavement Condition		Initial Operation			Subsequent Operations			Comments
Pavement Temperature	Traffic Condition	Maintenance Action	Liquid	Chemical Spread Rate	Maintenance Action	Prewetted Salt	Dry Salt	
Above 32°F Pavement Temperature Steady or Rising	Any Level	None; See Comments						1) Monitor pavement temperature closely. Begin treatment as soon as pavement temperature begins to drop to 32°F and is at or below dew point.
28°F to 32°F Pavement Temperature is falling to near 32°F	Less than 100 vehicles/hr	Apply Salt		50-75 lbs/lane mile	100 lbs/lane mile	50-75 lbs/lane mile	100 lbs/lane mile	1) Monitor pavement closely, if pavement becomes wet or if thin ice forms, increase application rate to 150 lbs/lane mile for dry salt or 75-100 lbs/lane mile for prewet salt. 2) Do not apply liquid salt onto heavy snow accumulations or packed snow
20°F to 28°F Pavement Temperature Remaining in Range and equal to or below dew point	Any Level	Apply Salt		50-100 lbs/lane mile	100-150 lbs/lane mile	50-100 lbs/lane mile	100-150 lbs/lane mile	1) Monitor pavement closely; if thin ice forms, increase application rate to 150 lbs/lane mile for dry salt or 75-100 lbs/lane mile for prewet salt. 2) Applications will need to be more frequent at higher levels of condensation. If traffic volumes are not
10°F to 20°F Pavement Temperature Remaining in Range	Any Level	Apply Salt		75-150 lbs/lane mile	150-200 lbs/lane mile	75-150 lbs/lane mile	150-200 lbs/lane mile	1) Monitor pavement closely, if thin ice forms, increase application rate to 200 lbs/lane mile for dry salt or 100-150 lbs/lane mile for prewet salt. 2) Applications will need to be more frequent at higher levels of condensation. If traffic volumes are no
Below 10°F Pavement Temperature Steady or Falling	Any Level	Apply abrasives or prewet salt		200 lbs/lane mile down to 0°F		200 lbs/lane mile down to 0°F		1) It is not recommended that dry salt or salt prewetted with sodium chloride brine be applied in this temperature range.

1) Time initial applications to prevent deteriorating conditions or the development of packed and bonded snow
2) Apply liquid or salt ahead of traffic rush periods occurring during a storm
3) If needed, blade before salt applications so that excess snow, slush, or ice is removed.
4) Abrasives will adhere to the road surface better if they are prewetted.

Table 6: Sleet Storm

Michigan Department of Transportation

Pavement Condition	Initial Operation		Subsequent Operations			Comments	
	Maintenance Action	Prewetted Salt	Dry Salt	Maintenance Action	Prewetted Salt		Dry Salt
Temperature Above 32°F	None; See Comments			None; See Comments			1) Monitor pavement temperature closely. 2) Treat icy patches with salt at 100 lbs/lane mile
Pavement Temperature Steady or Rising		50-75 lbs/lane mile	100 lbs/lane mile	apply salt when needed	50-75 lbs/lane mile	100 lbs/lane mile	1) Monitor pavement temperature and precipitation closely. 2) Increase salt rate toward higher indicated rate with increase in freezing sleet intensity. 3) Decrease salt rate toward higher indicated rate with decrease in freezing sleet intensity.
Above 32°F Pavement Temperature Is falling to near 32°F	Apply Salt			Blade as needed Apply salt when needed	50-150 lbs/lane mile	100-200 lbs/lane mile	1) Monitor pavement temperature and precipitation closely. 2) Increase salt rate toward higher indicated rate with increase in freezing sleet intensity. 3) Decrease salt rate toward higher indicated rate with decrease in freezing sleet intensity.
28°F to 32°F	Blade as needed Apply Salt	50-150 lbs/lane mile	100-200 lbs/lane mile	Blade as needed Apply salt when needed	100-300 lbs/lane mile	200-400 lbs/lane mile	1) Monitor pavement temperature and precipitation closely. 2) Increase salt rate toward higher indicated rate with increase in freezing sleet intensity. 3) Decrease salt rate toward higher indicated rate with decrease in freezing sleet intensity.
10°F to 28°F	Blade as needed Apply Salt	100-300 lbs/lane mile	200-400 lbs/lane mile	Blade as needed Apply salt when needed	200 lbs/lane mile down to 0°F		1) It is not recommended that dry salt or prewetted salt be applied in this temperature range. 2) Abrasives can be applied to enhance traction (5)
Below 10°F Pavement Temperature Steady or Falling	Blade as needed			Blade as needed Apply abrasives as needed			

2) Apply liquid or salt ahead of traffic rush periods occurring during a storm
3) If needed, blade before salt applications so that excess snow, slush, or ice is removed.
4) Abrasives will adhere to the road surface better if they are prewetted.



PESTICIDE CERTIFICATION-REGISTRATION CATEGORIES

CATEGORY	DESCRIPTION	CATEGORY	DESCRIPTION
1A Field Crops	This includes applicators who use pesticides for the production of field crops; cereal grains, feed grains, beans, soybeans, sugarbeets, forage.	6 Right-of-Way Pest Management	This includes applicators who use pesticides in the maintenance of any of the following: public roads, ditch banks, electric power lines, pipelines, railway rights-of-way, parking lots, tennis courts, similar noncrop areas.
1B Vegetable Crops	This includes applicators who use pesticides for the production of vegetable crops; tomatoes, potatoes, snap beans, celery, onions, cucurbits, cole crops, sweet corn.	7A General Pest Management	This includes applicators who use pesticides in, on, or around any of the following: food-handling establishments, human dwellings, institutions such as schools and hospitals.
1C Fruit Crops	This includes applicators who use pesticides for the production of tree fruit; apples, cherries, pears, peaches, plums, nuts, blueberries, strawberries, grapes, and raspberries.	7B Wood Destroying Pest Management	This includes applicators who use pesticides in, on, or around structures for the management of wood-destroying pests, such as any of the following: termites, powder post beetles, carpenter ants, wood-destroying fungi.
1D Livestock Pest Management	This includes applicators who use pesticides on animals; cattle, swine, sheep, horses, goats, other livestock, poultry. A person who use pesticides on or in places where animals are confined.	7D Vertebrate Pest Management	This includes applicators who use pesticides to manage vertebrate pests, such as birds, rats, or mice.
2 Forest Pest Management	This includes applicators who use pesticides in any of the following areas: forests, forest nurseries, Christmas tree plantations, forest seed-producing areas.	7E Interior Plant Pest Management	This includes applicators who use pesticides in the maintenance of plants at inside locations, such as any of the following: homes, offices, shopping malls, stores, similar sites.
2A Wood Preservation	This includes applicators who use pesticides for preserving wood products.	7F Mosquito Management	This includes applicators who use pesticides to manage mosquitoes in an outside environment.
3A Turfgrass Pest Management	This includes applicators who use pesticides to manage pest of turf grasses.	7G Domestic Animal Pest Management	This includes applicators who use pesticides to control pests associated with small domestic animals, such as cats and dogs.
3B Ornamental Pest Management	This includes applicators who use pesticides to manage pests of ornamental plants in exterior areas, such as evergreens, shrubs, and shade trees.	8 Public Health Pest Management	This includes state, federal, or other government employees who use pesticides in public health programs for the management of pests that have medical and public health importance, excluding mosquitoes.
4 Seed Treatment	This includes applicators who use pesticides on any of the following: seeds, corns, tubers, rhizomes, stolons, other plant parts used or propagation.	9 Regulatory Pest Management	This includes state, federal, or other government employees who use pesticides in the management of regulated pests.
5 Aquatic Pest Management	This includes applicators who use pesticides which are applied to lakes, ponds, streams, marshes, or ditches and tributaries which flow into them or which are applied to surfaces that contact such bodies of water to manage aquatic pest. This category does not include applicators who engage in mosquito management.	10 Demonstration and Research Pest Management	This includes individuals who demonstrate to the public the proper use, and techniques of application of pesticides, who supervise the demonstrations, or who conduct field research with pesticides and, in so doing, use restricted-use pesticides.
5A Swimming Pools	This includes applicators who use pesticides in maintaining public or private swimming pools to manage algae, bacteria, or other swimming pool pests.	AE Aerial	Applicators who apply pesticides by aircraft.
5B Microbial Pest Management	This includes applicators who use pesticides in any of the following to manage bacteria, fungi, algae or viruses; cooling towers, air washers, evaporative condensers, pulp and paper mills, sewer treatment, other applications.	FUM Fumigation	Includes the application of a fumigant for structural, soil borne, stored commodity and greenhouse pests.
5C Sewer Line Pest Management	This includes applicators who use pesticides in sewer lines for root control.		



United States Environmental Protection Agency and the EPA Region III states of Pennsylvania, Maryland, Delaware, District of Columbia, Virginia and West Virginia

Understanding Impaired Waters and Total Maximum Daily Load (TMDL) Requirements for Municipal Stormwater Programs

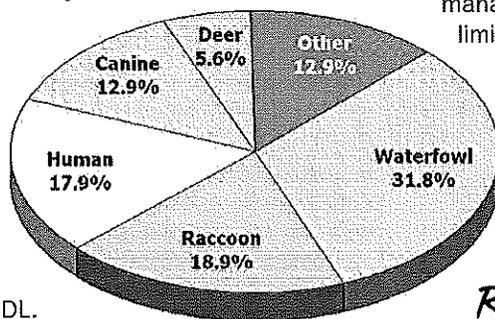
EPA 833-F-07-009

January 2008

Executive Summary

Does your municipal separate storm sewer system (MS4) contribute a pollutant of concern to an impaired waterbody, a waterbody with an approved Total Maximum Daily Load (TMDL), or to a tributary of the Chesapeake Bay? If so, you most likely need to take steps to modify your municipal stormwater management program to meet state and federal National Pollutant Discharge Elimination System (NPDES) regulations.

This document describes how municipal stormwater managers can determine if their storm drain system discharges to an impaired waterbody and how to update their stormwater management program to address the TMDL.



Sources of fecal coliform in Four Mile Run, Virginia

Introduction

In the Mid-Atlantic Region, stormwater runoff is a leading source of stream impairments. Stormwater runoff contributes to the primary pollutants impairing the Chesapeake Bay—nitrogen, phosphorus, and sediment.

Section 303(d) of the Clean Water Act requires that states develop impaired waters lists for rivers, lakes, coastal waters, and estuaries that do not meet water quality standards. These 303(d) lists are published biannually and are available at the web link listed in the Resources section of this document. TMDLs, developed for waterbodies placed on the list, specify the maximum amount of a pollutant that a waterbody can receive in order to meet water quality standards. Regulations governing the TMDL program (40 CFR 130.2 and 130.70) define the TMDL as “the sum of the individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources.” Mathematically the TMDL can be represented by the following equation:

$$TMDL = \sum WLA + \sum LA + MOS$$

Where MOS is the margin of safety.

WLAs are generally expressed in numeric form (e.g., 500 lbs/day phosphorus). Municipal stormwater sources, which are regulated as point sources under the NPDES program, are included as part of the wasteload allocations. Non-NPDES permitted areas are included as LAs.

If your MS4 is affected by a TMDL, a numeric WLA will be assigned and your NPDES permit, when it is reissued or revised, will include effluent limits consistent with the requirements

of the WLA. These TMDL requirements convey the goal of the Clean Water Act and the implementing NPDES regulations which is to not cause or contribute to exceedance of water quality standards. However, EPA recognizes the difficulty in characterizing stormwater discharges because of the highly variable frequency and duration of storm events. Therefore, EPA issued a memorandum on November 22, 2002 that recommends initially expressing NPDES permit requirements (effluent limits) for NPDES-regulated municipal stormwater sources as best management practices (BMPs) rather than as numeric effluent limits. www.epa.gov/npdes/pubs/final-wwtmdl.pdf

This BMP approach provides more flexibility to MS4s, but requires that MS4s monitor and evaluate BMPs. When BMPs are not found to be effective, expanded or better-tailored BMPs may be necessary to attain water quality.

Steps to Address TMDL Requirements in MS4 Permits

The following five steps will help you determine if TMDL requirements apply to you and, if so, how to comply with those requirements. The first two steps describe how to determine if your MS4 discharges to an impaired waterbody. If your MS4 does not discharge to an impaired waterbody, you will only need to complete steps 1 and 2.

1. Determine if the waterbody into which your MS4 discharges is impaired, has a TMDL assigned, or drains to the Chesapeake Bay
2. Determine what requirements apply to your MS4
3. Update your stormwater management program
4. Implement programs and practices to address the TMDL
5. Assess effectiveness of the stormwater program in addressing pollutant(s) of concern

Step 1: Determine if the waterbody into which your MS4 discharges is impaired, has a TMDL assigned, or drains to the Chesapeake Bay

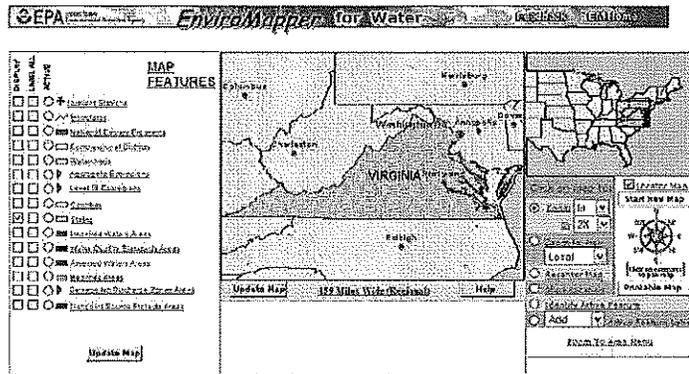
The first step is to identify the waterbodies into which your MS4 discharges. Most MS4s have developed maps of their outfalls and receiving waters. You should use your maps to develop a list of all the named and unnamed waterbodies into which your outfalls discharge. To facilitate the process to determine impairment status, you should include stream codes as assigned by states.

One source of information on waterbodies is EPA's Enviromapper for Water (www.epa.gov/waters/enviromapper/index.html). This Web-based system can map receiving waters in your jurisdiction.

Once you have the list of waterbodies into which your MS4 discharges, you will need to determine if any of these waterbodies

Understanding Impaired Waters and Total Maximum Daily Load (TMDL) Requirements for Municipal Stormwater Programs

are impaired, have been assigned a TMDL or drain to the Chesapeake Bay and therefore are covered by a state Tributary Strategy. This determination can be made by reviewing your state 303(d) list, state TMDL list, Chesapeake Bay Program web site or contacting your state stormwater coordinator or TMDL coordinator. Links to state 303(d), TMDL lists, and Chesapeake Bay Program web site are included in the Resources section of this document.



EPA's EnviroMapper for Water

Step 2: Determine what requirements apply to your MS4

Review your NPDES MS4 permit to identify specific TMDL allocations or requirements pertaining to MS4 stormwater discharges to impaired waterbodies. You will most likely find these requirements under the Special Conditions section of your MS4 NPDES stormwater permit. Keep in mind that NPDES permits have five year permit terms; therefore, your requirements for discharges to impaired waters might change as your state reissues your MS4 stormwater permit.

Impaired waterbodies for which a TMDL has not yet been developed. Contact your state TMDL coordinator to determine the schedule for TMDL development. You may be asked to participate in or supply information for the TMDL development process for impaired waterbodies that do not yet have an approved TMDL. Your participation in the TMDL process will likely mean attending public meetings as a stakeholder and providing information that will assist in characterizing your MS4 system. TMDL development is a data-intensive exercise; therefore you should provide the best available data related to your stormwater discharges, such as outfall locations, drainage areas, types and locations of structural and non-structural BMPs, as well as the expected or measured pollutant load reductions from the BMPs. This information supports calculation of an accurate and reasonable WLA for your system.

Impaired Waterbodies with approved TMDLs. Review TMDL reports and supporting documents to identify WLA(s) assigned to your MS4 and review the approach and assumptions used to calculate the WLA(s). Depending on the availability of information and the technical approach used to develop the TMDL, a TMDL might assign your MS4 a specific WLA or use a broader approach, such as assigning an aggregate WLA to several MS4s. In some cases, the TMDL might assign an aggregate WLA to all

permitted stormwater sources (e.g., MS4s, industrial facilities, and construction sites) because data are not available to make source-specific allocations.

Given the general WLAs assigned to MS4s, it is often beneficial to estimate more specifically the pollutant loads and reductions needed within and across the MS4. For more examples of methods to estimate MS4 contributions, please refer to "Summary of 17 TMDLs with Stormwater Sources" listed in the resources section of this document. The following are some suggestions for estimating your MS4's specific contribution to the impaired waterbodies pollutant(s) of concern:

- General estimation:** Assess to what extent your MS4 discharge contributes to the water quality impairment listed in the 303(d) list, TMDL or Chesapeake Bay Tributary Strategy. Land use patterns, in particular, impervious cover and vegetation, influence the volume and rate of runoff and the type of pollutants found in stormwater runoff. Assessing the amount and location of industrial and commercial, light medium and dense residential areas, etc., provides a rough indication of the amount and type of pollutant loads to anticipate from these areas. The Chesapeake Bay Program web site and EPA published reports on urban stormwater contain common pollutant levels found in urban storm water runoff based on land use.
- More refined estimation:** Once you have an indication of the types of pollutant loads that may emanate from your MS4 during a storm, you may either directly monitor your discharge and/or estimate through simple calculations or models, to get a better sense of what is causing the water quality standard exceedances and where in your jurisdiction are the anticipated hotspots. This effort can include reviewing existing monitoring data (if available) or conducting new stormwater outfall monitoring, estimating pollutant loads using common computational methods such as the Simple Method (www.stormwatercenter.net/monitoring%20and%20assessment/simple%20meth/simple.htm), or modeling using any number of computer models. EPA's SWMM Model is one such model that simulates stormwater runoff quantity and quality in any given area (www.epa.gov/ednrmrl/models/swmm/index.htm). Additional TMDL models are available from EPA's Watershed and Water Quality Modeling Technical Support Center (www.epa.gov/athens/wwwqtsc/).

Getting a better sense of your MS4's specific contribution to the pollutants of concern will enable you to design and implement the most appropriate controls in the best locations across your MS4.

For example, several TMDLs have been established for waters within for the city of Portland, Oregon and surrounding municipalities. These TMDLs include WLAs for all urban areas, within and adjacent to the MS4 boundaries (Portland's NPDES permit is available at www.deq.state.or.us/wq/stormwater/municipalph1.htm). As a result, the aggregated WLA assigned to Portland includes contributions from areas outside their control and does not separate allocations to each MS4 jurisdiction separately. The City of Portland and its co-permittees refined the WLAs in the TMDLs by delineating the land area within each MS4

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boundary, estimating the stormwater runoff for each jurisdiction, and apportioning the WLA for each MS4.

For additional examples of how TMDLs have been implemented through stormwater permits, the following reports may be useful: "Summary of 17 TMDLs with Stormwater Sources" (www.epa.gov/owow/tmdl/17_TMDLs_Stormwater_Sources.pdf) and "Total Maximum Daily Loads and National Pollutant Discharge Elimination System Storm Water Permits for Impaired Water Bodies: A Summary of State Practices" (www.epa.gov/region5/water/wshednps/topic_tmdls.htm).

Step 3: Update your stormwater management program

You should consider updating your MS4 stormwater management program and associated legal documents (e.g., stormwater ordinances) to address the allocations in the TMDL (relevant WLAs). For those waterbodies that do not yet have a TMDL issued, consult your MS4 NPDES permit and your state stormwater coordinator to determine what intermediate steps can be taken to address those impairments.

Updates to your MS4 stormwater management program will be based on estimations of pollutant loads emanating from various land uses across your MS4 as described in Step 2 and an understanding of what BMPs can be put in place to target those pollutants. There are several resources available to assist with the design of appropriate BMPs to reduce pollutant loads. For instance, the International Stormwater BMP Database (www.bmpdatabase.org) or the SWMM model mentioned above, can be used as aids in this process to help the municipality devise a suite of BMPs that will meet the requirements of the effluent limits based on the TMDL or reduce the pollutants of concern in the impaired waterbody.

In addition to revising your stormwater management program, you may be invited to participate in the development of a TMDL Implementation Plan to specifically address implementation of any TMDLs in your watershed. Maryland, Virginia and Delaware currently require development of TMDL Implementation Plans (in Delaware, these plans are called Pollution Control Strategies). An Implementation Plan describes and quantifies the types of activities to be implemented, along with a time frame to meet the WLA. Because most TMDLs cross multiple jurisdictions, these TMDL Implementation Plans are often developed by a group of stakeholders. Additional information on TMDL implementation plans can be found at:

- Virginia – www.deq.virginia.gov/tmdl/implement.html
- Maryland – www.mde.state.md.us/Programs/WaterPrograms/TMDL/implementation.asp
- Delaware – www.dnrec.state.de.us/water2000/Sections/Watershed/ws/pcs.htm

An example of how an MS4 updated its program to address TMDLs is once again provided by the city of Portland, Oregon. In Portland, TMDLs and wasteload allocations have been developed for two watersheds. Pollutants include among others, bacteria, phosphorus and pesticides.

To comply with the effluent limits based on the TMDL WLAs, Portland conducted a thorough review of its existing MS4 stormwater management program and identified additional activities necessary to fulfill new MS4 permit requirements for stormwater discharges to waters with assigned TMDLs. The city developed performance measures for each BMP and numeric benchmarks for each pollutant as required by the permit (e.g. reduction of 436 lbs/day of phosphorous), as well as modified the existing stormwater monitoring program to evaluate progress towards achieving the benchmarks. The city used the GRID model to model pollutant loads and develop benchmarks. BMPs included such things as instream flow control, riparian tree protection and planting, culvert replacement, streambank restoration, and water quality facilities. If any new TMDLs are developed and approved for impaired waters within the MS4 boundary, the city of Portland will have 18 months to again review and update its existing stormwater management program to ensure current BMPs adequately address new WLAs. Information on Portland's stormwater management program is available at www.portlandonline.com/bes/index.cfm?c=31892.

Step 4: Implement programs and practices to address the TMDL

The crucial step is to implement the programs and practices described in your updated stormwater management plan to address the effluent limits based on the TMDL and to reduce the pollutant(s) of concern. These programs can range from tailoring your public education and outreach to pet owners in order to reduce fecal coliform, to installing a series of BMPs such as porous pavement, percolation trenches, and biofilters in dense residential areas to capture the first flush and reduce any number of pollutants including nutrients, BOD or sediment.

Implementation will require proper budgeting and oversight to ensure BMPs are built or enacted appropriately and effectively.

Step 5: Assess Effectiveness of the Stormwater Program in Reducing Pollutant(s) of Concern

Because implementation of most MS4 WLAs will be BMP-based, it is critical to assess the effectiveness of those BMPs and your stormwater management program in meeting the effluent limits based on the WLA. NPDES regulations require such assessment. The EPA document *Evaluating the Effectiveness of Municipal Stormwater Programs* describes different approaches available to evaluate effectiveness of the stormwater management program.

Some steps you can take to evaluate the effectiveness of your program in reducing the pollutants of concern include:

- *Track BMPs.* Develop a process to inventory the type and quantity of existing structural and non-structural BMPs and determine the current pollutant load reductions from these practices based on estimated or modeled reduction estimates. It is also helpful to track the year of installation and applicable design standards, where available. This information will help you to document compliance with the TMDL.
- *Assess BMP monitoring data for the pollutant(s) of concern.* Review BMP performance data collected through monitoring

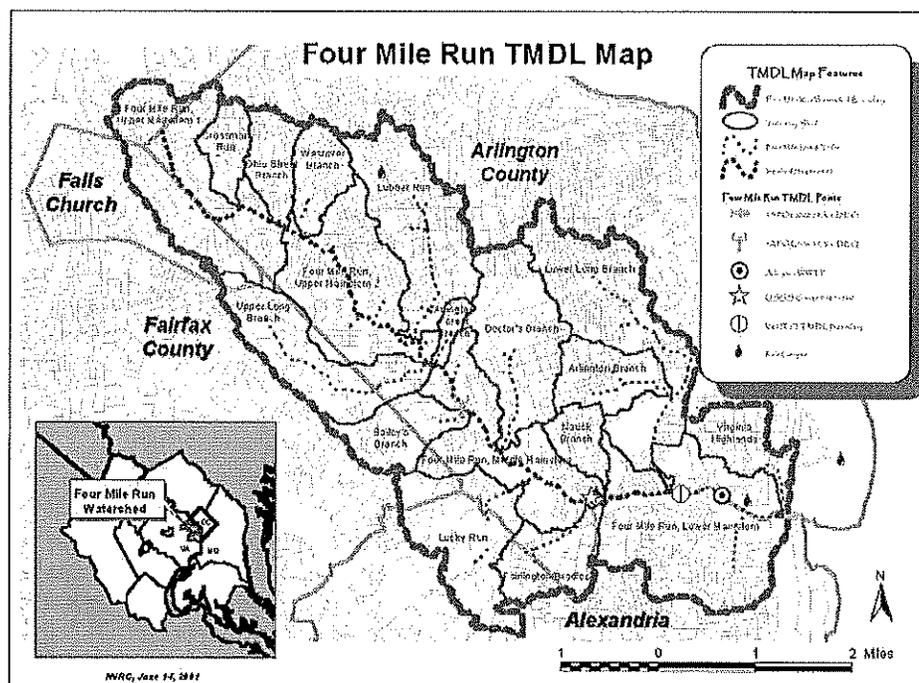
programs, including BMP performance data collected regionally. Conduct early reviews of BMP monitoring data to gauge whether BMPs are generating the expected flow volume and pollutant load reductions anticipated. Address BMP performance issues if early data indicate that BMPs are not performing as expected. Implement additional BMPs, if necessary, to provide additional pollutant load reductions.

- Assess water quality monitoring data for the pollutant(s) of concern, and/or data on TMDL surrogates such as flow or percent impervious cover. Review data from outfall monitoring and/or ambient water quality monitoring, to determine the impact of stormwater discharges on water quality. Other possible sources of local data to help characterize discharges from your MS4 include local watershed management plans, university studies and reports, or reports generated by departments with stormwater management related responsibilities (e.g., public works department catch basin cleaning or street sweeping reports).

Case Study: Implementing the Four Mile Run Fecal Coliform TMDL through MS4 Stormwater Programs

Watershed Overview

Four Mile Run is one of the most urbanized watersheds in Northern Virginia and has been included in Virginia's 303(d) list as being impaired by bacteria. In May 2002, EPA approved the Fecal Coliform TMDL for Four Mile Run (available at www.novaregion.org/bacteriatmdl.htm).



Four Mile Run Watershed

Regulated MS4s in the Four Mile Run Watershed

The Fecal Coliform TMDL for Four Mile Run documents bacteria contributions from Fairfax and Arlington Counties, which are both Phase I MS4s covered under individual permits, as well as Alexandria and Falls Church, which are both Phase II MS4s covered under general permits.

Four Mile Run TMDL Wasteload Allocations for MS4s

The technical approach used to develop the TMDL focused on modeling runoff from impervious surfaces in the watershed to determine wasteload allocations for the MS4s. The wasteload allocation assigns all MS4s one aggregate wasteload allocation (average annual fecal coliform loadings of $9.61E+14$ counts/year for pervious lands, and $2.04E+13$ counts/year for impervious lands). The TMDL modeling estimated that bacteria will need to be reduced by 98% from human and canine sources to achieve water quality standards for bacteria.

TMDL Implementation Plans

The Four Mile Run TMDL Implementation Plan (available at www.novaregion.org/bacteriainplementation.htm), finalized in May 2004, documents the commitments of each jurisdiction to address bacteria contributions. Many of the activities documented in the implementation plan are activities that were already required under each jurisdiction's respective MS4 permit (e.g., illicit discharge detection and elimination). The implementation plan focuses on pollution prevention practices (such as illicit discharge controls and proper pet waste disposal), mitigation measures (such as stormwater treatment using sand filters), and indirect measures (such as general outreach). The implementation plan also includes a timeline for implementation and monitoring/evaluation measures.

Connecting Chesapeake Bay Requirements to TMDL Implementation and MS4 Stormwater Management Programs

Each MS4 in the Four Mile Run watershed is subject to Virginia's 1988 Chesapeake Bay Preservation Act and, subsequently, has a local Chesapeake Bay Preservation Ordinance that requires the assessment of stormwater impacts from development and redevelopment on local tributaries to the Chesapeake Bay. These stormwater management efforts, tied to local Chesapeake Bay Preservation Ordinances are incorporated into each jurisdiction's MS4 stormwater management program and documented in the Four Mile Run TMDL Implementation Plan.

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Resources

State TMDL Websites

EPA Region 3 TMDL website: www.epa.gov/reg3wapd/tmdl/index.htm

Delaware: www.dnrec.state.de.us/water2000/Sections/Watershed/TMDL/tmdlinfo.htm

District of Columbia: http://app.doh.dc.gov/services/administration_offices/environmental/services2/water_division/report.shtm

Maryland: www.mde.state.md.us/Programs/WaterPrograms/TMDL/index.asp

Pennsylvania: www.dep.state.pa.us/watermanagement_apps/tmdl

Virginia: www.deq.state.va.us/tmdl/develop.html

West Virginia: www.wvdep.org/item.cfm?ssid=11&sslid=930

State 303(d) Lists

Reports and lists for all Region 3 states are available at: www.epa.gov/reg3wapd/tmdl/303d.htm

General TMDL Information

EPA TMDL website: www.epa.gov/owow/tmdl

EPA November 22, 2002 Memorandum *Establishing Total Maximum Daily Loads (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs*.
www.epa.gov/npdes/pubs/final-wwtmdl.pdf

Total Maximum Daily Loads and National Pollutant Discharge Elimination System Storm Water Permits for Impaired Water Bodies: A Summary of State Practices
www.epa.gov/r5water/wshednps/pdf/state_practices_report_final3_09_07.pdf

Summary of 17 TMDLs with Stormwater Sources: www.epa.gov/reg3wapd/tmdl/StormwaterResources

Region 3 TMDL Modeling Toolbox: www.epa.gov/athens/wwqtsc/

BMP Monitoring Guidance or Resources

Chesapeake Bay Program BMP Efficiencies and Definitions:
www.chesapeakebay.net/pubs/subcommittee/nsc/uswg/BMP_Pollutant_Removal_Efficiencies.pdf

Chesapeake Bay State Tributary Strategies Websites

Chesapeake Watershed Profile website www.chesapeakebay.net/wshed.htm

Delaware: www.dnrec.state.de.us/water2000/Sections/Watershed/ws/map_chesapeake.htm

District of Columbia: http://doh.dc.gov/doh/cwp/view,a,1374,q,586841,dohNav_GID,1802,dohNav,|33200|33215|.asp

Maryland: www.dnr.state.md.us/bay/tribstrat/index.html and
www.dnr.state.md.us/bay/tribstrat/implementation_plan/urban.pdf

Pennsylvania: www.depweb.state.pa.us/chesapeake/cwp/vlew.asp?a=3&Q=442886&chesapeakeNav=|29958|

Virginia: www.deq.virginia.gov/bay

West Virginia: www.wvnet.org

Other Resources

Ventura, California, MS4 Permit
www.swrcb.ca.gov/rwqcb4/html/programs/stormwater/venturaMs4.html

Portland, Oregon, MS4 Permit
www.deq.state.or.us/wq/stormwater/municipalph1.htm

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NOTE: This document is not law or regulation; it provides recommendations and explanations that MS4s may consider in determining how to comply with requirements of the CWA and NPDES permit requirements.

