

CITY OF EAST LANSING

ILLICIT DISCHARGE
ELIMINATION
PROGRAM

Updated
November 2013

CITY OF EAST LANSING ILLICIT DISCHARGE ELIMINATION PLAN

A. INTRODUCTION

The City's existing and proposed Municipal Separate Storm Water Discharge Permits require that the city implement and sustain an approved Illicit Discharge Elimination Plan (IDEP).

The IDEP plan is intended to apply to only those areas of the City where the sewage system is identified as a separate storm water collection system. Those areas of the City served by combined sewer systems will continue to be regulated by the provisions of the City's NPDES Wastewater Treatment Plant Discharge Permit No. MI 10022853.

Figure No. 1 shows those areas of the City of East Lansing that are served by a separate storm water collection system and those areas that are served by the combined sewer system.

The major components involved in establishing the initial IDEP plan included (1) verifying point source discharge locations; (2) initial field screening all point source discharges and identifying problems; (3) elimination of any problems; (4) a review of the City's legal authority and making changes as needed to be able to conduct and enforce the IDEP; (5) reviewing the onsite sewage disposal systems program; and (6) coordinating activities with the watershed group. The City of East Lansing's original IDEP Program dated April 2008 was submitted and subsequently approved by MDEQ.

The original plan established an ongoing program for reviewing the known discharges on a five year reinspection cycle; updating the IDEP documents to meet State and Federal requirements as they become effective; and modifying the IDEP document as changes in the City's separate storm water system occur. The City has now completed a full five year cycle (2008 thru 2012 inclusive) for reviewing all known discharge points. Modifications to the original discharge points and the addition of new discharge points noted since 2008 have been included in this document. The City has also updated this document to reflect changes in the program to reflect State & Federal requirements.

B. IDENTIFYING POINT SOURCE DISCHARGE LOCATIONS

A “point source discharge” is defined as an outfall from a drainage system to waters of the state, or a point where a storm water drainage system discharges into a system operated by another public body.

“Waters of the State” are defined to mean all of the following: the Great Lakes and their connecting water; all inland lakes; rivers; streams; impoundments; open drains; and other surface bodies of water within the confines of the state. Waters of the State do not include drainage ways and ponds used solely for wastewater conveyance, treatment or control.

Although the NPDES requirements only ask that all point source discharges from the City’s municipal separate storm sewer system (MS4) be included in the IDEP, the City has expanded its IDEP to also include outfalls and points of discharge from private commercial or residential sites regulated under the City’s site plan review and approval process. Thus, the listing includes several outfalls from retail businesses, restaurants, apartment complexes, churches, etc... that are not classified as from an MS4. Several of these private outfalls are from existing on-site stormwater control structures required by the City such as retention basins, underground storage, stormceptors or other means of controlling the discharge from the site. The status of each outfall as part of the MS4 is identified in Tables B through P for each of the nineteen subwatersheds.

For the purposes of the IDEP, any discharge into a County or Inter-County Drain is considered a discharge into a system operated by another public body.

The City of East Lansing drains to two different major watersheds – the Red Cedar Watershed and the Looking Glass River Watershed. In order to determine the original listing of specific point source discharges, the City reviewed USGS maps, aerial photography, sewer atlases and individual sewer as-built drawings.

A listing of the various Waters of the State and/or drainage system under the control of another jurisdiction within each watershed is provided in Table A.

**WATERS OF THE STATE
TABLE A**

RED CEDAR WATERSHED

<u>Name</u>	<u>Type</u>	<u>Responsible Party</u>
Red Cedar River	River	State of Michigan
Goritz Drain	Open Drain	City of East Lansing
Heritage Hill Drain	Open Drain/Pipe	Ingham County Drain
Greencrest Relief Drain	Pipe	Ingham County Drain
Greencrest Drain	Pipe	Ingham County Drain
Kierstead Drain	Pipe	Ingham County Drain
Proctor Drain	Pipe	Ingham County Drain

LOOKING GLASS RIVER WATERSHED

<u>Name</u>	<u>Type</u>	<u>Responsible Party</u>
Sanderson Drain	Open Drain	Inter-County Drain
Taylor Drain	Open Drain	City of East Lansing
Smedley-Coolidge Drain	Open Drain	Ingham County Drain
Friegal Drain	Open Drain	City of East Lansing
Remy Chandler Drain	Open Drain	Inter-County Drain
Remy Chandler Branch No.2	Open Drain/Pipe	Inter-County Drain
Moore Branch	Open Drain/Pipe	Inter-County Drain
Foreback Drain	Pipe	Inter-County Drain
Melvin Drain	Open Drain/Pipe	Clinton County Drain
Melvin Branch No. 1	Open Drain	Clinton County Drain
Melvin Branch No. 2	Open Drain	Clinton County Drain
Towar-Snell Drain	Open Drain	Ingham County Drain

The following previously enclosed drains are not included in this report: Avondale Drain, Brookfield Drain, Clever Farm Drain, Cornell Avenue Drain, Gault Drain, Glen Haven Drain, Grandview Drain, Gunson Bridge of Avondale Drain, Lexington Avenue Drain, Lilac Lawn Drain, Spartan Avenue Drain, Stoddard Avenue Drain, Whitehills Drain, Willmarth Drain, Albert Street Drain, and Pinecrest Drain. These drains do not discharge directly into waters of the state. Rather, they discharge into either the City's existing separate storm sewer system or combined sewer system.

For each of the 19 subwatersheds listed in Table A the following information is provided where relevant:

- **Background:** This section describes the general location and type of water course or conveyance system (open drain, pipe, etc...) associated with each.
- **Review of Records:** This section includes a listing of the point source discharges which drain into the individual waters of the State or outlets under the jurisdiction of another entity and acknowledges the entity or party responsible for each of these point source discharges.
- **Original Field Investigations & Results:** This section describes the original field investigations, any sampling and analysis undertaken, and any corrective actions taken to eliminate known illicit discharges prior to submitting the original IDEP document to MDEQ in 2008.
- **Subsequent Field Investigations & Results:** This section describes any subsequent reinspections and any changes to the original list of discharges for each of the 19 subwatersheds. The changes may occur due to new construction, abandoning existing discharges, and/or discovery of new discharges during the five year cycle of reinspections.

C. RED CEDAR RIVER WATERSHED POINT SOURCE DISCHARGES

As noted in Table A, the portions of the Red Cedar River Watershed located within the city boundaries contains the Red Cedar River itself as well as, numerous other outlets that discharge directly into the Red Cedar River. The City's Engineering Department records and subsequent field investigations along with the records and cooperation from MSU and the Ingham County Drain Commissioner provided the basis for initially identifying the individual discharges into the following Waters of the State or discharges into a drainage system operated by another entity:

1. Red Cedar River

a). Background:

The Red Cedar River flows from east to west through the City of East Lansing. The Red Cedar River is located south of Grand River Avenue and Michigan Avenue. Much of the river is located on Michigan State University property.

The City of East Lansing and Michigan State University (MSU) both reviewed their office records to determine the location of all known point source discharges. MSU initiated the investigation and numbered each discharge, provided a map of their location, and provided a summary of all the discharges to the City of East Lansing prior to the original 2008 IDEP document. These documents were used by the City of East Lansing to perform the original field investigation of all outfalls under the City's jurisdiction and then placed on file as part of the City's IDEP.

b). Review of Records:

Field investigation and preliminary sampling by MSU prior to 2008 did discover two illicit discharges from the City of East Lansing's sewer system. The repair to a leak at one of the two points identified was made by the City's Sewer Department immediately. The other illicit discharge was traced to a location on Beal Street where a sanitary lead failed resulting in a direct discharge into the separate storm sewer (Outfall RC-10 in Table B below). The City of East Lansing immediately contacted and directed the property owner to complete the necessary repairs. The repairs were subsequently made.

An analysis of the point source discharges regulated under the authority of the City of East Lansing is shown in Table B. The location of the various point source discharges is shown on Figure No. 2.

**POINT SOURCE DISCHARGES
INTO RED CEDAR RIVER
TABLE B**

<u>Outfall ID</u>	<u>MSU Outfall No.</u>	<u>Description</u>
<u>ACTIVE DISCHARGE POINTS</u>		
RC-02	1	MS4 30" Storm Sewer Outlet from Reniger Court & Beal Street
RC-06	65a	MS4 15" Storm Sewer Outlet for Michigan Ave
RC-10	75	MS4 30" Storm Sewer Outlet for Beal Street
RC-13	82	MS4 10" Storm Sewer Outlet for Victor Street
RC-14	83	MS4 84" Storm Sewer Outlet for Grand River Ave
RC-15	84	MS4 54" Active CSO Outlet
RC-21*		MS4 10" Storm Sewer Outlet Grand River & Beal
RC-22*	--	4" Outlet for roof drain of Cedar Village Apt.
RC-23*	--	6" Storm Sewer Outlet for parking lot Catch Basin in Cedar Village Complex
RC-24*	--	6" Outlet for Lowebrook Apt. Complex
RC-25*	--	6" Outlet for Lowebrook Apt. Complex
RC-26*	--	6" Storm Sewer Outlet for parking lot Catch Basin in Lowebrook Apt. Complex

ABANDONED DISCHARGE POINTS

RC-01	0	10" Abandoned CSO Outlet
RC-03	55	21" Abandoned CSO Outlet
RC-04	57	22" Abandoned CSO Outlet
RC-05	65	15" Abandoned CSO Outlet
RC-07	66	Abandoned CSO Outlet
RC-08	72	4" Abandoned CSO Outlet
RC-09	74	36" Abandoned CSO Outlet
RC-11	80	78" Abandoned CSO Outlet
RC-12	81	42" Abandoned CSO Outlet
RC-17	58	84" Bulk-Headed CSO Outlet for Michigan Ave & Harrison Road

*Outfalls Added in 2012 as part of five year reinspection

Of the 22 identified point source discharges, 10 discharges are no longer active. These ten discharge pipes were originally overflows from the combined sewer system that discharged into the Red Cedar River. In 1994 the City of East

Lansing constructed a large diameter tunnel to collect the majority of the combined sewage overflow. This allowed the City to permanently bulkhead these ten overflows. As such, these points will not be included in the City's listing of regulated point source discharges to be permitted by MDEQ. However, these point source discharges will be checked as part of the five year cycle of reinspection to confirm that the bulkheads are still functioning.

Point source discharges RC-15 is still an active overflow point for the City's CSO system. This discharge point is regulated under the City's NPDES permit.

The 11 remaining point source discharges listed in Table B are active municipal separated storm water discharges regulated under the authority of the City of East Lansing. Outfalls RC-21 through RC26 were not discovered until the City's routine 5 year reinspection cycle in 2012. These point source discharges will continue to be investigated further and if necessary sampled and tested for illicit discharges by the City of East Lansing.

Former Outfalls RC-16 and RC-18 through RC-20 are not included in Table B since they were physically eliminated and removed during the course of the Hagadorn Road bridge reconstruction project completed in August of 2007.

c). Initial Field Investigations & Results:

The initial analysis of the City of East Lansing's Red Cedar River outfalls was conducted in September 2006. Upon identifying all outfalls, an inventory sheet containing the culvert's size, location, and amount of flow present was completed for each outfall. The City's file for each outfall also includes digital camera photos, aerial photos, a location sketch, and a copy of the appropriate storm sewer atlas map. No outfall samples were collected for the Red Cedar River during the initial field investigation, as all waters at these locations appeared to be free of odors, deposits, floatable matter, and/or other signs of an illicit discharge.

In June 2007, the City of East Lansing returned to the Red Cedar River to further evaluate the identified outfalls during dry weather conditions. Of the then sixteen outfalls, only RC-10 revealed signs of a potential illicit discharge. A sample was taken and tested to further evaluate its contents.

Strong odors and floatable matter were present at outfall number RC-10. Lab tests revealed this outfall was in fact an illicit discharge. No flow and/or standing water only was observed at the remaining outfalls. There was no evidence of odors, deposits, or floatable matter, with the exception of RC-10 during this subsequent investigation. A summary of the data collected from the site evaluations is shown on the following tables:

DRAIN: Red Cedar River

Available Files

No.	D.O.L. INSP.	Available Files				COMMENTS:
		LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
RC-01	6/26/2007	X	X	X	X	No flow from culvert. Repairs needed.
RC-02	6/26/2007	X	X	X	X	No flow from culvert.
RC-03	9/4/2007	X	X	X	X	No flow. Bulkheaded.
RC-04	6/26/2007	X	X	X	X	No flow. Submerged by ex. river water.
RC-05	6/26/2007	X	X	X	X	Outfall has been bulkheaded.
RC-06	6/26/2007	X	X	X	X	No flow from culvert. Erosion problems.
RC-07	6/26/2007	X	X	X	X	Abandoned CSO.
RC-08	6/26/2007	X	X	X	X	No flow from culvert.
RC-09	6/26/2007	X	X	X	X	No flow from culvert. Repairs needed.
RC-10	6/26/2007	X	X	X	X	Pot. illicit discharge. Sampled on 7/31/07.
RC-11	9/4/2007	X	X	X	X	Abandoned CSO. Bulkheaded.
RC-12	9/4/2007	X	X	X	X	Abandoned CSO. Bulkheaded.
RC-13	6/26/2007	X	X	X	X	No flow. Conc. pipe needs to be repaired.
RC-14	9/4/2007	X	X	X	X	No flow. Standing river water only.
RC-15	9/4/2007	X	X	X	X	Standing river water only. Active CSO.
RC-17	9/4/2007	X	X	X	X	No flow. Bulkheaded.

* Manhole

** Maintenance Required

Lab Results:

Tested Elements

ID:	CBOD5	NH3-N	Tot. P	Susp. Solids	Fecal Coliform
RC-10	148 mg/l	38.5 mg/l	5.1 mg/l	42 mg/l	>60,000/100 ml

Typical Raw Sewage Values:

CBOD5	NH3-N	Tot. P	Susp. Solids	Fecal Coliform
100-200 mg/l	5-25 mg/l	3-8 mg/l	100-200 mg/l	Billions/100 ml

The source of the potential illicit discharge was traced to a sanitary sewer lead that was in disrepair. The property owner was notified and the repairs were made immediately to prevent any future illicit discharges from Outfall RC-10.

The overall investigation of the Red Cedar River and outfalls RC-01 to RC-15, and RC-17 were included in Group E in the five year reinspection cycle.

Any outfalls which exhibited obstructions, standing water, broken pipe, or other maintenance needs were also scheduled for further investigation and corrective action.

d). Subsequent Field Investigation & Results

The Red Cedar River subwatershed was included in the 2012 Annual Reinspection of Group E as part of the five-year cycle of reinspections. During the reinspection a field inspection report was completed at each outfall location to analyze dry weather flow characteristics of the discharge point and the receiving waters. This included observations of water clarity, color, and odor; the presence of suds, oil/bacterial sheens, sewage, floatable materials, and algae; staining of the banks and unusual vegetative growth. Discharge structures were also evaluated for the same characteristics along with structural stability.

Visual inspections of the culvert conditions revealed deterioration of pipe at outfall RC-01, RC-05, RC-21 and separation of end sections from the storm sewer pipe at outfalls RC-06, RC-09, RC-10, and RC-13. Severe erosion exists along the drain embankments where the culvert end sections have separated.

Dry weather flow was observed at Outfall Numbers RC-03, RC-10 and RC-21. Samples were collected to further evaluate the contents.

Sample results of Outfall RC-10 revealed that discharge from this outfall is in fact an illicit discharge. Lab results revealed that flow from the storm sewer is consistent of sewage as fecal contamination was detected. Appropriate action was taken to investigate the sewer system tributary to the discharge point. Further investigation revealed that illicit discharges from two separate residences were connected to the storm sewer. Appropriate action was taken by the property owners, and the improper connections were removed.

Sample results of Outfall RC-21 revealed that discharge from this outfall is also in fact an illicit discharge. Lab results revealed that flow from the sewer is consistent of sewage as fecal contamination was detected.

Appropriate action is being taken to remove this discharge from the Red Cedar River. Ongoing investigation involves removing all debris and cleaning the mainline sewer that is causing flow to backup. Flow then overflows and discharges through Outfall RC-10 to the river once it reaches a certain elevation. Once resolved and the mainline sewer is able to sustain flow, the connection out letting to the river will be permanently bulkheaded.

Sample results of Outfall RC-03 revealed that discharge from this outfall is in fact not an illicit discharge. Lab results revealed that flow from the culverts is

consistent of normal storm water; fecal contamination was not detected as reported by the City's Wastewater Treatment Plant Supervisor Catherine Garnham.

During the field investigation six new discharges (RC-21 thru RC-26) were identified in the Red Cedar River. The City also updated its master spreadsheet and provided maps for these sub-watersheds, which include all field information gathered upon identifying the new discharges.

A summary of the data collected from the site evaluations is shown in the following Table:

DRAIN: Red Cedar River		Available Files				COMMENTS:
No.	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
**RC-01	10/2/2012	X	X	X	X	No flow from culvert- appears abandoned.
RC-02	10/2/2012	X	X	X	X	No flow from culvert.
RC-03	10/2/2012	X	X	X	X	Flow present. Sample collected. Results Neg.
RC-04	10/2/2012	X	X	X	X	No flow from culvert.
RC-05	10/2/2012	X	X	X	X	No flow from culvert- appears abandoned.
**RC-06	10/2/2012	X	X	X	X	No flow from culvert.
RC-07	10/2/2012	X	X	X	X	Abandoned CSO.
RC-08	10/2/2012	X	X	X	X	No flow from culvert.
**RC-09	10/2/2012	X	X	X	X	No flow from culvert.
**RC-10	10/2/2012	X	X	X	X	Flow present. Sample collected. Results Pos.
RC-11	10/2/2012	X	X	X	X	Abandoned CSO. Bulkheaded.
RC-12	10/2/2012	X	X	X	X	Abandoned CSO. Bulkheaded.
**RC-13	10/2/2012	X	X	X	X	No flow from culvert.
RC-14	10/2/2012	X	X	X	X	No flow from culvert, standing water only.
RC-15	10/2/2012	X	X	X	X	No flow from culvert. Active CSO.
RC-17	10/2/2012	X	X	X	X	No flow. Bulkheaded.
**RC-21	10/2/2012	X	X	X	X	Flow present. Sample collected. Results Pos.
RC-22	10/2/2012	X	X	X	X	No flow from PVC pipe.
RC-23	10/2/2012	X	X	X	X	No flow from PVC pipe.
RC-24	10/2/2012	X	X	X	X	No flow from PVC pipe.
RC-25	10/2/2012	X	X	X	X	No flow from PVC pipe.
RC-26	10/2/2012	X	X	X	X	No flow from PVC pipe.

* Manhole

** Maintenance Required

Lab Results:

Tested Elements

ID:	CBOD5	NH3-N	Tot. P	Susp. Solids	Fecal Coliform	pH	Residual Chlorine
RC-03	4.00 mg/L	0.50 mg/L	0.08 mg/L	28 mg/L	0/100 mLs	7.9	NA
RC-10	108.00 mg/L	76.40 mg/L	9.90 mg/L	60.00 mg/L	>60,000/100 mLs	7.2	NA
RC-21	74.00 mg/L	20.70 mg/L	3.10 mg/L	470.00 mg/L	25,000/100 mLs	6.8	NA

Typical Raw Sewage Values:

100-200 mg/L	5-25 mg/L	3-8 mg/L	100-200 mg/L	Billions/100 mLs		
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Outfalls which exhibited obstructions or broken pipe sections were reported to the DPW for corrective action.

2. GORITZ DRAIN

a). Background:

The City of East Lansing's portion of the Goritz Drain serves as an outlet for the area south of Marigold Avenue, west of Harrison Road and north of the CSX Railroad. The City of East Lansing is responsible for this portion of the drain and for the IDEP investigation of the drainage area.

The downstream portion of the Goritz Drain consists of an open channel drain which begins at the Red Cedar River (immediately east of I-496/I-127) and proceeds easterly between Daisy Lane and Tanager Lane across Narcissus Drive to Sever Drive. An enclosed pipe then proceeds south and east from Sever Drive. A secondary branch of the drain starts near the Red Cedar River and proceeds to the west property line of 810 Hicks Drive and 1261 Marigold Avenue.

The portions of the Goritz Drain south of the CSX Railroad are under the authority of the Ingham County Drain Commissioner.

b). Review of Records:

A preliminary review of office records and initial field investigation resulted in the identification of the point source discharges shown in Table C. The location of the various point source discharges is shown on Figure No.3.

**POINT SOURCE DISCHARGES
GORITZ DRAIN
TABLE C**

<u>Outfall Id</u>	<u>Description</u>
GD-01	MS4 24" Storm Sewer Outlet for Marigold/Lilac/Daisy Area
GD-02	MS4 66" Storm Sewer Outlet for Ivanhoe/ Arbor/ South of Trowbridge
GD-03	MS4 15" Storm Sewer for Outlet for Tanager Area
GD-04	MS4 8" Storm Sewer Outlet & 2 Catch Basins at Narcissus
GD-05	MS4 36" Storm Sewer Outlet & Catch Basins at Sever
GD-06*	- - 18" Storm Sewer Outlet for University Lutheran Church parking lot

*Outfall Added in 2012 as part of five year reinspection

The storm system discharging through outfall GD-01 is referred to as the Lilac Lawn Drain. The storm sewer system discharging through outfall GD-02 is referred to as the Clever Farm Drain. Outfall GD-06 was discovered during the 2012 five year reinspection.

All six point source discharges listed in Table C are active municipal separate storm water discharges under the authority of the City of East Lansing. As such, these point source discharges will be investigated further and if necessary sampled and tested for illicit discharges by the City of East Lansing.

c). Initial Field Investigations & Results:

The initial analysis of the Goritz Drain was conducted in October 2006. Upon identifying all outfalls, an inventory sheet containing the culvert's size, location, and amount of flow present was completed for each outfall. The City's file for each outfall also includes digital camera photos, aerial photos, a location sketch, and a copy of the appropriate storm sewer atlas map. No outfall samples were collected for the Goritz Drain during the initial field investigation, as all waters at these locations appeared to be free of odors, deposits, floatable matter, and/or other signs of an illicit discharge.

In July 2007, the City of East Lansing returned to the Goritz Drain to further evaluate the identified outfalls during dry weather conditions.

No flow and/or standing water only was observed at each of the five original outfalls GD-01 thru GD-05. Again, there was no evidence of odors, deposits, floatable matter, and/or other signs of a potential illicit discharge during this

subsequent investigation. A summary of the data collected from the two site evaluations is shown on the following table:

DRAIN: Goritz Drain		Available Files				COMMENTS:
No.	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
GD-01	9/10/2007	X	X	X	X	No flow from culvert.
GD-02	9/10/2007	X	X	X	X	9.5" of standing water in culvert.
GD-03	7/2/2007	X	X	X	X	No flow from culvert.
*GD-04	7/2/2007	X	X	X	X	Standing water in manhole.
GD-05	9/10/2007	X	X	X	X	7" of standing water in culvert.

* Manhole

** Maintenance Required

The overall investigation of the Goritz Drain and outfalls GD-01 through GD-05 were included in Group E in the five year reinspection cycle.

Any outfalls which exhibited obstructions, standing water, broken pipe, or other maintenance needs were also scheduled for further investigation and possible corrective action.

d). Subsequent Field Investigation & Results

The Goritz Drain subwatershed was included in the 2012 Annual Reinspection of Group E as part of the five-year cycle of reinspections. During the reinspection a field inspection report was completed at each outfall location to analyze dry weather flow characteristics of the discharge point and the receiving waters. This included observations of water clarity, color, and odor; the presence of suds, oil/bacterial sheens, sewage, floatable materials, and algae; staining of the banks and unusual vegetative growth. Discharge structures were also evaluated for the same characteristics along with structural stability.

None of the outfalls revealed signs of a potential illicit discharge.

No dry weather flow was observed at any of the outfalls.

During the field investigation one new discharge (GD-06) was identified in the Goritz Drain. The City also updated its master spreadsheet and provided maps for these sub-watersheds, which include all field information gathered upon identifying the new discharges.

A summary of the data collected from the site evaluations is shown in the following Table:

DRAIN: Goritz Drain**Available Files**

NO:	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	COMMENTS:
GD-01	10/1/2012	X	X	X	X	No flow from culvert.
GD-02	10/1/2012	X	X	X	X	No flow from culvert.
GD-03	10/1/2012	X	X	X	X	No flow from culvert.
*GD-04	10/1/2012	X	X	X	X	Standing water only in manhole, no flow.
GD-05	10/1/2012	X	X	X	X	8" of standing water in culvert, no flow.
GD-06	10/1/2012	X	X	X	X	No flow from culvert.

* Manhole

** Maintenance Required

Outfalls which exhibited obstructions or broken pipe sections were reported to the DPW for corrective action.

3. HERITAGE HILL DRAIN

a). Background:

The Heritage Hill Drain generally serves as an outlet for the area north of Haslett Road, east of Hagadorn Road, and north into Meridian Charter Township. The Heritage Hill Drain consists of an open channel drain from the City limits at Park Lake Road upstream to Merritt Road. A 42" pipe then extends north of Merritt Road to serve the East Lansing Drive commercial development and portions of Meridian Township north of Saginaw Highway. The open channel portion of the Heritage Hill Drain as well as the public storm sewers serving the East Lansing Drive area and Meridian Township are under the authority of the Ingham County Drain Commissioner. The Heritage Hill Drain also serves as the outlet for the Greencrest Relief Drain. The only drains into the Heritage Hill Drain under the authority of the City of East Lansing are the enclosed pipe serving Merritt Road and the five private drains serving the former Public Works site.

b). Review of Records:

A preliminary review of office records and initial field investigation resulted in the identification of the point source discharges shown in Table D that are under the authority of the City of East Lansing. The location of the various point source discharges is shown on Figure No. 4.

**POINT SOURCE DISCHARGES
HERITAGE HILL/GREENCREST RELIEF DRAIN
TABLE D***

<u>Outfall ID</u>	<u>Description</u>
HHD-03	MS4 12" Storm Sewer Outlet Merritt Road North
HHD-04	-- 10" Storm Sewer Outlet for 2000 Merritt Road
HHD-05	-- 10" Storm Sewer Outlet for 2000 Merritt Road
HHD-06	-- 15" Storm Sewer Outlet for Haslett Road
HHD-07	-- 8" Storm Sewer Outlet for 2000 Merritt Road
HHD-08	-- 10" Storm Sewer Outlet for 2000 Merritt Road

*Table D updated in 2012

As noted, five private point source discharges (HHD-04 thru HHD-08) originate from the former Department of Public Works site north of the Heritage Hills Drain between Merritt Road and Park Lake Road. This site is presently being redeveloped. Upon redevelopment, some of the five existing direct discharges into the Heritage Hills Drain may be combined and discharged into an onsite detention basin before being released at a controlled rate to the drain.

The existing point source discharges listed in Table D are under the authority of the City of East Lansing. As such, only these six point source discharges will be investigated further and if necessary sampled and tested for illicit discharges by the City of East Lansing.

The open channel portion of the Heritage Drain as well as the upstream pipes serving the East Lansing Drive area and Meridian Township are part of the Ingham County Drain Commissioner's storm sewer system. As such, those point source discharges will be investigated further and if necessary sampled and tested for illicit discharges by the Ingham County Drain Commissioner.

c). Initial Field Investigations & Results:

All point source discharges into the Heritage Drain were originally considered as being under the authority of the Ingham County Drain Commissioner. As such no prior field investigations were performed previously.

As such the City originally only acknowledged responsibility to assist the ICDC if they located any additional point source discharges entering the open channel portions of the drain during their IDEP investigation.

d). Subsequent Field Investigation & Results

As noted previously the Heritage Hill Drain subwatershed has not been included in any inspections or reinspections to-date.

The overall investigation of the Heritage Hill Drain and outfalls HHD-03 through HHD-08 will be conducted in 2016 in dry weather conditions as part of the Group D in the five year reinspection cycle.

Any outfalls which exhibit obstructions, standing water, broken pipe, or other maintenance needs will also be scheduled for further investigation and possible corrective action.

4. GREENCREST RELIEF DRAIN

a). Background:

The Greencrest Relief Drain generally serves as an outlet for the area west of the Heritage Hill Drain, north of Haslett Road, east of Hagadorn Road, and north into Meridian Charter Township. The Greencrest Relief Drain discharges into the Heritage Hill Drain at Merritt Road. The Greencrest Relief Drain is a system of enclosed pipes north of Haslett Road and then extending north of Saginaw Highway so serve a small portion of the City of East Lansing and parts of Meridian Township. The Greencrest Relief Drain and all discharges into it are under the authority of the Ingham County Drain Commissioner. As such, the Greencrest Drain will be investigated further and if necessary sampled and tested for illicit discharges by the Ingham County Drain Commissioner.

b). Review of Records:

All storm sewers entering the Greencrest Relief Drain are under the jurisdiction of the Ingham County Drain Commissioner and as such no point source discharges were identified by the City of East Lansing

c). Field Investigations:

The entire public storm sewer system upstream of the Greencrest Relief Drain is part of the Ingham County Drain Commissioner's storm sewer system. As such, any point source discharges will be investigated further and if necessary sampled and tested for illicit discharges by the Ingham County Drain Commissioner.

Additional Notes:

In October 2007, the Michigan Department of Transportation identified potential sanitary sewerage in the storm sewer system along M-78 (Saginaw St.) east of Hagadorn Road. It was investigated and determined that the American Physicians Capital, Inc. building located at 1301 North Hagadorn Road had mistakenly connected one of its internal sanitary sewer lines to their storm sewer system that then connected to the storm sewer owned and operated by the

Michigan Department of Transportation. Flows from this location then discharge into the Greencrest Relief drainage system.

To resolve the issue, an investigation was conducted by DC Engineering to determine the discharge locations for this property and eliminate any illicit flows to the storm sewer. Dye testing of fixtures throughout the building was conducted, and the results are summarized in the investigation report submitted by DC Engineering, P.C. The report is on file. Rerouting of the piping system to the sanitary main was completed.

5. GREENCREST DRAIN

a). Background:

The Greencrest Drain is located along Haslett Road east of Hagadorn Road. It consists of a 36" storm sewer which serves the south side of Haslett Road and parts of Woodside Drive. The Drain and all the discharges into it are under the authority of the Ingham County Drain Commissioner. As such, the Greencrest Drain will be investigated further and if necessary sampled and tested for illicit discharges by the Ingham County Drain Commissioner.

b). Review of Records:

All storm sewers entering the Greencrest Drain are under the jurisdiction of the Ingham County Drain Commissioner and as such no point source discharges were identified by the City of East Lansing

c). Field Investigations:

The entire public storm sewer system upstream of the Greencrest Drain is part of the Ingham County Drain Commissioner's storm sewer system. As such, any point source discharges will be investigated further and if necessary sampled and tested for illicit discharges by the Ingham County Drain Commissioner.

6. KIERSTEAD DRAIN

a). Background:

The Kierstead Drain is located along Burcham Drive and Timberlane Street east of Hagadorn Road. It consists of a 42" storm sewer which services the area north of Moorland Drive and parts of Park Lake Road. The Drain and all public storm sewers discharging into it are under the authority of the Ingham County Drain Commissioner. As such, the Kierstead Drain will be investigated further and if necessary sampled and tested for illicit discharges by the Ingham County Drain Commissioner.

b). Review of Records:

All storm sewers entering the Kierstead Drain are under the jurisdiction of the Ingham County Drain Commissioner and as such no point source discharges were identified by the City of East Lansing

c). Field Investigations:

The entire public storm sewer system upstream of the Kierstead Drain is part of the Ingham County Drain Commissioner's storm sewer system. As such, any point source discharges will be investigated further and if necessary sampled and tested for illicit discharges by the Ingham County Drain Commissioner.

7. PROCTOR DRAIN

a). Background:

The Proctor Drain extends along Timberline Street north of Cahill Drive. It consists of an enclosed 78" storm sewer which services the east City limits between Melrose Avenue and Cahill Drive south of Mt. Vernon Avenue. The Drain and the discharges into it are under the authority of the Ingham County Drain Commissioner. As such, the Proctor Drain will be investigated further and if necessary sampled and tested for illicit discharges by the Ingham County Drain Commissioner.

b). Review of Records:

All storm sewers entering the Proctor Drain are under the jurisdiction of the Ingham County Drain Commissioner and as such no point source discharges were identified by the City of East Lansing

c). Field Investigations:

The entire public storm sewer system upstream of the Proctor Drain is part of the Ingham County Drain Commissioner's storm sewer system. As such, any point source discharges will be investigated further and if necessary sampled and tested for illicit discharges by the Ingham County Drain Commissioner.

D. LOOKING GLASS RIVER WATERSHED POINT SOURCE DISCHARGE

As noted in Table A, the portions of the Looking Glass River Watershed located within the city boundaries contains twelve identified waters of the State and/or storm drainage systems operated by another entity. The City's Engineering Department records along with the records and cooperation from the Clinton County Drain Commissioner's Office and the Ingham County Drain Commissioner's Office provided the basis for initially identifying the individual discharges into the following Waters of the State or discharges into a drainage system operated by another entity:

1. SANDERSON DRAIN

a). Background:

The Sanderson Drain is an open drain located west of Abbot Road and east of Harrison Road. The open drain begins at the Remy Chandler Drain at a point approximately 1,200 feet south of State Road and 1,200 feet west of Chandler Road. The drain then proceeds south across Coleman Road and Lake Lansing Road to a point approximately 600 feet north of Saginaw Street. The Sanderson Drain serves as the outlet for the Taylor Drain, Smedley-Coolidge Drain and the Friegal Drain.

The drain is an inter-county drain under the authority of the Ingham and Clinton County Drain Commissioners.

b). Review of Records:

A preliminary review of office records and initial field investigation resulted in the identification of the point source discharges shown in Table E. The location of the various point source discharges is shown on Figure No. 5.

**POINT SOURCE DISCHARGES
SANDERSON DRAIN
TABLE E**

<u>Outfall ID</u>		<u>Description</u>
SD-01	MS4	27" Storm Sewer Outlet from Saginaw Street
SD-02	MS4	24" Storm Sewer Outlet from Saginaw Street
SD-03	MS4	15" Storm Sewer Outlet from Woodingham Drive
SD-04	MS4	21" Storm Sewer Outlet from Woodingham Drive
SD-05	--	15" Outlet from CBs south of Abbott Pt. Apartments

SD-06	--	15" Outlet from CBs north of Abbott Pt. Apartments
SD-07	--	15" Outlet from CB Hickory Hill south of Bainbridge
SD-08	MS4	36" Storm Sewer Outlet for Bainbridge
SD-09	MS4	30" Storm Sewer Outlet for Gainsborough (west)
SD-10	MS4	18" Storm Sewer Outlet for Gainsborough (east)
SD-11	MS4	10" Storm Sewer Outlet for Riveria/ Tamarisk
SD-12	MS4	15" Storm Sewer Outlet for Tamarisk
SD-13	--	12" Outlet from Detention Area 411 Lake Lansing/ Asher Court
SD-14	MS4	15" Storm Sewer Outlet for Lake Lansing (west)
SD-15	MS4	15" Storm Sewer Outlet for Lake Lansing (east)
SD-16B*	--	10" Outlet from CB north of Abbott Pt. Apartments
SD-17	--	8" Storm Sewer Outlet from Saginaw Street
SD-18	--	10" Storm Sewer Outlet South of Woodingham Drive
SD-19	MS4	8" Storm Sewer Outlet for Gainsborough (west)
SD-20	MS4	24" Storm Sewer Outlet for Gainsborough (west)
SD-21	MS4	24" Storm Sewer Outlet from City Park
SD-22	--	15" Storm Sewer Outlet for Capstone Apartments
SD-23	MS4	30" Storm Sewer Outlet for Homestead Apartments
SD-24	--	18" Outlet from Detention Pond north of Capstone
SD-25	MS4	18" Outlet from Detention Pond south of Soccer Complex
SD-28	MS4	30" Storm Sewer Outlet for Coleman Road (west)
SD-29	--	6" Storm Sewer Outlet for Hawk's Nest
SD-30	--	10" Storm Sewer Outlet for Hawk's Nest
SD-31	--	12" Storm Sewer Outlet for Hawk's Nest
SD-32	--	6" Storm Sewer Outlet for Hawk's Nest
SD-33	--	12" Storm Sewer Outlet for Hawk's Nest
SD-34	--	15" Storm Sewer Outlet for Hawk's Nest north of Avocet Dr.
SD-35	--	15" Storm Sewer Outlet for Hawk's Nest at Whimbrel Way
SD-36	--	12" Storm Sewer Outlet for Hawk's Nest south of Plover Place
SD-37	--	12" Storm Sewer Outlet for Hawk's Nest north of Plover Place
SD-38	--	12" Storm Sewer Outlet for Hawk's Nest north of Plover Place
SD-39	--	12" Storm Sewer Outlet for Hawk's Nest at Plover Place
SD-40	--	6" Storm Sewer Outlet for Hawk's Nest north of Plover Place

*Outfall SD-16B replaced SD-16 in 2009 as part of five year reinspection

The existing point source discharges listed in Table E are active municipal separate storm water discharges regulated under the authority of the City of East Lansing. As such, these point source discharges will be investigated further and if necessary sampled and tested for illicit discharges by the City of East Lansing.

Outfalls SD-26, SD-27, and SD-41 through SD-45 are under the jurisdiction of the Clinton County Drain Commissioner. A copy of all field data collected was distributed to the CCDC for their files.

c). Initial Field Investigations & Results:

The initial analysis of the Sanderson Drain was conducted in July 2006. Upon identifying all outfalls, an inventory sheet containing the culvert’s size, location, and amount of flow present was completed for each outfall. The City’s file for each outfall also includes digital camera photos, aerial photos, a location sketch, and a copy of the appropriate sewer atlas map. No outfall samples were collected for the Sanderson Drain during the initial field investigation, as all waters at these locations appeared to be free of odors, deposits, floatable matter, and/or other signs of an illicit discharge.

In June of 2007, the City of East Lansing returned to the Sanderson Drain to further evaluate the identified outfalls during dry weather conditions. Of the thirty-eight outfalls, only Outfall Number SD-15 revealed signs of a potential illicit discharge. A sample was taken and tested to further evaluate its contents.

Dry weather flow was observed at outfall number SD-15, while no flow and/or standing water only was observed at the remaining outfalls. Again, there was no evidence of odors, deposits, floatable matter, and/or other signs of a potential illicit discharge, with the exception to SD-15 during this subsequent investigation. A summary of the data collected from the site evaluations is shown on the following tables:

DRAIN: Sanderson Drain		Available Files				COMMENTS:
No.	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
SD-01	9/13/2007	X	X	X	X	Standing water in culvert.
SD-02	6/26/2007	X	X	X	X	No flow from culvert.
SD-03	6/26/2007	X	X	X	X	Outfall hampered by debris. No flow from culvert.
SD-04	6/26/2007	X	X	X	X	Partially submerged, however no current flow.
SD-05	6/25/2007	X	X	X	X	Currently 6" of water in culvert, however no flow.
SD-06	6/26/2007	X	X	X	X	No flow from culvert.
SD-07	6/15/2007	X	X	X	X	No flow from culvert. Thin film on surface water.

SD-08	9/13/2007	X	X	X	X	No flow from culvert
*SD-09	9/13/2007	X	X	X	X	Standing water in manhole.
*SD-10	9/13/2007	X	X	X	X	No flow in manhole.
SD-11	9/13/2007	X	X	X	X	No flow from culvert
SD-12	6/26/2007	X	X	X	X	No flow from culvert.
SD-13	6/26/2007	X	X	X	X	No flow from culvert.
*SD-14	6/26/2007	X	X	X	X	Potential illicit discharge. Will cont. to monitor.
*SD-15	9/13/2007	X	X	X	X	Completed and verified
SD-16	6/25/2007	X	X	X	X	Culvert submerged approx. 4" by drain water.
SD-17	6/26/2007	X	X	X	X	No flow from culvert.
SD-18	6/26/2007	X	X	X	X	Culvert submerged approx. 2" by drain water.
SD-19	6/25/2007	X	X	X	X	No flow from culvert.
SD-20	6/25/2007	X	X	X	X	No flow from culvert.
SD-21	6/25/2007	X	X	X	X	Culvert contains topsoil & thick vegetation.
SD-22	6/25/2007	X	X	X	X	No flow from culvert.
SD-23	9/13/2007	X	X	X	X	Standing water in culvert
SD-24	9/13/2007	X	X	X	X	Flow from detention.
SD-25	6/25/2007	X	X	X	X	Culvert partially blocked w/ vegetation & debris.
SD-28	6/14/2007	X	X	X	X	12" of standing water in culvert.
SD-29	6/15/2007	X	X	X	X	No flow from culvert.
SD-30	6/15/2007	X	X	X	X	No flow from culvert.
SD-31	6/15/2007	X	X	X	X	11" of standing water in culvert.
SD-32	6/15/2007	X	X	X	X	No flow from culvert.
SD-33	6/15/2007	X	X	X	X	Culvert submerged by drain water.
SD-34	7/2/2007	X	X	X	X	8" of standing water in culvert.
SD-35	7/2/2007	X	X	X	X	Earth & vegetation obstruct flow.
SD-36	9/13/2007	X	X	X	X	Standing water in culvert
SD-37	6/14/2007	X	X	X	X	No flow from culvert.
SD-38	6/14/2007	X	X	X	X	5" of standing water in culvert.
SD-39	6/14/2007	X	X	X	X	1" of standing water in culvert.
SD-40	6/14/2007	X	X	X	X	No flow from culvert.

* Manhole

** Maintenance Required

Lab Results:

Tested Elements

ID:	CBOD5	NH3-N	Tot. P	Susp. Solids	Fecal Coliform
SD-15	14 mg/l	0.04 mg/l	0.06 mg/l	2 mg/l	600/100 ml

Typical Raw Sewage Values:

CBOD5	NH3-N	Tot. P	Susp. Solids	Fecal Coliform
100-200 mg/l	5-25 mg/l	3-8 mg/l	100-200 mg/l	Billions/100 ml

Sample results of SD-15 revealed that discharge from this outfall was in fact not an illicit discharge. The overall investigation of the Sanderson Drain and outfalls SD-01 to SD-25, and SD-28 to SD-40, were included in Group B in the five year reinspection cycle.

Any outfalls which exhibited obstructions, standing water, broken pipe, or other maintenance needs were also scheduled for further investigation and possible corrective action.

If the ICDC or CCDC locates any additional point source discharges entering the drain during their own IDEP investigations, the City of East Lansing will work with the respective Drain Commissioner to determine the responsibility for those discharge pipes.

d). Subsequent Field Investigation & Results

The Sanderson Drain subwatershed was included in the 2009 Annual Reinspection of Group B as part of the five-year cycle of reinspections. During the reinspection a field inspection report was completed at each outfall location to analyze dry weather flow characteristics of the discharge point and the receiving waters. This included observations of water clarity, color, and odor; the presence of suds, oil/bacterial sheens, sewage, floatable materials, and algae; staining of the banks and unusual vegetative growth. Discharge structures were also evaluated for the same characteristics along with structural stability.

Of the thirty-eight outfalls, only Outfall Numbers SD-14 and SD-30 revealed signs of a potential illicit discharge.

Visual inspections of the culvert conditions revealed structural damage at Outfall Numbers SD-05 and SD-13, while obstruction of potential flow was observed at Outfall Numbers SD-03, SD-07, SD-21, SD-27, SD-33 and SD-34.

Dry weather flow was observed at Outfall SD-30. A sample was collected to further evaluate its contents. Sample results of SD-30 revealed that discharge from this outfall is in fact not an illicit discharge. Lab results revealed that flow from the culvert is consistent of a fertilizer application. Fecal contamination was not detected as reported by the City's Wastewater Treatment Plant Supervisor Charles Peterson.

Outfall SD-14 lies within a manhole adjacent to the Lake Lansing Road southern curb line. Visual inspection of the manhole revealed an oil sheen area of discoloration or staining in the pipe's invert, however no flow was detected. With the absence of dry weather flow at Outfall Number SD-14, the pipe was televised by the City of East Lansing Sewer Department to determine its

function. Upon further investigation, it was determined that the pipe had been abandoned as televising revealed pockets of infiltrated water where the pipe had settled or failed. The oil sheen discovered was a result of the pipes texture. During the field inspection of Outfall Number SD-16, it was discovered that this connection was no longer active and had been abandoned. However this outfall had been replaced by a new 8" PVC pipe (Identification Number SD-16B) extending from the parking lot catch basin located on the property of the Abbot Point Apartment Complex to the existing storm sewer system. This new outfall has been renumbered as Outfall Number SD-16B.

No other new discharges were found during the Sanderson Drain inspection.

A summary of the data collected from the site evaluations is shown in the following Table:

DRAIN: Sanderson Drain		Available Files				COMMENTS:
NO:	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
SD-01	8/5/2009	X	X	X	X	Standing water in culvert.
SD-02	8/5/2009	X	X	X	X	No flow from culvert.
SD-03	8/6/2009	X	X	X	X	**No flow from culvert.
SD-04	8/6/2009	X	X	X	X	Standing water in culvert.
SD-05	8/6/2009	X	X	X	X	**Standing water in culvert.
SD-06	8/6/2009	X	X	X	X	No flow from culvert.
SD-07	8/6/2009	X	X	X	X	**Standing water in culvert
SD-08	8/6/2009	X	X	X	X	No flow from culvert.
*SD-09	8/6/2009	X	X	X	X	Minor flow in manhole. Sprinkler system.
*SD-10	8/6/2009	X	X	X	X	**No flow in manhole.
SD-11	8/6/2009	X	X	X	X	No flow from culvert.
SD-12	8/6/2009	X	X	X	X	Standing water in culvert.
SD-13	8/6/2009	X	X	X	X	**No flow from culvert.
*SD-14	8/6/2009	X	X	X	X	Completed and verified.
*SD-15	8/6/2009	X	X	X	X	Minor flow from culvert. Sampled in 2007, Negative.
SD-16	8/6/2009	X	X	X	X	Abandoned culvert.
SD-16B	8/6/2009	X	X	X	X	No flow from culvert.
SD-17	8/5/2009	X	X	X	X	No flow from culvert.
SD-18	8/6/2009	X	X	X	X	Standing water in culvert.
SD-19	8/6/2009	X	X	X	X	No flow from culvert.
SD-20	8/6/2009	X	X	X	X	No flow from culvert.
SD-21	8/6/2009	X	X	X	X	**No flow from culvert.
SD-22	8/7/2009	X	X	X	X	No flow from culvert.

SD-23	8/7/2009	X	X	X	X	Standing water in culvert.
SD-24	8/7/2009	X	X	X	X	No flow from culvert.
SD-25	8/7/2009	X	X	X	X	**No flow from culvert.
SD-28	8/7/2009	X	X	X	X	Standing water in culvert.
SD-29	8/7/2009	X	X	X	X	No flow from culvert.
SD-30	8/7/2009	X	X	X	X	Completed and verified.
SD-31	8/7/2009	X	X	X	X	Standing water in culvert.
SD-32	8/7/2009	X	X	X	X	No flow from culvert.
SD-33	8/7/2009	X	X	X	X	**Standing water in culvert.
SD-34	8/7/2009	X	X	X	X	Standing water in culvert.
SD-35	8/7/2009	X	X	X	X	**Standing water in culvert.
SD-36	8/7/2009	X	X	X	X	Standing water in culvert.
SD-37	8/7/2009	X	X	X	X	No flow from culvert.
SD-38	8/7/2009	X	X	X	X	Standing water in culvert.
SD-39	8/7/2009	X	X	X	X	No flow from culvert.
SD-40	8/7/2009	X	X	X	X	No flow from culvert.

* Manhole

**Maintenance required.

Outfalls which exhibited obstructions or broken pipe sections were reported to the DPW for corrective action.

2. TAYLOR DRAIN

a). Background:

The Taylor Drain begins at the Sanderson Drain immediately north of the north end of Colorado Drive. It then proceeds east across Abbot Road (north of the City of East Lansing Fire Department) to the east side of the fire department property. The drain then splits into two branches. One branch continues southeasterly to Woodland Pass near Stan Lake Drive. The other branch continues easterly through the Greater Forty-Rutkowski Pond to Pebblebrook Lane.

The drain is under the authority of the City of East Lansing and is not a county drain.

b). Review of Records:

A preliminary review of office records and initial field investigation resulted in the identification of the point source discharges shown in Table F. The location of the various point source discharges is shown on Figure No. 6.

**POINT SOURCE DISCHARGES
TAYLOR DRAIN
TABLE F**

<u>Outfall ID</u>	<u>Description</u>
TD-01	MS4 42" Storm Sewer Outlet for Woodland and Stanlake
TD-02	MS4 22" Storm Sewer Outlet for Woodland and Kendale
TD-03	MS4 54" Storm Sewer Outlet for Pebblebrook
TD-04	MS4 48" x 76" Storm Sewer for Abbot (south)
TD-05	MS4 27" Storm Sewer Outlet for Abbot (north)
TD-06	MS4 58" x 91" Storm Sewer Outlet for Abbot (west)
TD-07	MS4 15" Storm Sewer Outlet for Orlando
TD-08	MS4 48" Storm Sewer Outlet for Woodland Pass

The storm sewers discharging through outfalls TD-04 and TD-05 are part of the Gault Drain which is an enclosed City storm sewer system. The southern portion of the Gault Drain serves as an outlet for the Whitehills Drain which is also an enclosed City storm sewer system.

The existing point source discharges listed in Table F are active municipal separate storm water discharges regulated under the authority of the City of East Lansing. As such, these point source discharges will be investigated further and if necessary sampled and tested for illicit discharges by the City of East Lansing.

c). Initial Field Investigations & Results:

The initial analysis of the Taylor Drain was conducted in May 2006. Upon identifying all outfalls, an inventory sheet containing the culvert's size, location, and amount of flow present was completed for each outfall. The City's file for each outfall also includes digital camera photos, aerial photos, a location sketch, and a copy of the appropriate storm sewer atlas map. No outfall samples were collected for the Taylor Drain during the initial field investigation, as all waters at these locations appeared to be free of odors, deposits, floatable matter, and/or other signs of an illicit discharge.

In June 2007, the City of East Lansing returned to the Taylor Drain to further evaluate the identified outfalls during dry weather conditions. Of the eight outfalls, only Outfall Number TD-01 (and subsequently Outfall Number TD-08 upstream of TD-01) revealed signs of a potential illicit discharge. A sample was taken and tested to further evaluate its contents.

Dry weather flow was observed at outfall numbers TD-01 and TD-08, while no flow and/or standing water only was observed at the six remaining outfalls.

Again, there was no evidence of odors, deposits, floatable matter, and/or other signs of a potential illicit discharge, with the exception of TD-01 and TD-08 during this subsequent investigation. A summary of the data collected from the site evaluations is shown on the following table:

DRAIN: Taylor Drain		Available Files				COMMENTS:
No.	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
*TD-01	9/19/2007	X	X	X	X	Pot. Illicit discharge. Sampled on 10/31/07.
*TD-02	6/26/2007	X	X	X	X	.25" of standing water in manhole.
TD-03	6/26/2007	X	X	X	X	Culvert partially submerged. No flow.
*TD-04	6/26/2007	X	X	X	X	4" of standing water in manhole.
*TD-05	9/19/2007	X	X	X	X	Standing water in manhole.
*TD-06	9/19/2007	X	X	X	X	Standing water in drain & manhole.
TD-07	6/26/2007	X	X	X	X	Culvert partially submerged. No flow.
TD-08	6/26/2007	X	X	X	X	Flow from TD-01

* Manhole

** Maintenance Required

Lab Results:

Tested Elements					
ID:	CBOD5	NH3-N	Tot. P	Susp. Solids	Fecal Coliform
TD-01	64 mg/l	0.18 mg/l	0.25 mg/l	12 mg/l	>6,000/100 ml

Typical Raw Sewage Values:

CBOD5	NH3-N	Tot. P	Susp. Solids	Fecal Coliform
100-200 mg/l	5-25 mg/l	3-8 mg/l	100-200 mg/l	Billions/100 ml

Sample results of TD-01 revealed that discharge from this outfall was in fact not an illicit discharge. The overall investigation of the Taylor Drain and outfalls TD-01 to TD-08 were included in Group D in the five year reinspection cycle.

Any outfalls which exhibited obstructions, standing water, broken pipe, or other maintenance needs were also scheduled for further investigation and possible corrective action.

d). Subsequent Field Investigation & Results

The Taylor Drain subwatershed was included in the 2011 Annual Reinspection of Group D as part of the five-year cycle of reinspections. During the reinspection a field inspection report was completed at each outfall location to

analyze dry weather flow characteristics of the discharge point and the receiving waters. This included observations of water clarity, color, and odor; the presence of suds, oil/bacterial sheens, sewage, floatable materials, and algae; staining of the banks and unusual vegetative growth. Discharge structures were also evaluated for the same characteristics along with structural stability.

None of the outfalls revealed signs of a potential illicit discharge.

Dry weather flow was observed at Outfall Number TD-01. Samples were collected to further evaluate the contents. Outfall TD-01 discharges into a manholes. Outfall TD-01 previously exhibited flow and was thus sampled and tested in the fall of 2007 with negative results reported for an illicit discharge.

With the presence of dry weather flow as a result of the surrounding road drainage systems, samples were collected at Outfall Number TD-01. Sample results revealed that discharges from this outfall were in fact not illicit discharges. Lab results revealed that flow from the storm sewer pipes and culverts was consistent with normal storm water. The level of fecal coliform is a result of animal waste or suspended solids due to soil runoff as reported by the City's Wastewater Treatment Plant Supervisor Catherine Garnham.

No new discharges were identified.

A summary of the data collected from the site evaluations is shown in the following Table:

DRAIN: Taylor Drain		Available Files				COMMENTS:
NO:	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
*TD-01	9/9/2011	X	X	X	X	Minor flow in manhole, sample collected.
*TD-02	9/9/2011	X	X	X	X	Standing water in manhole, no flow.
TD-03	9/9/2011	X	X	X	X	Standing water only in culvert and manhole.
*TD-04	9/9/2011	X	X	X	X	Standing water only in manhole.
*TD-05	9/9/2011	X	X	X	X	Standing water only in manhole.
*TD-06	9/9/2011	X	X	X	X	Standing water only in manhole.
TD-07	9/9/2011	X	X	X	X	Standing water only in culvert, no flow.
TD-08	9/9/2011	X	X	X	X	Flow from TD-01.

* Manhole

** Maintenance Required

Lab Results:

Tested Elements

ID:	CBOD5	NH3-N	Tot. P	Susp. Solids	Fecal Coliform	pH	Residual Chlorine
TD - 01	32.20 mg/L	1.14 mg/L	0.42 mg/L	108 mg/L	1400/100 mLs	7.62	0.00 m/L

Typical Raw Sewage Values:	CBOD5	NH3-N	Tot. P	Susp. Solids	Fecal Coliform	pH	Residual Chlorine
	100-200 mg/L	5-25 mg/L	3-8 mg/L	100-200 mg/L	Billions/100 mLs		

Outfalls which exhibited obstructions or broken pipe sections were reported to the DPW for corrective action.

3. SMEDLEY-COOLIDGE DRAIN

a). Background:

The Smedley-Coolidge Drain begins at the Sanderson Drain between Tarleton Avenue and Lake Lansing Road. The drain then proceeds west across Harrison Road, continues westward and south of Ramblewood Drive, to Coolidge Road, and then westward again to US 127.

The drain is under the authority of the Ingham County Drain Commissioner.

b). Review of Records:

A preliminary review of office records and initial field investigation resulted in the identification of the point source discharges shown in Table G. The location of the various point source discharges is shown on Figure No. 7.

**POINT SOURCE DISCHARGES
SMEDLEY-COOLIDGE DRAIN
TABLE G**

<u>Outfall ID</u>	<u>Description</u>
SCD-01	MS4 36" Storm Sewer Outlet for Coolidge (south)
SCD-02	MS4 18" Storm Sewer Outlet for Coolidge (north)
SCD-03	MS4 Overflow from Lake in City Park East of Coolidge
SCD-04	MS4 24" Storm Sewer Outlet for Ramblewood at Rolling Brook
SCD-05	MS4 12" Storm Sewer Outlet for Ramblewood east of Rolling Brook

SCD-06	MS4	15" Storm Sewer Outlet for Ramblewood at Green Tree
SCD-07	MS4	18" Storm Sewer Outlet for Ramblewood east of Green Tree
SCD-08	MS4	18" Storm Sewer Outlet for Ramblewood west of Winchester
SCD-09	MS4	48" Storm Sewer Outlet for Winchester
SCD-10	--	12" Outlet from Cedarwood Retention
SCD-11	MS4	18" Storm Sewer Outlet for Pinecrest
SCD-12	MS4	12" Outlet from catch basin at Harrison
SCD-13	MS4	36" Storm Sewer Outlet for Harrison
SCD-14	--	12" Storm Sewer Outlet for Geisenhaver Subdivision
SCD-15	--	4" Storm Sewer Outlet for Geisenhaver Subdivision
SCD-16	MS4	12" Storm Sewer Outlet for Tarleton at Riveria
SCD-17	--	4" Storm Sewer Outlet for Geisenhaver Subdivision
SCD-18	--	4" Storm Sewer Outlet for Pinecrest #4
SCD-19	MS4	10" Storm Sewer Outlet for Fox Hills
SCD-20	--	4" Storm Sewer Outlet for Ramblewood at Green Tree
SCD-21	--	4" Storm Sewer Outlet for Ramblewood at Green Tree
SCD-22	--	10" Storm Sewer Outlet for Retention Pond
SCD-23	--	8" Storm Sewer Outlet for Ramblewood Imaging Center
SCD-24	--	15" Storm Sewer Outlet leading from US-127
SCD-25	--	6" Storm Sewer Outlet leading from US-127
SCD-26	--	42" Storm Sewer Outlet along US-127 (NB)

The storm sewers discharging through Outfall SCD-09 are part of the Pinecrest Drain.

The existing point source discharges listed in Table G are active municipal separate storm water discharges regulated under the authority of the City of East Lansing. As such, these point source discharges will be investigated further and if necessary sampled and tested for illicit discharges by the City of East Lansing.

c). Initial Field Investigations & Results:

The initial analysis of the Smedley-Coolidge Drain was conducted in April 2006. Upon identifying all outfalls, an inventory sheet containing the culvert's size, location, and amount of flow present was completed for each outfall. The City's file for each outfall also includes digital camera photos, aerial photos, a location sketch, and a copy of the appropriate storm sewer atlas map. No outfall samples were collected for the Smedley-Coolidge Drain during the initial field investigation, as all waters at these locations appeared to be free of odors, deposits, floatable matter, and/or other signs of an illicit discharge.

In June 2007, the City of East Lansing returned to the Smedley-Coolidge Drain to further evaluate the identified outfalls during dry weather conditions. Of the twenty-six outfalls, only Outfalls Number SCD-23 and SCD-25 revealed signs of a potential illicit discharge. Samples were taken and tested to further evaluate their contents.

Dry weather flow was observed at outfall numbers SCD-23 and SCD-25, while no flow and/or standing water only was observed at the remaining outfalls. Again, there was no evidence of odors, deposits, floatable matter, and/or other signs of a potential illicit discharge, with the exception of SCD-23 and SCD-25 during this subsequent investigation. A summary of the data collected from the site evaluations is shown on the following table:

DRAIN: Smedley-Coolidge Drain		Available Files				COMMENTS:
No.	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
*SCD-01	9/13/2007	X	X	X	X	1.5" of standing water in manhole.
*SCD-02	6/13/2007	X	X	X	X	Standing water in base of manhole.
SCD-03	6/13/2007	X	X	X	X	No flow from culvert.
SCD-04	6/13/2007	X	X	X	X	No flow from culvert. Erosion around outfall.
SCD-05	6/14/2007	X	X	X	X	No flow from culvert.
SCD-06	6/11/2007	X	X	X	X	No flow from culvert.
SCD-07	9/13/2007	X	X	X	X	No flow from culvert.
SCD-08	6/14/2007	X	X	X	X	No flow from culvert.
*SCD-09	9/13/2007	X	X	X	X	Standing water only in manhole.
SCD-10	6/25/2007	X	X	X	X	No flow from culvert.
SCD-11	6/25/2007	X	X	X	X	No flow from culvert. Debris disrupts flow.
*SCD-12	6/14/2007	X	X	X	X	No flow from catch basin.
*SCD-13	9/13/2007	X	X	X	X	Standing water in manhole.
SCD-14	6/25/2007	X	X	X	X	No flow from culvert. Repairs needed to pipe.
SCD-15	6/25/2007	X	X	X	X	No flow from culvert.
SCD-16	6/25/2007	X	X	X	X	No flow from culvert.
SCD-17	6/25/2007	X	X	X	X	No flow from culvert.
SCD-18	9/13/2007	X	X	X	X	No flow from culvert.
SCD-19	6/14/2007	X	X	X	X	No flow from culvert.
SCD-20	6/14/2007	X	X	X	X	No flow from culvert.
SCD-21	6/14/2007	X	X	X	X	No flow from culvert.
SCD-22	6/13/2007	X	X	X	X	No flow from culvert.
SCD-23	9/13/2007	X	X	X	X	Completed and verified
SCD-24	6/13/2007	X	X	X	X	No flow from culvert or in drain. Repairs needed.
SCD-25	9/13/2007	X	X	X	X	Completed and verified
SCD-26	6/13/2007	X	X	X	X	Standing water in culvert and drain.

* Manhole

** Maintenance Required

Lab Results:

Tested Elements

ID:	CBOD5	NH3-N	Tot. P	Susp. Solids	Fecal Coliform
SCD-23	18 mg/l	0.02 mg/l	0.06 mg/l	8 mg/l	800/100 ml
SCD-25	16 mg/l	0.03 mg/l	0.32 mg/l	8 mg/l	ND

Typical Raw Sewage Values:

CBOD5	NH3-N	Tot. P	Susp. Solids	Fecal Coliform
100-200 mg/l	5-25 mg/l	3-8 mg/l	100-200 mg/l	Billions/100 ml

ND – Non Detect dilution factor 100

Sample results of SCD-23 and SCD-25 revealed that these outfalls were in fact not illicit discharges. The overall investigation of the Smedley-Coolidge Drain and outfalls SCD-01 to SCD-26 were included in Group D in the five year reinspection cycle.

Any outfalls which exhibited obstructions, standing water, broken pipe, or other maintenance needs were also scheduled for further investigation and possible corrective action.

If the ICDC locates any additional point source discharges entering the drain during their IDEP investigation, the City of East Lansing will work with the Drain Commissioner to determine responsibility for those discharge pipes.

d). Subsequent Field Investigation & Results

The Smedley-Coolidge subwatershed was included in the 2011 Annual Reinspection of Group D as part of the five-year cycle of reinspections. During the reinspection a field inspection report was completed at each outfall location to analyze dry weather flow characteristics of the discharge point and the receiving waters. This included observations of water clarity, color, and odor; the presence of suds, oil/bacterial sheens, sewage, floatable materials, and algae; staining of the banks and unusual vegetative growth. Discharge structures were also evaluated for the same characteristics along with structural stability.

None of the outfalls revealed signs of a potential illicit discharge. Visual inspections of the culvert conditions revealed separation of end sections from the storm sewer pipe at outfalls SCD-14, SCD-24 and SCD-25; while flow obstruction was observed at outfall SCD-11. Moderate erosion exists along the drain embankments where the culvert end sections have separated.

Dry weather flow was observed at Outfall Number SCD-23. Samples were collected to further evaluate the contents. Outfall SCD-23 discharges to an open drain. The outfall previously exhibited flow and was thus sampled and tested in the fall of 2007 with negative results reported for an illicit discharge.

With the presence of dry weather flow as a result of the surrounding road drainage systems, samples were collected at Outfall Number SCD-23. Sample results revealed that discharge from this outfall was in fact not an illicit discharge. Lab results revealed that the flow was consistent with normal storm water. The level of fecal coliform is a result of animal waste or suspended solids due to soil runoff as reported by the City's Wastewater Treatment Plant Supervisor Catherine Garnham.

No new discharges were identified.

A summary of the data collected from the site evaluations is shown in the following Table:

DRAIN: Smedley-Coolidge Drain		Available Files				COMMENTS:
NO:	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
*SCD-01	9/12/2011	X	X	X	X	Standing water only in manhole and drain.
*SCD-02	9/12/2011	X	X	X	X	Standing water only in manhole and drain.
SCD-03	9/12/2011	X	X	X	X	No flow from culvert.
SCD-04	9/12/2011	X	X	X	X	No flow from culvert.
SCD-05	9/12/2011	X	X	X	X	No flow from culvert.
SCD-06	9/12/2011	X	X	X	X	No flow from culvert.
SCD-07	9/12/2011	X	X	X	X	No flow from culvert.
SCD-08	9/12/2011	X	X	X	X	No flow from culvert.
*SCD-09	9/12/2011	X	X	X	X	Standing water only in manhole, no flow.
SCD-10	9/12/2011	X	X	X	X	No flow from culvert.
**SCD-11	9/12/2011	X	X	X	X	No flow from culvert.
*SCD-12	9/12/2011	X	X	X	X	No flow from catch basin.
*SCD-13	9/12/2011	X	X	X	X	No flow in manhole.
**SCD-14	9/12/2011	X	X	X	X	No flow from culvert.
SCD-15	9/12/2011	X	X	X	X	No flow from culvert.
SCD-16	9/12/2011	X	X	X	X	No flow from culvert.
SCD-17	9/12/2011	X	X	X	X	No flow from culvert.
SCD-18	9/12/2011	X	X	X	X	No flow from culvert.
SCD-19	9/12/2011	X	X	X	X	No flow from culvert.
SCD-20	9/12/2011	X	X	X	X	No flow from drain tile.
SCD-21	9/12/2011	X	X	X	X	No flow from drain tile.
SCD-22	9/12/2011	X	X	X	X	No flow from culvert.
SCD-23	9/12/2011	X	X	X	X	Water flow from culvert, sample

						collected.
**SCD-24	9/12/2011	X	X	X	X	No flow from culvert.
**SCD-25	9/12/2011	X	X	X	X	No flow from culvert.
SCD-26	9/12/2011	X	X	X	X	Standing water only in culvert, no flow.

* Manhole

** Maintenance Required

Lab Results:

Tested Elements

ID:	CBOD5	NH3-N	Tot. P	Susp. Solids	Fecal Coliform	pH	Residual Chlorine
SCD - 23	5.60 mg/L	1.58 mg/L	0.02 mg/L	6 mg/L	4600/100 mLs	7.72	0.00 m/L

Typical Raw Sewage Values:

100-200 mg/L	5-25 mg/L	3-8 mg/L	100-200 mg/L	Billions/100 mLs		
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Outfalls which exhibited obstructions or broken pipe sections were reported to the DPW for corrective action.

4. FRIEGAL DRAIN

a). Background:

The Friegal Drain begins at the Sanderson Drain and proceeds west as an open drain to the intersection of Marfitt Road and Abbey Road and then continues westerly along the north side of Abbey Road to Coolidge Road.

The drain is under the authority of the City of East Lansing.

b). Review of Records:

A preliminary review of office records and initial field investigation resulted in the identification of the point source discharges shown in Table H. The location of the various point source discharges is shown on Figure No. 8.

**POINT SOURCE DISCHARGES
FRIEGAL DRAIN
TABLE H**

<u>Outfall ID</u>		<u>Description</u>
FG-01	--	8" Storm Sewer Outlet for Ashton Lakes Apartments Retention Pond
FG-02	MS4	30" Storm Sewer Outlet for Abbey Road east of Marfitt
FG-03	MS4	21" Storm Sewer Outlet from Marfitt Road north of Abbey Road

FG-04	MS4	18" Storm Sewer Outlet from Marfitt Road south of Abbey Road
FG-05	MS4	12" Storm Sewer Outlet from Marfitt Road south of Abbey Road and from the Meijer Property
FG-06	MS4	12" Catch Basin Outlet for Abbey Road west of Marfitt
FG-07	MS4	10" Catch Basin Outlet for Abbey Road east of Coolidge
FG-08	--	10" Storm Sewer Outlet for 3000 Coolidge Road
FG-09	MS4	36" Storm Sewer Outlet for Coolidge Road
FG-10	MS4	18" Storm Sewer Outlet for Abbey Road West of Marfitt

The existing point source discharges listed in Table H are active municipal separate storm water discharges regulated under the authority of the City of East Lansing. As such, these point source discharges will be investigated further and if necessary sampled and tested for illicit discharges by the City of East Lansing.

c). Initial Field Investigations & Results:

The initial analysis of the Friegal Drain was conducted in May 2006. Upon identifying all outfalls, an inventory sheet containing the culvert's size, location, and amount of flow present was completed for each outfall. The City's file for each outfall also includes digital camera photos, aerial photos, a location sketch, and a copy of the appropriate storm sewer atlas map. No outfall samples were collected for the Friegal Drain during the initial field investigation, as all waters at these locations appeared to be free of odors, deposits, floatable matter, and/or other signs of an illicit discharge.

In June 2007, the City of East Lansing returned to the Friegal Drain to further evaluate the identified outfalls during dry weather conditions. Of the ten outfalls, only Outfall Number FG-04 and FG-05 revealed signs of a potential illicit discharge. Samples were taken and tested to further evaluate their contents.

Dry weather flow was observed at outfall numbers FG-04 and FG-05, while no flow and/or standing water only was observed at the remaining outfalls. Again, there was no evidence of odors, deposits, floatable matter, and/or other signs of a potential illicit discharge, with the exception of FG-04 and FG-05 during this subsequent investigation. A summary of the data collected from the site evaluations is shown on the following table:

DRAIN: Friegal Drain

Available Files

No.	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	COMMENTS:
FG-01	6/26/2007	X	X	X	X	No flow in culvert or drain.
FG-02	6/26/2007	X	X	X	X	Culvert is partially submerged. No flow.
*FG-03	9/19/2007	X	X	X	X	No flow in manhole
*FG-04	9/19/2007	X	X	X	X	Completed and verified
*FG-05	9/19/2007	X	X	X	X	Completed and verified
FG-06	6/26/2007	X	X	X	X	No flow from culvert.
FG-07	7/2/2007	X	X	X	X	No flow from culvert.
FG-08	7/2/2007	X	X	X	X	No flow from culvert.
FG-09	6/26/2007	X	X	X	X	Standing water in culvert
FG-10	9/19/2007	X	X	X	X	Standing water in culvert.

* Manhole

** Maintenance Required

Lab Results

Tested Elements

ID:	CBOD5	NH3-N	Tot. P	Susp. Solids	Fecal Coliform
FG-04	20 mg/l	0.10 mg/l	0.08 mg/l	4 mg/l	>6,000/100 ml
FG-05	20 mg/l	0.06 mg/l	0.08 mg/l	1 mg/l	1,700/100 ml

Typical Raw Sewage Values:

CBOD5	NH3-N	Tot. P	Susp. Solids	Fecal Coliform
100-200 mg/l	5-25 mg/l	3-8 mg/l	100-200 mg/l	Billions/100 ml

Sample results of FG-04 and FG-05 revealed that discharges from these outfalls were in fact not illicit discharges. The overall investigation of the Friegal Drain and outfalls FG-01 to FG-10 were included in Group D in the five year reinspection cycle.

Any outfalls which exhibited obstructions, standing water, broken pipe, or other maintenance needs were also scheduled for further investigation and possible corrective action.

d). Subsequent Field Investigation & Results

The Friegal Drain subwatershed was included in the 2011 Annual Reinspection of Group D as part of the five-year cycle of reinspections. During the reinspection a field inspection report was completed at each outfall location to analyze dry weather flow characteristics of the discharge point and the receiving waters. This included observations of water clarity, color, and odor; the presence of suds, oil/bacterial sheens, sewage, floatable materials, and algae;

staining of the banks and unusual vegetative growth. Discharge structures were also evaluated for the same characteristics along with structural stability.

None of the outfalls revealed signs of a potential illicit discharge. Visual inspections of the culvert conditions revealed separation of end sections from the storm sewer pipe at outfall FG-10. Moderate erosion exists along the drain embankments where the culvert end sections have separated.

Dry weather flow was observed at Outfall Numbers FG-04 and FG-05. Samples were collected to further evaluate the contents. Outfall FG-04 and FG-05 discharge into manholes. Both outfalls previously exhibited flow and were thus sampled and tested in the fall of 2007 with negative results reported for an illicit discharge.

With the presence of dry weather flow as a result of the surrounding road drainage systems, samples were collected at Outfall Numbers FG-04 and FG-05. Sample results revealed that discharges from these outfalls were in fact not illicit discharges. Lab results revealed that flow from the storm sewer pipes and culverts was consistent with normal storm water. The level of fecal coliform is a result of animal waste or suspended solids due to soil runoff as reported by the City's Wastewater Treatment Plant Supervisor Catherine Garnham.

No new discharges were identified.

A summary of the data collected from the site evaluations is shown in the following Table:

DRAIN: Friegal Drain		Available Files				COMMENTS:
NO:	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
FG-01	9/9/2011	X	X	X	X	No flow from culvert.
FG-02	9/9/2011	X	X	X	X	Standing water in culvert, no flow.
*FG-03	9/9/2011	X	X	X	X	No flow from culvert.
*FG-04	9/9/2011	X	X	X	X	Water flow from culvert, sample collected.
*FG-05	9/9/2011	X	X	X	X	Water flow from culvert, sample collected.
FG-06	9/9/2011	X	X	X	X	Standing water in culvert.
FG-07	9/9/2011	X	X	X	X	No flow from culvert.
FG-08	9/9/2011	X	X	X	X	No flow from culvert.
FG-09	9/9/2011	X	X	X	X	Standing water in culvert.
**FG-10	9/9/2011	X	X	X	X	Standing water in culvert.

* Manhole

** Maintenance Required

Lab Results:

Tested Elements

ID:	CBOD5	NH3-N	Tot. P	Susp. Solids	Fecal Coliform	pH	Residual Chlorine
FG - 04	3.20 mg/L	0.10 mg/L	0.06 mg/L	60 mg/L	2000/100 mLs	7.92	0.00 m/L
FG - 05	19.60 mg/L	0.20 mg/L	0.20 mg/L	12 mg/L	1900/100 mLs	7.23	0.00 m/L

Typical Raw Sewage Values:

100-200 mg/L	5-25 mg/L	3-8 mg/L	100-200 mg/L	Billions/100 mLs		
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Outfalls which exhibited obstructions or broken pipe sections were reported to the DPW for corrective action.

5. REMY CHANDLER DRAIN

a). Background:

The Remy Chandler Drain is the primary outlet for all flow from within the City of East Lansing that discharges to the Looking Glass River. The drain enters the City Limits along the Eagle Eye Golf Course. The drain then proceeds along the east end of the State Road Condominiums to State Road at a point approximately 1,900 feet west of Chandler Road. The Remy Chandler Drain then proceeds southeasterly to the intersection with the Sanderson Drain and Moore Drain at the old abandoned railroad right-of-way. The Remy Chandler Drain then proceeds east approximately 1,200 feet to Chandler Road at a point approximately 1,200 feet south of State Road and at the intersection with the Remy-Chandler Branch No. 2. The Remy Chandler Drain then proceeds east approximately 4,600 feet to the City Limits.

The Remy Chandler Drain is an inter-county drain under the authority of the Ingham and Clinton County Drain Commissioners.

b). Review of Records:

A preliminary review of office records and initial field investigation resulted in the identification of the point source discharges shown in Table I. The location of the various point source discharges is shown on Figure No. 9.

This Table only includes that portion of the Remy Chandler Drain that lies within the City limits of East Lansing.

**POINT SOURCE DISCHARGES
REMY CHANDLER DRAIN
TABLE I**

<u>Outfall ID</u>	<u>Description</u>
RC-10 --	24" Storm Sewer Outlet for Eagle Eye Golf Course
RC-11 --	12" Storm Sewer Outlet for Eagle Eye Golf Course
RC-13 --	28" Storm Sewer Outlet for Eagle Eye Golf Course
RC-14 --	12" Storm Sewer Outlet for Eagle Eye Golf Course
RC-15 --	18" Storm Sewer Outlet for Eagle Eye Golf Course
RC-16 --	8" Storm Sewer Outlet for Aquila Drive
RC-17 MS4	24" Storm Sewer Outlet for Eagle Eye Condominiums
RC-18 --	8" Storm Sewer Outlet for Eagle Eye Golf Course
RC-19 --	8" Storm Sewer Outlet for Eagle Eye Golf Course
RC-20 --	8" Storm Sewer Outlet for Eagle Eye Golf Course

The existing point source discharges listed in Table E are active municipal separate storm water discharges regulated under the authority of the City of East Lansing. As such, these point source discharges will be investigated further and if necessary sampled and tested for illicit discharges by the City of East Lansing.

Outfalls RC-01 through RC-09 and RC-12 are under the jurisdiction of the Clinton County Drain Commissioner. A copy of all field data collected was distributed to the CCDC for their files.

c). Initial Field Investigations & Results:

The initial analysis of the Remy Chandler Drain was conducted in October 2006. Upon identifying all outfalls, an inventory sheet containing the culvert's size, location, and amount of flow present was completed for each outfall. The City's file for each outfall also includes digital camera photos, aerial photos, a location sketch, and a copy of the appropriate storm sewer atlas map. No outfall samples were collected for the Remy Chandler Drain during the initial field investigation, as all waters at these locations appeared to be free of odors, deposits, floatable matter, and/or other signs of an illicit discharge.

In July 2007, the City of East Lansing returned to the Remy Chandler Drain to further evaluate the identified outfalls during dry weather conditions. Of the eleven identified outfalls, only Outfall Numbers RC-13, RC-15 and RC-17 revealed signs of a potential illicit discharge. Samples were taken and tested to further evaluate their contents.

Dry weather flow was observed at outfall numbers RC-13, RC-15 and RC-17, while no flow and/or standing water only was observed at the remaining outfalls. Again, there was no evidence of odors, deposits, floatable matter, and/or other signs of a potential illicit discharge, with the exception of RC-13, RC-15 and RC-17 during this subsequent investigation. A summary of the data collected from the site evaluations is shown on the following table:

DRAIN: Remy Chandler Drain

Available Files

No.	D.O.L. INSP.	Available Files				COMMENTS:
		LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
RC-10	9/19/2007	X	X	X	X	No flow from culvert
RC-11	7/11/2007	X	X	X	X	No flow from culvert.
RC-13	9/19/2007	X	X	X	X	Completed and verified.
RC-14	7/11/2007	X	X	X	X	No flow from culvert.
RC-15	9/19/2007	X	X	X	X	Completed and verified.
RC-16	7/11/2007	X	X	X	X	No flow from culvert.
RC-17	9/19/2007	X	X	X	X	Completed and verified.
RC-18	9/19/2007	X	X	X	X	No flow from culvert.
RC-19	9/19/2007	X	X	X	X	Debris has plugged culvert. No flow.
RC-20	7/11/2007	X	X	X	X	Standing water in culvert.

* Manhole ** Maintenance Required

Lab Results

Tested Elements

ID:	CBOD5	NH3-N	Tot. P	Susp. Solids	Fecal Coliform
RC-13	20 mg/l	1.69 mg/l	0.20 mg/l	12 mg/l	700/100 ml
RC-15	18 mg/l	0.12 mg/l	0.07 mg/l	1 mg/l	6,000/100 ml
RC-17	22 mg/l	0.06 mg/l	0.08 mg/l	1 mg/l	1,600/100 ml

Typical Raw Sewage Values:

CBOD5	NH3-N	Tot. P	Susp. Solids	Fecal Coliform
100-200 mg/l	5-25 mg/l	3-8 mg/l	100-200 mg/l	Billions/100 ml

Sample results of RC-13, RC-15 and RC-17 revealed that discharges from these outfalls were in fact not illicit discharges. The overall investigation of the Remy Chandler Drain and outfalls RC-10 to RC-20 were included in Group A in the five year reinspection cycle.

Any outfalls which exhibited obstructions, standing water, broken pipe, or other maintenance needs were also scheduled for further investigation and possible corrective action.

If the CCDC or ICDC locates any additional point source discharges entering the drain during their IDEP investigations, the City of East Lansing will work with the Drain Commissioners to determine responsibility for those discharge pipes.

d). Subsequent Field Investigation & Results

The Remy Chandler Drain subwatershed was included in the 2008 Annual Reinspection of Group A as part of the five-year cycle of reinspections. During the reinspection a field inspection report was completed at each outfall location to analyze dry weather flow characteristics of the discharge point and the receiving waters. This included observations of water clarity, color, and odor; the presence of suds, oil/bacterial sheens, sewage, floatable materials, and algae; staining of the banks and unusual vegetative growth. Discharge structures were also evaluated for the same characteristics along with structural stability.

None of the outfalls revealed signs of a potential illicit discharge. However, obstruction of potential flow was observed at Outfall Number RC-19.

Dry weather flow was observed at Outfall Numbers RC-10, RC-13, and RC-15 as a result of surrounding sprinkler systems and detention pond drainage. Dry weather flow was attributed to the surrounding sprinkler systems and detention pond drainage as confirmed in 2007. As such, no samples were collected at Outfall Numbers RC-10, RC-13, and RC-15.

No new discharges were identified. A summary of the data collected from the site evaluations is shown in the following Table:

DRAIN: Remy Chandler Drain		Available Files				COMMENTS:
NO:	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
RC-10	9/23/2008	X	X	X	X	Minor flow from culvert. Sprinkler system.
RC-11	9/23/2008	X	X	X	X	No flow from culvert.
RC-13	9/23/2008	X	X	X	X	Minor flow from culvert. Sprinkler system.
RC-14	9/23/2008	X	X	X	X	No flow from culvert.
RC-15	9/23/2008	X	X	X	X	Minor flow from culvert. Sampled in 2007, Negative.
RC-16	9/23/2008	X	X	X	X	No flow from culvert.
RC-17	9/23/2008	X	X	X	X	Minor flow from culvert. Detention pond.
RC-18	9/23/2008	X	X	X	X	No flow from culvert.
RC-19	9/23/2008	X	X	X	X	**No flow from culvert.
RC-20	9/23/2008	X	X	X	X	Standing water in culvert.

* Manhole

** Maintenance required

Outfalls which exhibited obstructions, broken pipe sections or other maintenance issues were reported to the DPW for corrective action.

6. REMY CHANDLER DRAIN BRANCH NO. 2

a). Background:

The Remy Chandler Branch No. 2 begins at the Remy Chandler Drain on the east side of Chandler Road at a point approximately 1,200 feet south of the intersection of State Road and then proceeds south along Chandler Road (Abbot Road) to a point approximately 350 feet north of Lake Lansing Road. The portion of the drain that extends from Coleman Road south to Lake Lansing Road was enclosed as part of the Abbot Road reconstruction project in 2008. The Remy Chandler Branch No. 2 serves as the outlet for the Towar Snell Drain which serves a large area east of Abbot Road and into Meridian Township.

The Remy Chandler Branch No.2 is an inter-county drain under the authority of the Ingham and Clinton County Drain Commissioners.

b). Review of Records:

A preliminary review of office records and initial field investigation resulted in the identification of the point source discharges shown in Table J. The location of the various point source discharges is shown on Figure No. 10.

This Table only includes that portion of the Remy Chandler Branch No. 2 Drain that lies within the City limits of East Lansing (south of #16647 Chandler Road).

**POINT SOURCE DISCHARGES
REMY CHANDLER BRANCH NO. 2 DRAIN
TABLE J**

<u>Outfall ID</u>		<u>Description</u>
RC2-02	MS4	18" Storm Sewer Outlet for Abbot Road South to Lake Lansing Road
RC2-03	--	12" Storm Sewer Outlet for Vacant Property East of Abbot Road
RC2-04	--	10" Storm Sewer Outlet for Parking Lot South of Hunsaker Drive
RC2-09	--	12" Storm Sewer Outlet for The Landing's Apartment Complex
RC2-10	--	12" Storm Sewer Outlet for Retention Pond
RC2-11	--	15" Storm Sewer Outlet for Retention Pond

RC2-17	MS4	43"x68" Storm Sewer Outlet for Wetland Mitigation Area
RC2-18	MS4	54" Storm Sewer Outlet for Wetland Mitigation Area
RC2-19	--	12" Outlet for Drainage Ditch South of Coleman Road

The point source discharges listed in Table J are active municipal separate storm water discharges regulated under the authority of the City of East Lansing. As such, these point source discharges will be investigated further and if necessary sampled and tested for illicit discharges by the City of East Lansing.

Outfalls RC2-12 thru RC2-16 were abandoned and new Outfalls RC2-17 thru RC2-19 were added with the enclosure of the drain as part of the Abbot Road Reconstruction Project.

RC2-02 is the controlled outlet for the Towar Snell Drain. Outfalls RC2-05 through RC2-08 are under the jurisdiction of the Clinton County Drain Commissioner. A copy of all field data collected was distributed to the CCDC for their files.

c). Initial Field Investigations & Results:

The initial analysis of the Remy Chandler Drain Branch No. 2 was conducted in October 2006. Upon identifying all outfalls, an inventory sheet containing the culvert's size, location, and amount of flow present was completed for each outfall. The City's file for each outfall also includes digital camera photos, aerial photos, a location sketch, and a copy of the appropriate storm sewer atlas map. No outfall samples were collected for the Remy Chandler Drain Branch No. 2 during the initial field investigation, as all waters at these locations appeared to be free of odors, deposits, floatable matter, and/or other signs of an illicit discharge.

In July 2007, the City of East Lansing returned to the Remy Chandler Drain Branch No. 2 to further evaluate the identified outfalls during dry weather conditions. Of the twelve identified outfalls, none revealed signs of a potential illicit discharge.

No flow and/or standing water only was observed at the twelve outfalls. Again, there was no evidence of odors, deposits, floatable matter, and/or other signs of a potential illicit discharge during this subsequent investigation. A summary of the data collected from the site evaluations is shown on the following table:

No.	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	COMMENTS:
RC2-01	9/19/2007	X	X	X	X	No flow from culvert.
RC2-02	7/10/2007	X	X	X	X	No flow from culvert.
RC2-03	7/10/2007	X	X	X	X	No flow from culvert.
RC2-04	7/10/2007	X	X	X	X	No flow from culvert.
RC2-09	7/10/2007	X	X	X	X	No flow from culvert.
RC2-10	7/10/2007	X	X	X	X	Standing storm water in culvert.
RC2-11	7/10/2007	X	X	X	X	No flow from culvert. Culvert repairs needed.
RC2-13	7/10/2007	X	X	X	X	No flow from culvert.
RC2-14	7/10/2007	X	X	X	X	No flow from culvert.
RC2-15	7/10/2007	X	X	X	X	6" of standing storm water in culvert.
RC2-16	7/10/2007	X	X	X	X	4" of standing storm water in culvert.

* Manhole

** Maintenance Required

The overall investigation of the Remy Chandler Branch No.2 and outfalls were included in Group A in the five year reinspection cycle.

Any outfalls which exhibited obstructions, standing water, broken pipe, or other maintenance needs were also scheduled for further investigation and possible corrective action.

If the CCDC or ICDC locates any additional point source discharges entering the drain during their IDEP investigations, the City of East Lansing will work with the Drain Commissioners to determine responsibility for those discharge pipes.

d). Subsequent Field Investigation & Results

The Remy Chandler Branch No.2 subwatershed was included in the 2008 Annual Reinspection of Group A as part of the five-year cycle of reinspections. During the reinspection a field inspection report was completed at each outfall location to analyze dry weather flow characteristics of the discharge point and the receiving waters. This included observations of water clarity, color, and odor; the presence of suds, oil/bacterial sheens, sewage, floatable materials, and algae; staining of the banks and unusual vegetative growth. Discharge structures were also evaluated for the same characteristics along with structural stability.

None of the outfalls revealed signs of a potential illicit discharge.

Visual inspections of the culvert conditions revealed structural damage at Outfall Number RC2-11.

Dry weather flow was observed at Outfall Number RC2-10 as a result of surrounding sprinkler systems and detention pond drainage. Dry weather flow was attributed to the surrounding sprinkler systems and detention pond drainage as confirmed in 2007. As such, no samples were collected.

No new discharges were identified.

A summary of the data collected from the site evaluations is shown in the following Table:

DRAIN: Remy Chandler Drain-Branch No.2		Available Files				COMMENTS:
NO:	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
RC2-02	9/24/2008	X	X	X	X	No flow from culvert.
RC2-03	9/24/2008	X	X	X	X	No flow from culvert.
RC2-04	9/24/2008	X	X	X	X	No flow from culvert.
RC2-09	9/24/2008	X	X	X	X	No flow from culvert.
RC2-10	9/24/2008	X	X	X	X	Minor flow from culvert. Detention pond.
RC2-11	9/24/2008	X	X	X	X	No flow from culvert.
RC2-17	9/24/2008	X	X	X	X	Standing water in culvert.
RC2-18	9/24/2008	X	X	X	X	Standing water in culvert.
RC2-19	9/24/2008	X	X	X	X	No flow from culvert.

* Manhole

** Maintenance required

Outfalls which exhibited obstructions or broken pipe sections were reported to the DPW for corrective action.

7. MOORE BRANCH DRAIN

a). Background:

The Moore Branch Drain begins at the juncture of the Sanderson Drain and Remy Chandler Drain southwest of the intersection of Chandler Road and State Road. The drain proceeds southwesterly along the old abandoned railroad right-of-way to a point approximately 1000 feet east of Coolidge Road, and then continues south to Coleman Road. The Moore Drain then continues as a 54" enclosed pipe generally west along Coleman Road to Coolidge Road, south on Coolidge Road toward Abbey Road, west toward West Road, south along West Road to a point approximately 1100 feet south of Abbey road, and then westerly across US 127.

The Moore Drain is an inter-county drain under the authority of the Ingham and Clinton County Drain Commissioners.

b). Review of Records:

A preliminary review of office records and initial field investigation resulted in the identification of the point source discharges shown in Table K. The location of the various point source discharges is shown on Figure No. 11.

**POINT SOURCE DISCHARGES
MOORE BRANCH DRAIN
TABLE K**

<u>Outfall ID</u>	<u>Description</u>
MB-02	-- 8" Storm Sewer Outlet for Plover Place West of Kiskadee
MB-03	-- 12" Storm Sewer Outlet for Wrangler Road West of Palomino Drive
MB-04	-- 6" Storm Sewer Outlet for #3893 Plover Place
MB-05	-- 12" Storm Sewer Outlet for Plover Place
MB-06	-- 12" Storm Sewer Outlet for Plover Place South of Pedigree
MB-07	-- 6" Storm Sewer Outlet for #3877 Plover Place
MB-08	-- 24" Storm Sewer Outlet for Pedigree Road West of Wrangler
MB-09	-- 18" Storm Sewer Outlet for Wrangler Road West of Pedigree
MB-10	-- 8" Storm Sewer Outlet for The Falcon Golf Course
MB-11	-- 8" Storm Sewer Outlet for #3867 Plover Place
MB-12	-- 8" Storm Sewer Outlet for The Falcon Golf Course South of Quarterhorse Road
MB-13	-- 8" Storm Sewer Outlet for The Falcon Golf Course
MB-14	-- 8" Storm Sewer Outlet for The Falcon Golf Course
MB-15	-- 12" Storm Sewer Outlet for The Falcon Golf Course
MB-16	-- 8" Storm Sewer Outlet for The Falcon Golf Course
MB-17	-- 24" Storm Sewer Outlet for Parula Drive North of Phoebe
MB-18	-- 4" Storm Sewer Outlet for The Falcon Golf Course
MB-19	-- 12" Storm Sewer Outlet for The Falcon Golf Course
MB-20	-- 8" Storm Sewer Outlet for The Falcon Golf Course
MB-21	-- 15" Storm Sewer Outlet for Vacant Land West of Parula
MB-22	-- 15" Storm Sewer Outlet for Vacant Land West of Parula
MB-23	-- 8" Storm Sewer Outlet for Retention Pond East of Coolidge
MB-24	-- 15" Storm Sewer Outlet for Private Drive East of Coolidge
MB-25	-- 15" Storm Sewer Outlet for Vacant Lot on Northeast corner of Coolidge/Coleman Road
MB-26* MS4	24" Storm Sewer Outlet for CB South Side of Coleman

MB-27* MS4 18" Storm Sewer Outlet for Coleman West of Coolidge
 MB-28* MS4 15" Storm Sewer Outlet for Earl Lane
 MB-29* -- 12" Retention Basin Outlet for Maynard Basin #1
 MB-30* -- 8" Retention Basin for Trilogy
 MB-31* -- 12" Outlet for Hall Rokema and Wetlands to West & South
 MB-32* MS4 15" Storm Sewer Outlet from Safire Ct
 MB-33* -- 6" Retention Basin Outlet for East portion of Water Tower Place
 MB-34* -- 4" Storm Sewer Outlet for 3001 Coolidge
 MB-35* MS4 15" Storm Sewer Outlet for Abbey Road East
 MB-36* MS4 21" Storm Sewer Outlet for Abbey Road & West Road
 MB-37* MS4 18" Storm Sewer Outlet for Abbey Road Cul-De-Sac
 MB-38* -- 21" Storm sewer Outlet for WERL Complex
 MB-39* -- 12" Retention Basin Outlet for Holiday Inn
 MB-40* -- 15" Retention Basin Outlet for Independent Bank
 MB-41* -- 8" Storm sewer Outlet for Area South of Independent Bank

*Outfalls MB-26 thru MB-41 added in 2012.

The discharge points listed in Table K include those pipes that discharge into the open drain (MB-02 thru MB-25) and were included in the original 2008 IDEP report. Pipes that discharge into the enclosed portion of the drain (MB-26 thru MB-41) were added in conjunction with this 2013 update. All the outfalls are active municipal separate storm water discharges regulated under the authority of the City of East Lansing. As such, these point source discharges will be investigated further and if necessary sampled and tested for illicit discharges by the City of East Lansing.

MB-01 was the discharge from the enclosed pipe portion of the drain into the open channel at Coleman Road. As such, it is under the jurisdiction of the Inter-County Drain.

c). Initial Field Investigations & Results:

The initial analysis of the Moore Branch Drain was conducted in November 2006 and only included MB-01 through MB-25. Upon identifying these outfalls, an inventory sheet containing the culvert's size, location, and amount of flow present was completed for each outfall. The City's file for each outfall also includes digital camera photos, aerial photos, a location sketch, and a copy of the appropriate storm sewer atlas map. No outfall samples were collected for the Moore Branch Drain during the initial field investigation, as all waters at these locations appeared to be free of odors, deposits, floatable matter, and/or other signs of an illicit discharge.

In July 2007, the City of East Lansing returned to the Moore Branch Drain to further evaluate the twenty five original outfalls during dry weather conditions.

Of the twenty five original outfalls, only Outfall Number MB-10 showed signs of a small amount of flow. However, the minute flow was attributed to the golf course sprinkler system that was running at the time.

Dry weather flow was observed at outfall number MB-10, while no flow and/or standing water only was observed at the twenty-four remaining outfalls. Again, there was no evidence of odors, deposits, floatable matter, and/or other signs of a potential illicit discharge during this subsequent investigation. A summary of the data collected from the site evaluations is shown on the following table:

DRAIN: Moore Branch		Available Files				COMMENTS:
No.	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
MB-01	7/10/2007	X	X	X	X	3" of standing water in culvert and drain.
MB-02	7/9/2007	X	X	X	X	No flow from culvert.
MB-03	7/9/2007	X	X	X	X	No flow from culvert.
MB-04	9/19/2007	X	X	X	X	No flow from culvert.
MB-05	9/19/2007	X	X	X	X	6" of standing water in culvert.
MB-06	7/9/2007	X	X	X	X	No flow from culvert.
MB-07	7/9/2007	X	X	X	X	No flow from culvert.
MB-08	9/19/2007	X	X	X	X	3.5" of standing water in culvert.
MB-09	7/9/2007	X	X	X	X	No flow from culvert.
MB-10	9/19/2007	X	X	X	X	Minor flow from operating sprinkler system.
MB-11	7/9/2007	X	X	X	X	No flow from culvert.
MB-12	7/9/2007	X	X	X	X	No flow from partially submerged culvert.
MB-13	7/9/2007	X	X	X	X	No flow from partially submerged culvert.
MB-14	7/9/2007	X	X	X	X	No flow from partially submerged culvert.
MB-15	7/9/2007	X	X	X	X	No flow from culvert.
MB-16	7/9/2007	X	X	X	X	No flow from culvert.
MB-17	9/19/2007	X	X	X	X	5" of standing water in culvert.
MB-18	7/9/2007	X	X	X	X	No flow from culvert.
MB-19	7/9/2007	X	X	X	X	3" of standing water in culvert.
MB-20	7/9/2007	X	X	X	X	No flow from partially submerged culvert.
MB-21	7/9/2007	X	X	X	X	No flow from culvert.
MB-22	7/10/2007	X	X	X	X	No flow from culvert.
MB-23	7/10/2007	X	X	X	X	No flow from culvert.
MB-24	7/10/2007	X	X	X	X	1" of standing water in culvert.
MB-25	7/10/2007	X	X	X	X	No flow from culvert.

* Manhole

** Maintenance Required

The overall investigation of the Moore Drain and outfalls MB-01 to MB-25 were included in Group A in the five year reinspection cycle.

Any outfalls which exhibited obstructions, standing water, broken pipe, or other maintenance needs were also scheduled for further investigation and possible corrective action.

If the CCDC or ICDC locates any additional point source discharges entering the drain during their IDEP investigations, the City of East Lansing will work with the Drain Commissioners to determine responsibility for those discharge pipes.

d). Subsequent Field Investigation & Results

The Moore Drain subwatershed was included in the 2008 Annual Reinspection of Group A as part of the five-year cycle of reinspections. Again only Outfalls discharging into the open drain portion of the Moore Drain (MB-01 thru MB-25) were investigated. During the reinspection a field inspection report was completed at each outfall location to analyze dry weather flow characteristics of the discharge point and the receiving waters. This included observations of water clarity, color, and odor; the presence of suds, oil/bacterial sheens, sewage, floatable materials, and algae; staining of the banks and unusual vegetative growth. Discharge structures were also evaluated for the same characteristics along with structural stability.

None of the outfalls revealed signs of a potential illicit discharge. However, obstruction of potential flow was observed at Outfall Number MB-15.

Dry weather flow was observed at Outfall Number MB-11 as a result of surrounding sprinkler systems and detention pond drainage.

No new discharges were identified.

A summary of the data collected from the site evaluations is shown in the following Table:

DRAIN: Moore Branch Drain

Available Files

NO:	D.O.L. INSP.	Available Files				COMMENTS:
		LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
MB-01	9/25/2008	X	X	X	X	Standing water in culvert.
MB-02	9/25/2008	X	X	X	X	No flow from culvert.
MB-03	9/25/2008	X	X	X	X	No flow from culvert.
MB-04	9/25/2008	X	X	X	X	No flow from culvert.
MB-05	9/25/2008	X	X	X	X	Standing water in culvert.
MB-06	9/25/2008	X	X	X	X	No flow from culvert.
MB-07	9/25/2008	X	X	X	X	No flow from culvert.
MB-08	9/25/2008	X	X	X	X	Standing water in culvert.
MB-09	9/25/2008	X	X	X	X	Standing water in culvert.
MB-10	9/25/2008	X	X	X	X	No flow from culvert.
MB-11	9/25/2008	X	X	X	X	Minor flow from culvert. Sampled in 2007, Negative
MB-12	9/25/2008	X	X	X	X	Standing water in culvert.
MB-13	9/25/2008	X	X	X	X	Standing water in culvert.
MB-14	9/25/2008	X	X	X	X	No flow from culvert.
MB-15	9/25/2008	X	X	X	X	**Standing water in culvert.
MB-16	9/25/2008	X	X	X	X	No flow from culvert.
MB-17	9/25/2008	X	X	X	X	Standing water in culvert.
MB-18	9/25/2008	X	X	X	X	No flow from culvert.
MB-19	9/25/2008	X	X	X	X	No flow from culvert.
MB-20	9/25/2008	X	X	X	X	Standing water in culvert.
MB-21	9/25/2008	X	X	X	X	No flow from culvert.
MB-22	9/25/2008	X	X	X	X	No flow from culvert.
MB-23	9/25/2008	X	X	X	X	No flow from culvert.
MB-24	9/25/2008	X	X	X	X	No flow from culvert.
MB-25	9/25/2008	X	X	X	X	No flow from culvert.

* Manhole

** Maintenance required

Outfalls which exhibited obstructions or broken pipe sections were reported to the DPW for corrective action.

Data on point source discharges for MB-26 through MB-41 will be gathered during the 2013 five year reinspection cycle.

8. FOREBACK DRAIN

a). Background:

The Foreback Drain consists of a 10” diameter storm sewer pipe. The Foreback Drain begins at the 54” diameter Moore Drain in Coolidge Road at a manhole approximately 200 feet south of Coleman Road. The drain then proceeds southwesterly through the backyards of the homes on the south side of Coleman Road to West Road. The Foreback Drain originally continued southwesterly from West Road across US 127 but that portion has since been abandoned.

The Foreback Drain is an inter-county drain under the authority of the Ingham and Clinton County Drain Commissioners.

b). Review of Records:

A preliminary review of office records and initial field investigation resulted in the identification of the point source discharges shown in Table L. The location of the various point source discharges is shown on Figure No. 12.

**POINT SOURCE DISCHARGES
FOREBACK DRAIN
TABLE L**

<u>Outfall ID</u>	<u>Description</u>
FB-01 MS4	10” Storm Sewer Outlet for West Road South of Coleman
FB-02 MS4	10” Storm Sewer Outlet for West Road South of Coleman
FB-04* - -	2" Outlet for residential property at 16927 West Road

*Outfall added in 2012 as part of five year reinspection

The existing point source discharges listed in Table L are active municipal separate storm water discharges regulated under the authority of the City of East Lansing. As such, these point source discharges will be investigated further and if necessary sampled and tested for illicit discharges by the City of East Lansing.

c). Initial Field Investigations & Results:

The initial analysis of the Foreback Drain was conducted in November 2006 and included Outfalls FB-01 and FB-02 only.

Upon identifying all outfalls, an inventory sheet containing the culvert’s size, location and amount of flow present was completed for each outfall. The City’s file for each outfall also includes digital camera photos, aerial photos, a location sketch, and a copy of the appropriate storm sewer atlas map. No outfall samples

were collected for the Foreback Drain during the initial field investigation, as all waters at these locations appeared to be free of odors, deposits, floatable matter, and/or other signs of an illicit discharge.

In July 2007, the City of East Lansing returned to the Foreback Drain to further evaluate the identified outfalls during dry weather conditions. Of the two identified outfalls, none revealed signs of a potential illicit discharge.

No flow and/or standing water only was observed in the two structures. Again, there was no evidence of odors, deposits, floatable matter, and/or other signs of a potential illicit discharge during this subsequent investigation. A summary of the data collected from the site evaluations is shown on the following table:

DRAIN: Foreback Drain		Available Files				COMMENTS:
No.	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
FB-01	9/19/2007	X	X	X	X	No water in structure.
FB-02	9/19/2007	X	X	X	X	No water in structure.

* Manhole

** Maintenance Required

The overall investigation of the Foreback Drain and outfalls FB-01 and FB-02 were included in Group E in the five year reinspection cycle.

Any outfalls which exhibited obstructions, standing water, broken pipe, or other maintenance needs were also scheduled for further investigation and possible corrective action.

d). Subsequent Field Investigation & Results

The Foreback Drain subwatershed was included in the 2012 Annual Reinspection of Group E as part of the five-year cycle of reinspections. During the reinspection a field inspection report was completed at each outfall location to analyze dry weather flow characteristics of the discharge point and the receiving waters. This included observations of water clarity, color, and odor; the presence of suds, oil/bacterial sheens, sewage, floatable materials, and algae; staining of the banks and unusual vegetative growth. Discharge structures were also evaluated for the same characteristics along with structural stability.

None of the outfalls revealed signs of a potential illicit discharge.

During the field investigation one new discharge (FB-04) was identified in the Foreback Drain. The City also updated its master spreadsheet and provided

maps for these sub-watersheds, which include all field information gathered upon identifying the new discharges.

A summary of the data collected from the site evaluations is shown in the following Table:

DRAIN: Foreback Drain		Available Files				COMMENTS:
NO:	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
FB-01	10/1/2012	X	X	X	X	Standing water only in structure.
FB-02	10/1/2012	X	X	X	X	Standing water only in structure.
FB-04	10/1/2012	X	X	X	X	No flow from PVC pipe

* Manhole

** Maintenance required

Outfalls which exhibited obstructions or broken pipe sections were reported to the DPW for corrective action.

9. MELVIN DRAIN

a). Background:

The Melvin Drain begins at the Remy Chandler Drain in the middle of Eagle Eye Golf Course. The original drain has been relocated due to recent development. The drain proceeds south from the Remy Chandler Drain 1,500 feet to the Melvin Drain Branch No. 1. The Melvin Drain then originally continued southwesterly to the Keilen Branch Drain north of the DPW facility. This portion of the drain has since been officially abandoned. Currently the Melvin Drain, upstream of the abandoned portion of the drain, continues from the Keilen Branch Drain, south to the northeast corner of the City of East Lansing DPW facility. The Melvin Drain then proceeds along the north and west property line of the DPW facility to State Road before proceeding southwesterly under US-127 as a 30" enclosed drain.

The Melvin Drain is under the authority of the Clinton County Drain Commissioner.

b). Review of Records:

A preliminary review of office records and initial field investigation resulted in the identification of the point source discharges shown in Table M. The location of the various point source discharges is shown on Figure No. 13.

This Table only includes that portion of the Melvin drain that lies within the City Limits of East Lansing- from the northeast corner of the DPW facility to US-127.

**POINT SOURCE DISCHARGES
MELVIN DRAIN
TABLE M**

<u>Outfall ID</u>	<u>Description</u>
MV-01	MS4 18" Storm Sewer Outlet for the DPW Retention Pond
MV-02	-- 12" Storm Sewer Outlet for Brown Road North of State
MV-03	-- 48" Storm Sewer Outlet running beneath State Road West of Brown Road
MV-04	-- 12" Storm Sewer Outlet along State Road (West Bound)

The existing point source discharges listed in Table M are active municipal separate storm water discharges regulated under the authority of the City of East Lansing. As such, these point source discharges will be investigated further and if necessary sampled and tested for illicit discharges by the City of East Lansing.

c). Initial Field Investigations & Results:

The initial analysis of the Melvin Drain was conducted in December 2006. Upon identifying all outfalls, an inventory sheet containing the culvert's size, location, and amount of flow present was completed for each outfall. The City's file for each outfall also includes digital camera photos, aerial photos, a location sketch, and a copy of the appropriate storm sewer atlas map. No outfall samples were collected for the Melvin Drain during the initial field investigation, as all waters at these locations appeared to be free of odors, deposits, floatable matter, and/or other signs of an illicit discharge.

In July 2007, the City of East Lansing returned to the Melvin Drain to further evaluate the identified outfalls during dry weather conditions. Of the four identified outfalls, none revealed signs of a potential illicit discharge.

No flow and/or standing water only was observed at the four outfalls. Again, there was no evidence of odors, deposits, floatable matter, and/or other signs of a potential illicit discharge during this subsequent investigation. A summary of the data collected from the site evaluations is shown on the following table:

DRAIN: Melvin Drain

Available Files

No.	D.O.L. INSP.	Available Files				COMMENTS:
		LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
MV-01	7/2/2007	X	X	X	X	Culvert submerged by detention pond water.
MV-02	7/2/2007	X	X	X	X	5" of standing water in culvert/drain.
MV-03	7/2/2007	X	X	X	X	No flow from culvert.
MV-04	7/2/2007	X	X	X	X	No flow from culvert.

* Manhole

** Maintenance Required

The overall investigation of the Melvin Drain and outfalls MV-01 to MV-04 were included in Group C in the five year reinspection cycle.

Any outfalls which exhibited obstructions, standing water, broken pipe, or other maintenance needs were also scheduled for further investigation and possible corrective action.

If the CCDC locates any additional point source discharges entering the drain during their IDEP investigation, the City of East Lansing will work with the Drain Commissioner to determine responsibility for those discharge pipes.

d). Subsequent Field Investigation & Results

The Melvin Drain subwatershed was included in the 2010 Annual Reinspection of Group C as part of the five-year cycle of reinspections. During the reinspection a field inspection report was completed at each outfall location to analyze dry weather flow characteristics of the discharge point and the receiving waters. This included observations of water clarity, color, and odor; the presence of suds, oil/bacterial sheens, sewage, floatable materials, and algae; staining of the banks and unusual vegetative growth. Discharge structures were also evaluated for the same characteristics along with structural stability.

None of the outfalls revealed signs of a potential illicit discharge. Visual inspections of the culvert conditions revealed no structural damage or erosion along the drain embankments.

No dry weather flow was observed at any of the outfalls.

No new discharges were identified.

A summary of the data collected from the site evaluations is shown in the following Table:

DRAIN: Melvin Drain		Available Files				COMMENTS:
NO:	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
MV-01	9/21/2010	X	X	X	X	Standing water in culvert.
MV-02	9/15/2010	X	X	X	X	No flow from culvert.
MV-03	9/15/2010	X	X	X	X	Standing water in culvert.
MV-04	9/15/2010	X	X	X	X	No flow from culvert.

* Manhole

** Maintenance required

Outfalls which exhibited obstructions or broken pipe sections were reported to the DPW for corrective action.

10. MELVIN BRANCH NO. 1

a). Background:

The Melvin Branch No. 1 begins at the Melvin Drain approximately 2,750 feet north of State Road. The Melvin Branch No. 1 then proceeds south across State Road and then southwesterly to the abandoned railroad right-of-way. The drain then proceeds along the abandoned railroad right-of-way to Coolidge Road at a point approximately 1,400 feet north of Coleman Road.

The Melvin Branch No. 1 is under the authority of the Clinton County Drain Commissioner.

b). Review of Records:

A preliminary review of office records and initial field investigation resulted in the identification of the point source discharges shown in Table N. The location of the various point source discharges is shown on Figure No. 14.

**POINT SOURCE DISCHARGES
MELVIN DRAIN BRANCH NO. 1
TABLE N**

<u>Outfall ID</u>	<u>Description</u>
MVD1-01	-- 6" Storm Sewer Outlet from vacant land West of Eagle Eye Golf Course
MVD1-02	-- 24" Storm Sewer Outlet for Retention Pond
MVD1-03	-- 8" Storm Sewer Outlet for Eagle Eye Golf Course (hole #5)
MVD1-04	-- 8" Storm Sewer Outlet for Eagle Eye Golf Course (hole #5)

- MVD1-05 -- 8" Storm Sewer Outlet for Eagle Eye Golf Course (hole #5)
- MVD1-06 -- 8" Storm Sewer Outlet for Eagle Eye Golf Course (hole #5)
- MVD1-07 -- 8" Storm Sewer Outlet for Eagle Eye Golf Course (hole #5)
- MVD1-08 -- 4" Storm Sewer Outlet West of Aquila Drive
- MVD1-09 -- 8" Storm Sewer Outlet for Eagle Eye Golf Course (hole #5)
- MVD1-10 -- 8" Storm Sewer Outlet for Eagle Eye Golf Course (hole #5)
- MVD1-11 -- 8" Storm Sewer Outlet for Eagle Eye Golf Course (hole #5)
- MVD1-12 -- 8" Storm Sewer Outlet for Eagle Eye Golf Course (hole #5)
- MVD1-13 -- 8" Storm Sewer Outlet for Eagle Eye Golf Course (hole #5)
- MVD1-14 -- 24" Storm Sewer Outlet for Retention Pond
- MVD1-15 -- 10" Storm Sewer Outlet for Eagle Eye Golf Course
- MVD1-16 -- 4" Storm Sewer Outlet for #650 Aquila Drive
- MVD1-17 -- 4" Storm Sewer Outlet for #644 Aquila Drive
- MVD1-18 -- 4" Storm Sewer Outlet for #634 Aquila Drive
- MVD1-19 -- 12" Storm Sewer Outlet for Retention Pond located on Eagle Eye Golf Course
- MVD1-20 -- 6" Storm Sewer Outlet for Eagle Eye Golf Course (hole #4)
- MVD1-21 -- 6" Storm Sewer Outlet for Eagle Eye Golf Course (hole #4)
- MVD1-22 -- 8" Storm Sewer Outlet for Eagle Eye Golf Course (hole #4)
- MVD1-23 -- 8" Storm Sewer Outlet for Eagle Eye Golf Course
- MVD1-24 -- 24" Storm Sewer Outlet for Retention Pond South of Aquila
- MVD1-25 -- 6" Storm Sewer Outlet for #657 Aquila Drive
- MVD1-26 -- 6" Storm Sewer Outlet for #615 Ibis Circle
- MVD1-27 -- 8" Storm Sewer Outlet for Eagle Eye Golf Course (hole #6)
- MVD1-28 -- 4" Storm Sewer Outlet (6 total) for Eagle Eye Golf Course (hole #6)
- MVD1-29 -- 12" Storm Sewer Outlet for Retention Pond located on Eagle Eye Golf Course
- MVD1-30 -- 40" Storm Sewer Outlet for Retention Pond North of State
- MVD1-31 -- 6" Storm Sewer Outlet for Eagle Eye Golf Course (hole #6)
- MVD1-32 -- 8" Storm Sewer Outlet for Eagle Eye Golf Course (hole #6)
- MVD1-33 -- 6" Storm Sewer Outlet for Eagle Eye Golf Course (hole #6)
- MVD1-34 -- 6" Storm Sewer Outlet for Eagle Eye Golf Course (hole #6)
- MVD1-35 -- 4" Storm Sewer Outlet for #645 Aquila Drive
- MVD1-36 -- 4" Storm Sewer Outlet for #655 Aquila Drive
- MVD1-37 -- 24" Storm Sewer Outlet for State Road (East Bound)
- MVD1-38 -- 44" Storm Sewer Outlet for Eagle Eye Condominiums South of State Road
- MVD1-39 -- 15" Storm Sewer Outlet for Palomino Drive West of Quarterhorse Road
- MVD1-40 -- 12" Storm Sewer Outlet for Palomino Drive West of Quarterhorse Road
- MVD1-41 -- 12" Storm Sewer Outlet for Palomino Drive

- MVD1-42 -- 24" Storm Sewer Outlet for Palomino Drive
- MVD1-43* -- 8" Storm Sewer Outlet for Eagle Eye Golf Course (hole #6)
- MVD1-44* -- 4" Storm Sewer Outlet for Eagle Eye Golf Course (hole #6)
- MVD1-45* -- 8" Storm Sewer Outlet for Eagle Eye Golf Course (hole #6)
- MVD1-46* -- 8" Storm Sewer Outlet for Eagle Eye Golf Course (hole #6)
- MVD1-47* -- 2" Storm Sewer Outlet for Eagle Eye Golf Course (hole #6)
- MVD1-48* -- 2" Storm Sewer Outlet for Eagle Eye Golf Course (hole #5)
- MVD1-49* -- 4" Storm Sewer Outlet for Eagle Eye Golf Course (hole #5)
- MVD1-50* -- 8" Storm Sewer Outlet for Eagle Eye Golf Course (hole #5)
- MVD1-51* -- 2" Storm Sewer Outlet for Eagle Eye Golf Course (hole #5)
- MVD1-52* -- 4" Downspout Outlet for 671 Aquila Drive
- MVD1-53* -- 8" Storm Sewer Outlet for Eagle Eye Golf Course (hole #6)
- MVD1-54* MS4 12" Connection for State Road Condominiums

*Outfalls added in 2010 as part of five year reinspection

The existing point source discharges listed in Table N are active municipal separate storm water discharges regulated under the authority of the City of East Lansing. As such, these point source discharges will be investigated further and if necessary sampled and tested for illicit discharges by the City of East Lansing.

c). Initial Field Investigations & Results:

The initial analysis of the Melvin Branch No. 1 Drain was conducted in November 2006 on the original outfalls (Outfalls MVD1-01 thru MVD1-42) only. Upon identifying all outfalls, an inventory sheet containing the culvert's size, location, and amount of flow present was completed for each outfall. The City's file for each outfall also includes digital camera photos, aerial photos, a location sketch, and a copy of the appropriate storm sewer atlas map. No outfall samples were collected for the Melvin Branch No. 1 Drain during the initial field investigation, as all waters at these locations appeared to be free of odors, deposits, floatable matter, and/or other signs of an illicit discharge.

In July 2007, the City of East Lansing returned to the Melvin Branch No. 1 Drain to further evaluate the identified outfalls during dry weather conditions. Of the forty two identified outfalls, only outfall number MVD1-18 showed signs of a small flow. However, the minute flow was attributed to the golf course sprinkler system that was running at the time.

Dry weather flow was observed at outfall number MVD1-18, while no flow and/or standing water only was observed at the forty-one remaining outfalls. Again, there was no evidence of odors, deposits, floatable matter, and/or other signs of a potential illicit discharge during this subsequent investigation. A summary of the data collected from the site evaluations is shown on the following table:

DRAIN: Melvin Drain-Branch No. 1

Available Files

No.	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	COMMENTS:
MVD1-01	7/3/2007	X	X	X	X	No flow from culvert.
MVD1-02	7/3/2007	X	X	X	X	6" of standing detention pond water in culvert.
MVD1-03	7/3/2007	X	X	X	X	No flow from culvert.
MVD1-04	7/3/2007	X	X	X	X	Culvert submerged by detention pond water. No flow.
MVD1-05	7/3/2007	X	X	X	X	No flow from culvert.
MVD1-06	7/3/2007	X	X	X	X	No flow from culvert.
MVD1-07	7/3/2007	X	X	X	X	Culvert submerged by detention pond water. No flow.
MVD1-08	7/3/2007	X	X	X	X	No flow from culvert.
MVD1-09	7/2/2007	X	X	X	X	Culvert submerged by detention pond water. No flow.
MVD1-10	7/2/2007	X	X	X	X	Culvert submerged by detention pond water. No flow.
MVD1-11	7/2/2007	X	X	X	X	Culvert submerged by detention pond water. No flow.
MVD1-12	7/2/2007	X	X	X	X	Culvert submerged by detention pond water. No flow.
MVD1-13	7/2/2007	X	X	X	X	Culvert submerged by detention pond water. No flow.
MVD1-14	7/2/2007	X	X	X	X	Culvert submerged by detention pond water. No flow.
MVD1-15	7/3/2007	X	X	X	X	No flow from culvert.
MVD1-16	7/3/2007	X	X	X	X	No flow from culvert.
MVD1-17	7/3/2007	X	X	X	X	No flow from culvert.
MVD1-18	9/6/2007	X	X	X	X	Minor flow from sprinkler system.
MVD1-19	7/3/2007	X	X	X	X	Standing water in culvert.
MVD1-20	7/3/2007	X	X	X	X	Culvert submerged by detention pond water. No flow.
MVD1-21	7/3/2007	X	X	X	X	No flow from culvert.
MVD1-22	7/3/2007	X	X	X	X	No flow from culvert.
MVD1-23	7/3/2007	X	X	X	X	Culvert submerged by detention pond water. No flow.
MVD1-24	7/2/2007	X	X	X	X	No flow from culvert.
MVD1-25	7/2/2007	X	X	X	X	No flow from culvert.
MVD1-26	7/2/2007	X	X	X	X	No flow from culvert.
MVD1-27	7/2/2007	X	X	X	X	No flow from culvert.
MVD1-28	7/2/2007	X	X	X	X	.5" of standing water in culvert.
MVD1-29	7/2/2007	X	X	X	X	Water flowing from pond into culvert.
MVD1-30	7/2/2007	X	X	X	X	No flow from culvert.
MVD1-31	7/2/2007	X	X	X	X	No flow from culvert.
MVD1-32	7/2/2007	X	X	X	X	1.5" of standing pond water in culvert.
MVD1-33	7/2/2007	X	X	X	X	2" of standing water in culvert.

MVD1-34	7/2/2007	X	X	X	X	No flow from culvert.
MVD1-35	7/2/2007	X	X	X	X	No flow from culvert.
MVD1-36	7/2/2007	X	X	X	X	No flow from culvert.
MVD1-37	7/10/2007	X	X	X	X	10" of standing water in culvert.
MVD1-38	7/10/2007	X	X	X	X	9" of standing water in culvert.
MVD1-39	7/10/2007	X	X	X	X	No flow from culvert.
MVD1-40	7/10/2007	X	X	X	X	No flow from culvert.
MVD1-41	7/10/2007	X	X	X	X	No flow from culvert.
MVD1-42	7/10/2007	X	X	X	X	No flow from culvert.

* Manhole

** Maintenance Required

The overall investigation of the Melvin Branch No. 1 and outfalls MVD1-01 to MVD1-42 were included in Group C in the five year reinspection cycle.

Any outfalls which exhibited obstructions, standing water, broken pipe, or other maintenance needs were also scheduled for further investigation and possible corrective action.

If the CCDC locates any additional point source discharges entering the drain during their IDEP investigation, the City of East Lansing will work with the Drain Commissioner to determine responsibility for those discharge pipes.

d). Subsequent Field Investigation & Results

The Melvin Drain- Branch No.1 subwatershed was included in the 2010 Annual Reinspection of Group C as part of the five-year cycle of reinspections. During the reinspection a field inspection report was completed at each outfall location to analyze dry weather flow characteristics of the discharge point and the receiving waters. This included observations of water clarity, color, and odor; the presence of suds, oil/bacterial sheens, sewage, floatable materials, and algae; staining of the banks and unusual vegetative growth. Discharge structures were also evaluated for the same characteristics along with structural stability.

None of the outfalls revealed signs of a potential illicit discharge. Visual inspections of the culvert conditions revealed no structural damage or erosion along the drain embankments.

Dry weather flow was observed at Outfall Numbers MVD1-30, MVD1-35, and MVD1-37 as a result of roadside drainage and a residential downspout. No samples were previously collected from the Melvin Drain Branch No. 1 during the initial drain evaluation completed in November of 2006.

With the presence of dry weather flow as a result of the surrounding road drainage systems and residential downspout connections, samples were collected at Outfall Numbers MVD1-30, MVD1-35 and MVD1-37.

Sample results of Outfalls MVD1-30, MVD1-35 and MVD1-37 revealed that discharges from these outfalls were in fact not illicit discharges. Lab results revealed that flow from the culverts is consistent of normal storm water; fecal contamination was not detected as reported by the City's Wastewater Treatment Plant Supervisor Catherine Garnham.

Eleven new discharges (MVD1-43 thru MVD1-53 inclusive) were identified in the Melvin Drain Branch No.1. The City updated its master spreadsheet and map for these subwatersheds to include all of the information (including size of discharge, condition of pipe, GPS coordinates, etc...) for the new discharges. MVD1-54 has now been added and will be included in the 2015 scheduled five year reinspection for the Melvin Branch No. 1 Drain.

A summary of the data collected from the site evaluations is shown in the following Table:

DRAIN: Melvin Branch No. 1 Drain		Available Files				COMMENTS:
NO:	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
MVD1-01	9/27/2010	X	X	X	X	No flow from culvert.
MVD1-02	9/27/2010	X	X	X	X	21.5' of standing water in culvert.
MVD1-03	9/27/2010	X	X	X	X	No flow from culvert.
MVD1-04	9/28/2010	X	X	X	X	Culvert submerged by pond water. No flow.
MVD1-05	9/28/2010	X	X	X	X	Standing water in culvert.
MVD1-06	9/28/2010	X	X	X	X	Standing water in culvert.
MVD1-07	9/28/2010	X	X	X	X	Culvert submerged by pond water. No flow.
MVD1-08	9/28/2010	X	X	X	X	No flow from culvert.
MVD1-09	9/28/2010	X	X	X	X	Culvert submerged by pond water. No flow.
MVD1-10	9/28/2010	X	X	X	X	Culvert submerged by pond water. No flow.
MVD1-11	9/28/2010	X	X	X	X	Culvert submerged by pond water. No flow.
MVD1-12	9/28/2010	X	X	X	X	Culvert submerged by pond water. No flow.
MVD1-13	9/28/2010	X	X	X	X	Culvert submerged by pond water. No flow.
MVD1-14	9/28/2010	X	X	X	X	Culvert submerged by pond water. No flow.
MVD1-15	9/28/2010	X	X	X	X	Culvert submerged by pond water. No flow.
MVD1-16	9/28/2010	X	X	X	X	No flow from culvert.
MVD1-17	9/28/2010	X	X	X	X	No flow from culvert.
MVD1-18	9/28/2010	X	X	X	X	Standing water in culvert.
MVD1-19	9/28/2010	X	X	X	X	Standing water in culvert.
MVD1-20	9/28/2010	X	X	X	X	Culvert submerged by pond water. No flow.

MVD1-21	9/28/2010	X	X	X	X	No flow from culvert.
MVD1-22	9/28/2010	X	X	X	X	Culvert submerged by pond water. No flow.
MVD1-23	9/28/2010	X	X	X	X	Culvert submerged by pond water. No flow.
MVD1-24	9/24/2010	X	X	X	X	No flow from culvert.
MVD1-25	9/27/2010	X	X	X	X	No flow from culvert.
MVD1-26	9/27/2010	X	X	X	X	Culvert submerged by pond water. No flow.
MVD1-27	9/27/2010	X	X	X	X	No flow from culvert.
MVD1-28	9/27/2010	X	X	X	X	No flow from culvert.
MVD1-29	9/24/2010	X	X	X	X	Standing water in culvert.
MVD1-30	9/24/2010	X	X	X	X	Sampled and verified in 2010. Lab results were negative.
MVD1-31	9/24/2010	X	X	X	X	No flow from culvert.
MVD1-32	9/24/2010	X	X	X	X	No flow from culvert.
MVD1-33	9/24/2010	X	X	X	X	No flow from culvert.
MVD1-34	9/24/2010	X	X	X	X	No flow from culvert.
MVD1-35	9/27/2010	X	X	X	X	Sampled and verified in 2010. Lab results were negative.
MVD1-36	9/27/2010	X	X	X	X	No flow from culvert.
MVD1-37	9/21/2010	X	X	X	X	Sampled and verified in 2010. Lab results were negative.
MVD1-38	9/21/2010	X	X	X	X	6" of standing water in culvert.
MVD1-39	9/21/2010	X	X	X	X	No flow from culvert. 3" of soil line culvert.
MVD1-40	9/24/2010	X	X	X	X	Standing water in culvert.
MVD1-41	9/24/2010	X	X	X	X	No flow from culvert.
MVD1-42	9/24/2010	X	X	X	X	No flow from culvert.
MVD1-43	9/24/2010	X	X	X	X	New culvert identified. Submerged by pond water. No flow.
MVD1-44	9/24/2010	X	X	X	X	New culvert identified. No flow from culvert.
MVD1-45	9/27/2010	X	X	X	X	New culvert identified. No flow from culvert.
MVD1-46	9/27/2010	X	X	X	X	New culvert identified. No flow from culvert.
MVD1-47	9/27/2010	X	X	X	X	New culvert identified. No flow from culvert.
MVD1-48	9/28/2010	X	X	X	X	New culvert identified. No flow from culvert.
MVD1-49	9/28/2010	X	X	X	X	New culvert identified. No flow from culvert.
MVD1-50	9/28/2010	X	X	X	X	New culvert identified. No flow from culvert. Yard drainage.
MVD1-51	9/28/2010	X	X	X	X	New culvert identified. No flow from culvert.
MVD1-52	9/28/2010	X	X	X	X	New culvert identified. No flow, residential downspout.
MVD1-53	9/28/2010	X	X	X	X	New culvert identified. No flow from culvert.

* Manhole

** Maintenance required

Lab Results

Tested Elements

ID:	CBOD5	NH3-N	Tot. P	Susp. Solids	Fecal Coliform
MVD1-30	2.40 mg/l	0.20 mg/l	0.14 mg/l	14 mg/l	ND
MVD1-35	2.20 mg/l	0.10 mg/l	0.04 mg/l	236 mg/l	ND
MVD1-37	8.00 mg/l	0.10 mg/l	0.10 mg/l	82 mg/l	ND

Typical Raw Sewage Values:

CBOD5	NH3-N	Tot. P	Susp. Solids	Fecal Coliform
100-200 mg/l	5-25 mg/l	3-8 mg/l	100-200 mg/l	Billions/100 ml

Outfalls which exhibited obstructions or broken pipe sections were reported to the DPW for corrective action.

11. MELVIN BRANCH NO. 2

a). Background:

The Melvin Drain Branch No. 2 begins at the Melvin Drain at the northeast corner of the City of East Lansing DPW Facility and then proceeds south along the east side of the property to the intersection of State Road and Coolidge Road.

The Melvin Branch No. 2 Drain is under the authority of the Clinton County Drain Commissioner.

b). Review of Records:

A preliminary review of office records and initial field investigation resulted in the identification of the point source discharges shown in Table O. The location of the various point source discharges is shown on Figure No. 15.

**POINT SOURCE DISCHARGES
MELVIN BRANCH NO. 2 DRAIN
TABLE O**

<u>Outfall ID</u>	<u>Description</u>
MV2-01	MS4 36" Storm Sewer Outlet for E.L. DPW North of State
MV2-02	MS4 18" Storm Sewer Outlet from Farm Land East of E.L. DPW
MV2-03	MS4 12" Storm Sewer Outlet for State Road (West Bound)
MV2-04*	- - 4" Storm Sewer Outlet for Agricultural Land

*Outfall added in 2010 as part of five year reinspection

The existing point source discharges listed in Table O are active municipal separate storm water discharges regulated under the authority of the City of East Lansing. As such, these point source discharges will be investigated further and if necessary sampled and tested for illicit discharges by the City of East Lansing.

c). Field Investigation:

The initial analysis of the Melvin Branch No. 2 was conducted in December 2006. Upon identifying all outfalls, an inventory sheet containing the culvert’s size, location, and amount of flow present was completed for each outfall. The City’s file for each outfall also includes digital camera photos, aerial photos, a location sketch, and a copy of the appropriate storm sewer atlas map. No outfall samples were collected for the Melvin Branch No. 2 during the initial field investigation, as all waters at these locations appeared to be free of odors, deposits, floatable matter, and/or other signs of an illicit discharge.

In July 2007, the City of East Lansing returned to the Melvin Branch No. 2 to further evaluate the identified outfalls during dry weather conditions. Of the three identified outfalls, none revealed signs of a potential illicit discharge.

No flow and/or standing water only was observed at the three outfalls. Again, there was no evidence of odors, deposits, floatable matter, and/or other signs of a potential illicit discharge during this subsequent investigation. A summary of the data collected from the site evaluations is shown on the following table:

DRAIN: Melvin Drain-Branch No. 2		Available Files				COMMENTS:
No.	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
MV2-01	7/2/2007	X	X	X	X	4" of standing storm water in culvert & drain.
MV2-02	7/2/2007	X	X	X	X	3" of standing water in culvert.
MV2-03	7/2/2007	X	X	X	X	No flow from culvert.

* Manhole

** Maintenance Required

The overall investigation of the Melvin Branch No. 2 and outfalls MV2-01 to MV2-03 were included in Group C in the five year reinspection cycle.

Any outfalls which exhibited obstructions, standing water, broken pipe, or other maintenance needs were also scheduled for further investigation and possible corrective action.

If the CCDC locates any additional point source discharges entering the drain during their IDEP investigation, the City of East Lansing will work with the Drain Commissioner to determine responsibility for those discharge pipes.

d). Subsequent Field Investigation & Results

The Melvin Branch No. 2 subwatershed was included in the 2010 Annual Reinspection of Group C as part of the five-year cycle of reinspections. During the reinspection a field inspection report was completed at each outfall location to analyze dry weather flow characteristics of the discharge point and the receiving waters. This included observations of water clarity, color, and odor; the presence of suds, oil/bacterial sheens, sewage, floatable materials, and algae; staining of the banks and unusual vegetative growth. Discharge structures were also evaluated for the same characteristics along with structural stability.

None of the outfalls revealed signs of a potential illicit discharge. Visual inspections of the culvert conditions revealed no structural damage or erosion along the drain embankments.

No dry weather flow was observed at any of the outfalls.

During the field investigation, 1 new discharge (MV2-04) was identified in the Melvin Drain Branch No. 2. The City also updated its master spreadsheet and map for these subwatersheds to include all of the information (including size of discharge, condition of pipe, GPS coordinates, etc...) for the new discharge.

A summary of the data collected from the site evaluations is shown in the following Table:

DRAIN: Melvin Branch No. 2		Available Files				COMMENTS:
NO:	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
MV2-01	9/21/2010	X	X	X	X	1.5" of standing storm water in culvert. No flow.
MV2-02	9/21/2010	X	X	X	X	No flow from culvert. 2" of soil line invert.
MV2-03	9/21/2010	X	X	X	X	No flow from culvert.
MV2-04	9/21/2010	X	X	X	X	New outfall identified. No flow from culvert.

* Manhole

** Maintenance required

Outfalls which exhibited obstructions or broken pipe sections were reported to the DPW for corrective action.

12. TOWAR SNELL DRAIN

a). Background:

The Towar Snell Drain begins at the Remy Chandler Branch No. 2 on the east side of Abbot Road at a point approximately 800 feet north of Lake Lansing

Road and then proceeds easterly approximately 1,200 feet to the City Limits and Meridian Township.

The flow from the Towar Snell Drain enters the enclosed portion of the Remy Chandler Branch No. 2 through an existing 24” diameter pipe from a control structure located at the west end of the Towar Snell Drain. The drain within the City of East Lansing limits includes large regulated wetlands to help with cleansing and flow equalization.

The Towar Snell Drain is an inter-county drain between Ingham and Clinton Counties.

b). Review of Records:

A preliminary review of office records and initial field investigation resulted in the identification of the point source discharges shown in Table P. The location of the various point source discharges is shown on Figure No. 16.

This Table only includes that portion of the Towar Snell Drain that lies within the City limits of East Lansing.

**POINT SOURCE DISCHARGES
TOWAR SNELL DRAIN
TABLE P**

<u>Outfall ID</u>	<u>Description</u>
TS-02	-- 18” Outlet from CBs at Gaslight Village Development

The existing point source discharge listed in Table E is an active municipal separate storm water discharge regulated under the authority of the City of East Lansing. As such, this point source discharge will be investigated further and if necessary sampled and tested for illicit discharges by the City of East Lansing.

TS-01 was the discharge point for the Remy Chandler Branch No. 2 to the south which is under the jurisdiction of the Inter-County Drainage Board.

c). Initial Field Investigations & Results:

The initial analysis of the Towar Snell Drain was conducted in October 2006. Upon identifying all outfalls, an inventory sheet containing the culvert’s size, location, and amount of flow present was completed. The City’s file for each outfall also includes digital camera photos, aerial photos, a location sketch, and a copy of the appropriate storm sewer atlas map. No outfall samples were collected for the Towar Snell Drain during the initial field investigation, as all

waters at these locations appeared to be free of odors, deposits, floatable matter, and/or other signs of an illicit discharge.

In July 2007, the City of East Lansing returned to the Towar Snell Drain to further evaluate the identified outfalls during dry weather conditions. The one identified outfall revealed no signs of a potential illicit discharge.

No flow and/or standing water only was observed at the outfall. Again, there was no evidence of odors, deposits, floatable matter, and/or other signs of a potential illicit discharge during this subsequent investigation. A summary of the data collected from the site evaluations is shown on the following table:

DRAIN: Towar-Snell Drain		Available Files				COMMENTS:
No.	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
TS-02	7/10/2007	X	X	X	X	No flow from culvert.

* Manhole

** Maintenance Required

The overall investigation of the Towar Snell Drain and outfall TS-02 were included in Group A in the five year reinspection cycle.

Any outfalls which exhibited obstructions, standing water, broken pipe, or other maintenance needs were also scheduled for further investigation and possible corrective action.

If the CCDC or ICDC locates any additional point source discharges entering the drain during their IDEP investigations, the City of East Lansing will work with the Drain Commissioners to determine responsibility for those discharge pipes.

d). Subsequent Field Investigation & Results

The Towar Snell Drain subwatershed was included in the 2008 Annual Reinspection of Group A as part of the five-year cycle of reinspections. During the reinspection a field inspection report was completed at each outfall location to analyze dry weather flow characteristics of the discharge point and the receiving waters. This included observations of water clarity, color, and odor; the presence of suds, oil/bacterial sheens, sewage, floatable materials, and algae; staining of the banks and unusual vegetative growth. Discharge structures were also evaluated for the same characteristics along with structural stability.

Visual inspections of the culvert conditions revealed no structural damage or obstruction of potential flow.

No dry weather flow was observed at any of the outfalls.

No new discharges were identified.

A summary of the data collected from the site evaluations is shown in the following Table:

DRAIN: Towar Snell Drain		Available Files				COMMENTS:
NO:	D.O.L. INSP.	LOC. SKETCH	CULVERT PHOTOS	AERIAL PHOTO MAPPING	GPS	
TS-02	9/24/2008	X	X	X	X	No flow from culvert.

* Manhole

** Maintenance required

Outfalls which exhibited obstructions or broken pipe sections were reported to the DPW for corrective action.

E. DRAWINGS & RECORDS

The City maintains drawings and records of its infrastructure in the Engineering Division at the Department of Public Works Facility at 1800 State Road in East Lansing. The drawings and records consists of three general categories; atlases, construction drawings for public rights-of-ways, and site plan files. The City maintains atlases for its storm sewers, sanitary sewers, combined sewers, and water mains. The atlases use a parcel map as the base drawing. The storm sewer atlases generally show the following; sewer size, manholes, catch basins, and outlets.

The City is currently developing a GIS based version of the atlases. The GIS version is being updated and where possible GPS data is being incorporated.

The construction drawings for public rights-of-ways represent past projects undertaken by the City to construct or reconstruct various components of the public infrastructure located within their roadways- streets, curb and gutters, sidewalks, sewers, water mains, etc..... These drawings normally include various generations of projects. Most project drawings show the municipal storm sewer system.

The site plan drawings provide details on the storm sewer systems that are constructed as part of commercial and multi-family residential developments in the City. Although these separate storm sewer systems often remain privately owned, they do connect to the City's storm sewer system or directly to the County and Inter-County Drains. These separate private storm sewer system are included in and must be reviewed and approved by the City as part of its site plan review process. Often times, storm water retention is required before being allowed to discharge off site. These private storm sewer systems are denoted on the atlases as "private". The discharges from the private parcels are included in the Table of Discharge Points for each of the 19 subwatersheds described in Sections B through D and are included in the list of discharge points that are reinspected in the five year cycle. These private discharge points are however not included in the list of discharge points submitted to MDEQ for permitting as an MS4 outfall or discharge point for the City of East Lansing.

F. ORDINANCE REVIEW

The City reviewed its Municipal Code prior to the 2008 submittal to MDEQ in regards to meeting the requirements of the NPDES Storm Water Phase 2 regulations. In particular, the City evaluated its ability to meet the following objectives:

- Ability to regulate the contributions of pollutants to the municipal separate storm sewer system.
- Ability to prohibit illicit connections and illicit discharges to the municipal separate storm sewer system.
- Ability to carry out all inspections, surveillances, and monitoring procedures necessary to ensure compliance with the requirements of the City's Stormwater Phase 2 NPDES permit.

The existing Municipal Code did not contain a specific section dedicated to the municipal separate storm sewer system. As such, many of the references addressing the three issues listed above were scattered and/or fragmented throughout the code.

Therefore, the City has enacted a new section to the Municipal Code- CHAPTER 46- UTILITIES, ARTICLE IV., SEPARATE STORM SEWER SYSTEM SERVICE. The proposed wording for this new section was based largely upon the USEPA Model Ordinance. Some minor modifications were made to conform to the MDEQ wording found in our NPDES Permit.

The City adopted Ordinance No. 1182 enacting this new section to the City Code on November 7, 2007.

G. FIELD IDENTIFICATION & REVIEW

Initial Field Identification & Review Prior to 2008 Submittal to MDEQ:

The listing of point source discharges in each of the 7 drainage basins in the Red Cedar River Watershed in Section C and the 12 drainage basins in the Looking Glass River Watershed in Section D were identified using office records and field investigation. The City of East Lansing Engineering Department reviewed its sewer atlases, individual as-built drawings, and other historical records to identify as many point sources as possible prior to beginning actual field investigations. The Engineering Department staff then walked each of the 19 drainage basins to locate point source discharges. The initial field investigation found several additional discharge points not shown on the City's records. The original field investigations included specific attention to the presence/absence of flow; presence of any evidence of odors, deposits, floatable matter; and/or other signs of a potential illicit discharge.

The Engineering Department staff then prepared a file on each of the individual discharge points. The file includes the following data:

- Drainage System Inventory Sheet- This document includes the location of the discharge including GPS coordinates, type of structure, manhole information where applicable, culvert information, natural channel cross-section, and a location sketch.
- A photograph of the discharge point.
- An aerial photograph of the location of the point source discharge and surrounding area. The point was located using the GPS coordinates. The invert elevation of the discharge point is also shown based on the GPS field data.
- A copy of the appropriate City storm sewer atlas showing the overall drain and storm sewer system in the immediate vicinity. The atlas will help identify the area tributary to each discharge (for tracking potential illicit dischargers).

In many instances, the Engineering staff visited the individual discharge points on more than one occasion including during dry weather conditions in order to gather all of the information.

The Engineering staff returned to all of the original individual discharge points following a sustained period of no rainfall to visually inspect the discharge point for signs of flow. This information has been recorded and included in the individual files for each discharge point.

Subsequent Field Identification & Review As Part of the Five Year Reinspection Cycle

The City of East Lansing's established an ongoing and sustainable IDEP program for protecting the waters of the State that's provides for continually updating the IDEP document as new discharges are constructed and monitoring designated drains and discharges over a five year rotation process. This will allow for further evaluation of the identified outfalls and any new flows. When necessary, dry weather samples will be collected to determine their contents. If illicit discharges are discovered they will be dealt with in a timely manner.

The following is the tentative schedule established for the City's five year IDEP review and reinspection cycle:

- Group A: (2008)/2013 – Moore Branch Drain, Remy Chandler Drain, Remy Chandler Drain Branch No. 2, and Towar Snell Drain.
- Group B: (2009)/2014 – Sanderson Drain.
- Group C: (2010)/2015 – Melvin Drain, Melvin Drain Branch No. 1, Melvin Drain Branch No. 2.

- Group D: (2011)/2016 – Friegal Drain, Greencrest Drain, Heritage Hill Drain, Smedley-Coolidge Drain, and Taylor Drain.
- Group E: (2012)/2017 – Foreback Drain, Goritz Drain, and Red Cedar River.

The field investigations during the five year cycle of reinspections included specific attention to observations of presence/absence of flow; water clarity, color, and odor; the presence of suds, oil/bacterial sheens, sewage, floatable materials, and algae; staining of the banks and unusual vegetative growth. Discharge structures were also evaluated for the same characteristics along with structural stability.

H. DISCHARGE SAMPLING & ANALYSIS

Discharge points that require sampling are determined as discussed in Section F above. The City of East Lansing completed its original screening of all known sites in 2008 and has now completed an entire five year cycle of reinspections. To date, the total number of potential discharges in any single year that required sampling to determine whether an illicit discharge existed was five or less. Thus, the City has elected to not utilize field testing as a means of determining whether a flow is from an illicit source or not. Field testing equipment for such a small number of tests conducted each year is not considered feasible.

The City has therefore elected to take samples, preserving them, and have them analyzed at the City's Wastewater Treatment Plant laboratory. A 1 liter sample is collected from the discharge source and immediately brought to the lab for analysis. Samples are tested to evaluate levels of Ammonia Nitrogen, Residual Chlorine, pH, Phosphorus, Suspended Solids, Fecal Coliform Bacteria, Temperature, and Carbonaceous Biochemical Oxygen Demand. Results are summarized in the individual files for each discharge point and corrective actions are implemented when necessary.

During the scheduled annual inspections (part of the five year reinspection cycle), the inspectors will be prepared to take the samples the day of the original inspection.

If a potential illicit discharge is reported by the public or other city staff members, the discharge will be investigated within two work days of notification. If it is determined that the discharge may be an illicit discharge, a sample will be collected at that time and tested.

I. ELIMINATION OF ILLICIT DISCHARGES

As noted above, potential illicit discharges identified through field investigations are confirmed by sampling and testing to confirm whether or not the discharge is in fact an illicit discharge. If a discharge is confirmed to be an illicit discharge, a combination of methods is available to isolate its specific source.

If the test results for the illicit discharge indicates that the flow is other than normal domestic flow, then the investigation can initially be directed to commercial establishments that may match the characteristics of the discharge (i.e. dry cleaners, printers, restaurants, etc....).

The first step in the investigation usually consists of reviewing the City's drawings and records to determine the extent of the sewer system upstream of the discharge point and map that system. The nature and extent of the potential discharges in the isolated area can be verified by a simple windshield survey.

Once the extent of the sewer system is known, field crews can strategically inspect manholes within the storm sewer system to sample and measure specific chemical or physical indicators that can help isolate the discharge. This process involves progressive sampling at manholes in the storm sewer system to narrow the discharge down to an isolated segment between two manholes. Depending on the size of the storm sewer system, crews can either work progressively up the sewer system from the outfall and test manholes along the way or split the sewer system into equal segments and test manholes at strategic junctions in the storm sewer system.

Once the pipe segment has been identified, on-site investigations are used to find the specific illicit discharge or improper connection. On-site methods used to trace the source of an illicit discharge in a pipe segment include dye testing, televising, and smoke testing. The City of East Lansing has the equipment and capability to perform all of these methods.

As noted in Sections B and C, the City has previously been successful in investigating and tracing the source of an illicit discharge to its specific point of origin using the process described above.

Once the source of the illicit discharge is identified, the City has two options:

- (1) If it is determined that the illicit discharge could have severe impacts on the waters of the state, "City Ordinance Sec. 46-204(a) Suspension due to illicit discharge in emergency situations" states that "The City may without prior notice suspend municipal separate storm sewer discharge

access.” This is normally accomplished by plugging or excavating and disconnecting the private storm sewer lead at the public right-of-way.

- (2) If it is determined that the illicit discharge will not have a severe impact on waters of the state, the City will immediately proceed with further investigation on-site and develop a plan for elimination of the illicit discharge in accordance with “City Ordinance Sec 46-204(b) Suspension due to detection of illicit discharge. Under “City Ordinance Sec. 46-2006 Access to facilities, The City shall be permitted to enter and inspect premises subject to regulation under this article as often as may be necessary to determine compliance with this article.” Once access to the facility is gained, the City will attempt to locate the source of the illicit discharge, the specific material(s) being discharged and other pertinent information. If necessary, the Ordinance states that “The City has the right to set up on any premises such devices as are necessary in the opinion of the city to conduct monitoring and/or sampling of the facility’s storm water discharge.”

Once the source and material causing the illicit discharge is identified, the City will develop a written plan and schedule for the elimination of the illicit discharge. The written plan and schedule will be presented to the owner of the facility immediately upon completion.

It is anticipated that most causes of illicit discharges involving leaking pipes, valves, tanks, etc...; overflowing containment facilities; poor housekeeping practices; and other items involving minor corrections will be required to be corrected within 24 to 48 hours of notification.

It is anticipated that some causes of illicit discharges involving excavation and repairs and/or replacement of underground infrastructure; repairs and or replacement of major equipment components; structural repairs; and other more extensive corrections may be given up to 5 days from notification to complete.

It is anticipated that in some unusual instances the elimination of the illicit discharge may require more than 5 days from notification. In these instances, intermediate goals and timelines for reducing specified amounts of the discharge may be included in the plan presented to the facility.

J. ANALYSIS OF ON-SITE SEWAGE DISPOSAL SYSTEM PROGRAM

The West Road and Coleman Road sewer extensions were completed in the fall of 2007 providing sewer service to an area that was previously serviced by septic tanks only. For this area, the City has established a policy that the existing septic tanks can continue in service serving the existing structures only. At such time as the property redevelops, the property is significantly modified, or the existing septic system requires upgrading or replacement, the septic systems must be properly abandoned and the property will be required to connect to the City's municipal sanitary sewer system.

No other improved areas of the City are unsewered at this time.

Enforcement of the septic systems will continue to reside with the Ingham County Health Department and Mid Michigan District Health Department (Clinton County).

K. RESPONSE TO SPILLS OR OTHER RELEASES OF POLLUTING MATERIALS AT MUNICIPAL FACILITIES

The City of East Lansing adopted the BMPs recommended in the "Good Housekeeping and Pollution Prevention for Municipal Activities" as prepared by the GLRC Ordinance Committee. Specifically, BMP SC-2 "Spill Prevention, Control & Cleanup" outlines the process and procedure for addressing a spill at the City's own facilities.

The City has prepared three related spill prevention and control plans:

- A Pollution Incident Prevention Plan (PIPP).
- A Spill Prevention Control & Countermeasure (SPCC) Plan.
- A Storm Water Pollution Prevention Plan (SWPP).

Pollution Incident Prevention Plan (PIPP):

Under Part 31 of Act 451 of the State of Michigan, certain facilities are required to develop a Pollution Incident Prevention Plan (PIPP) in order to protect human health and the environment.

Effective August 31, 2001, the Part 5 Spillage of Oil and Polluting Materials administrative rules promulgated pursuant to Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451) MCL 324.3101 et seq. were revised. The

previous rules were rescinded and new rules (R324.2001 through R324.2009) were promulgated to address release prevention planning, secondary containment, surveillance, and release reporting requirements.

The City's current draft PIPP was developed in accordance with the new rules promulgated in 2001. In particular, the plan was developed in accordance with Rule 6 (R 324.2006) Pollution Incident Prevention Plan following the outline provided by MDNRE in their June 2003 document entitled "Pollution Incident Prevention Plan (PIPP) and Part 5 Rules- Information Packet".

The Part 5 Rules specifically require that a PIPP be prepared whenever the amount of polluting materials stored at a site exceeds the "threshold management quantities" identified in the Rule. The City of East Lansing's DPW Facility does in fact store the following materials on-site in quantities which exceed those specified threshold management quantities: (1) salt in solid form in excess of 5 tons; (2) salt in liquid form in excess of 1,000 gallons; and (3) oil products in aboveground storage tanks or containers in excess of 1,320 gallons.

The DPW Facility also includes a fueling depot on-site which has two 25,000 gallon underground tanks. The tanks are regulated separately under Parts 211 and 213 of Act 451. As such, the underground storage tanks themselves are exempt from the PIPP requirements. However, the City did include in their PIPP some details pertaining to a spill, leak, or discharge associated with the filling of the underground tanks and the dispensing of fuel from the pumps at the fueling depot.

Spill Prevention, Control, and Countermeasure (SPCC) Plan:

Under Title 40, Code of Federal Regulations, Part 112 (40 CFR Part 112), certain facilities are required to have a Spill Prevention, Control, and Countermeasure (SPCC) plan in accordance with the Federal Clean Water Act as administered by the U.S. EPA.

The SPCC regulations originated in the Federal Water Pollution Act of 1972 (later renamed the Clean Water Act). The SPCC regulations were modified extensively on July 17, 2002.

The City's current draft SPCC plan was developed using the latest posted version of 40CFR Part 112, as of June 1, 2006, and the U.S. EPA document entitled "SPCC Guidance for Regional Inspectors" Version 1.0, dated November 28, 2005.

The SPCC regulations specifically pertain to the DPW Facility's aboveground oil storage areas. The DPW facility also includes a fueling depot which has two 25,000 gallon underground tanks. The tanks are exempted from the federal SPCC regulations in accordance with Section 112.1(d) (4). The tanks are however, regulated by the State of Michigan under Parts 211 and 213, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451).

Storm Water Pollution Prevention Plan (SWPPP):

MDNRE recommends that a Storm Water Pollution Prevention Plan (SWPPP) be implemented for all municipal fleet maintenance and storage yards that are not regulated as industrial activities. The SWPPP was developed in accordance with guidance provided by MDNRE. In general, the SWPPP follows and incorporate the requirements identified in MDNRE's Industrial Storm Water Permit Program.

The City's fuel storage and dispensing; vehicle maintenance operations; waste disposal operations; material handling and storage; and salt storage and loading operations are located at the Department of Public Works Facility at 1800 East State Road.

The City of East Lansing noted that much of the data listed in the guidance documents was already contained in its existing draft Pollution Prevention Incident Plan (PIPP) and Spill Prevention, Control, and Countermeasure (SPCC) plan.

Notification of a Spill:

Each of the three plans provides guidelines for notifying the proper authority when a spill exceeding a designated threshold limit occurs.

L. RESPONSE TO REPORT OF POTENTIAL ILLICIT DISCHARGES, ILLEGAL DUMPING OR SPILLS

The City of East Lansing and the GLRC websites provide information for citizens to notify the proper authorities if they witness a potential illicit discharge, illegal dumping or spill, spill or other release of a polluting material.

The City will notify the Water Resources Department of a release of polluting materials from any portions of the City of East Lansing's MS4 to waters 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.

If the discharge is associated with a fire, traffic accident or other emergency situation, the first responders will evaluate the situation and determine the proper course of action. If necessary, the City of East Lansing is part of the regional Hazmat Team that is trained to respond to emergency spills.

In the case of a local citizens or City personnel noticing a potential illicit discharge into the storm drainage system; illegal dumping of any material into a drain or in a location that can potentially discharge into the drainage system; or a spill of a potentially hazardous material that can enter the drainage system the Department of Public Works should ultimately be notified. Examples include the following:

- A citizen or City personnel walking along any drain notices that the discharge from an outfall along the drain has an unusual odor, sheen, color, or other characteristics not normally associated with a storm water discharge.
- A citizen or City personnel notices a large puddle of oil, antifreeze or other motor fluid beneath a vehicle in a parking lot or other location where the fluid can runoff into a catch basin.
- A citizen or City staff notices inappropriate debris discarded along the roadway, in drainage ditches, etc... This may include such things as branches and yard wastes; mattresses and other unwanted household items, Christmas trees, etc...

The Department of Public Works will evaluate the calls when received and determine who and how quickly someone will investigate the reported incident. Once the reported incident is reviewed in the field, the situation will be resolved accordingly. In the case of a potential illicit discharge from an outfall into a Water of the State or other drainage body, the procedures outlined above in sections G. Field Identification & Review; H. Discharge Sampling & Analysis; and I. Elimination of Illicit Discharges will be followed.

M. Program to Train City Staff Who Are Involved in Illicit Discharge-Related Activities

The City of East Lansing has assigned 2 members of the Engineering Division's staff to oversee the IDEP program, perform the annual IDEP inspections, and prepare the annual IDEP report. One of the two staff members is an active member of the GLRC IDEP Committee. The GLRC IDEP Committee has actively followed the development and changes initiated by MDEQ in the establishment of the IDEP requirements under the Watershed General Permit. The GLRC IDEP Committee has included training for the IDEP inspectors and people associated with the IDEP program. The City of East Lansing has participated in those training sessions.

The GLRC and/or in-house training for those persons directly overseeing the IDEP program will continue to be addressed within one year of a change in staff assignments; whenever IDEP related policies and procedures are updated by MDEQ; or when the City modifies its IDEP program in response to program evaluation findings.

In addition, members of the Department of Public Work's Sewer Maintenance Division, Parks Division, etc... whose daily work assignments have the potential for witnessing potential illicit discharges or connections, will receive training on identifying illicit discharges as part of the good housekeeping BMP and IDEP training.

New staff or staff newly assigned to these duties will receive training within one year of hire or reassignment and all staff assigned to these duties will receive training once during the permit cycle.

The following training aides have been purchased by the GLRC specifically for training individual municipal employees on recognizing and responding to potential illicit discharges: Illicit Discharge Detection & Elimination (IDDE), a Grate Concern (30 minutes).

N. Determining the Effectiveness of the Illicit Discharge Elimination Program

The effectiveness of the IDEP program can best be measured by the number of suspected illicit discharges that are actually confirmed and then removed.

In the City's original IDEP Program, submitted in April 2008, all known discharges in all subwatersheds were identified and an initial dry weather inspection completed on each. During this initial phase of the IDEP program any outfalls exhibiting a discharge during dry weather flow conditions were investigated. Where dry weather flow was observed the City proceeded as described above to determine the nature of the flow and the level of investigation or sampling needed.

The annual IDEP evaluations in 2008 through 2012 also included dry weather inspections of the specific discharges included in each year's review. The results of the field investigations covering the first five year cycle of reinspections are shown in the attached table.

This table will be updated after each year's IDEP investigation. The data, and any trends in the data, will be evaluated to help determine the program's effectiveness in eliminating illicit discharges. As an example if the City's annual IDEP evaluation finds an increased level of illicit discharges in a certain area, the City may want to increase its level of investigation in that area. In addition, spills, illegal dumping, septic system failures and other activities will be monitored to determine whether the existing program including its enforcement mechanisms adequately and effectively address these issues, and if not, the City will modify its IDEP accordingly.

The City will maintain records of any illicit discharges that are identified. The records will include copies of enforcement actions, details of the methods for eliminating the discharge, and follow up investigation to assure that the discharge has been permanently removed.

DRY WEATHER INVESTIGATIONS OF MS4 DISCHARGES

	Initial Report April 2008	2008 Report	2009 Report	2010 Report	2011 Report	2012 Report
1. Number of Outfalls Inspected	240	50	38	61	46	24
2. Number of Discharges Exhibiting Flow	13	5	2	3	4	3
3. Number of Discharges Determined Without Sampling To Be Acceptable Discharges	2	5	1	0	0	0
4. Number of Discharges Sampled to Determine If They May Be Illicit Discharges	11	0	1	3	4	3
5. Number of Illicit Discharge Points Confirmed Thru Sampling	1 *	0	0	0	0	2**
4. Number of Illicit Discharges Identified	1 *	-	-	-	-	2**
5. Number of Illicit Discharges Removed	1*	-	-	-	-	2**
6. Number of Enforcement Actions Taken	0	0	0	0	0	0
7. Number of Spill Incidents Reported/Detected	0	0	0	0	0	0
8. Number of Incidents Illegal Dumping Reported/Detected	0	0	0	0	0	0

* The sampling and investigation showed one outfall did exhibit characteristics of an illicit discharge- RC-10. The source of the illicit discharge was traced to a sanitary sewer lead on Beal Street. This sanitary sewer lead was immediately removed from the storm sewer system and connected to the sanitary sewer system. No enforcement action was required. Illicit discharge removed was estimated at 400 gpd.

** The sampling and investigation showed two outfalls did exhibit characteristics of an illicit discharge- RC-10 and RC-21. The source of the illicit discharges from RC-10 was traced to two sanitary sewer lead on Beal Street. These sanitary sewer leads were immediately removed from the storm sewer system and connected to the sanitary sewer system. No enforcement action was required. Illicit discharge removed was estimated at 500 gpd. The source of the illicit discharges from RC-21 was found to be caused by an overflow from a plugged sanitary sewer line in Michigan Avenue. The two existing services on that sanitary sewer line are being scheduled for relocation into other sewers.