

**Wayne County ARC 2014 Illicit Discharge Elimination Plan (IDEP)
Activities
2014 Summary Report**

Introduction

Wayne County Department of Public Services, Water Quality Management Division (WQMD) utilized IDEP Field Investigation funding (ARC 2014 Budget TC3) allocated to Wayne County to conduct advanced investigations in IDEP/PEP 1st and 2nd priority areas as identified in Figure 1: *Priority Areas for E. coli TMDL in 2009-1015*. Activities are summarized below for each task of the work plan.

Work Plan

Task 1: Update Priority Areas

WQMD identified an additional priority area for commercial facility dye testing at Eight Mile Road and Grand River Ave in Upper Subwatershed. (See Figure 2: *Alliance of Rouge Communities Municipal Facility Dye Testing 2011-2014*). The business inventory for this area was developed, and 15 businesses were initially identified for facility dye test investigations.

Task 2: Dye Test Alliance of Rouge Communities Municipal Facilities.

WQMD surveyed ARC members in April 2014 to determine which municipalities requested their facilities to be inspected. Six ARC members responded and three requested municipal facility inspections. Municipal facilities were dye tested based on this survey and those municipal facilities not completed in 2013. (See Figure 2: *Alliance of Rouge Communities Municipal Facility Dye Testing 2014*). Eleven municipal facilities were inspected and six illicit connections (floor drains) and one illicit discharge (outdoor vehicle washing) were discovered at three facilities in 2014.

WQMD staff followed up at two municipal facilities with outstanding illicit connections and are in consultation with the municipality about a plan to correct the illicit connections. This plan was finalized and the illicit connections are on track to be corrected by February 28, 2015.

Attachment A is the summary of municipal facilities dye tested since 2011. Current status may not be reflected in the spreadsheets. Communities may not have informed us when corrections were made.

Table 1 is an estimated loading reduction to the Rouge River watershed as a result of the elimination of the illicit connections/discharges found at municipal facilities for the period, 2011 through 2014. Figure 3 represents the types of illicit connections/discharges found from 2011 through 2014.

Table 1: Estimated Pollutant Load Reductions to the Rouge River Watershed from Municipal Facilities (2011-2014)

Estimated amount of material prevented from entering Rouge River Watershed ¹	Parameter	Lbs./yr.
	Surfactant	1,986
	Potassium	1,741
	Ammonia	8
	Total	3,737
	Flow (Gals/yr.)	4,399,425

1. The loading reductions assume removal of all illicit connections/discharges

Task 3: Dye Test Commercial/Industrial Facilities within the Priority Areas.

The commercial facilities identified in Task 1 that were not previously inspected were dye tested with Wayne County funds and not charged to the ARC. Note- Review of the files found that many of these businesses have been dye test. Field observations found that some no longer exist the structures were demolished for redevelopment. Three commercial facilities were dye tested. The facilities did not have illicit connections or discharges.

Complaint/Spill Response: The WQMD staff collaborated with the City of Northville staff to investigate an oil spill to the Johnson Creek in the Middle Rouge. The source of the oil was identified as a hydraulic elevator with a broken seal in a nearby commercial facility. The hydraulic fluid reached the foundation sump and was discharged to a privately owned storm sewer system that drained to the Johnson Creek (See Figure 4: *Privates Storm Sewer Discharge to Johnson Creek*) The owner of the facility accepted responsibility and secured a cleanup contractor to clean up the spill to the satisfaction of the Michigan Department of Environmental Quality. The City of Northville Fire Department was planning to seek reimbursement for the Hazmat response involving the spill.

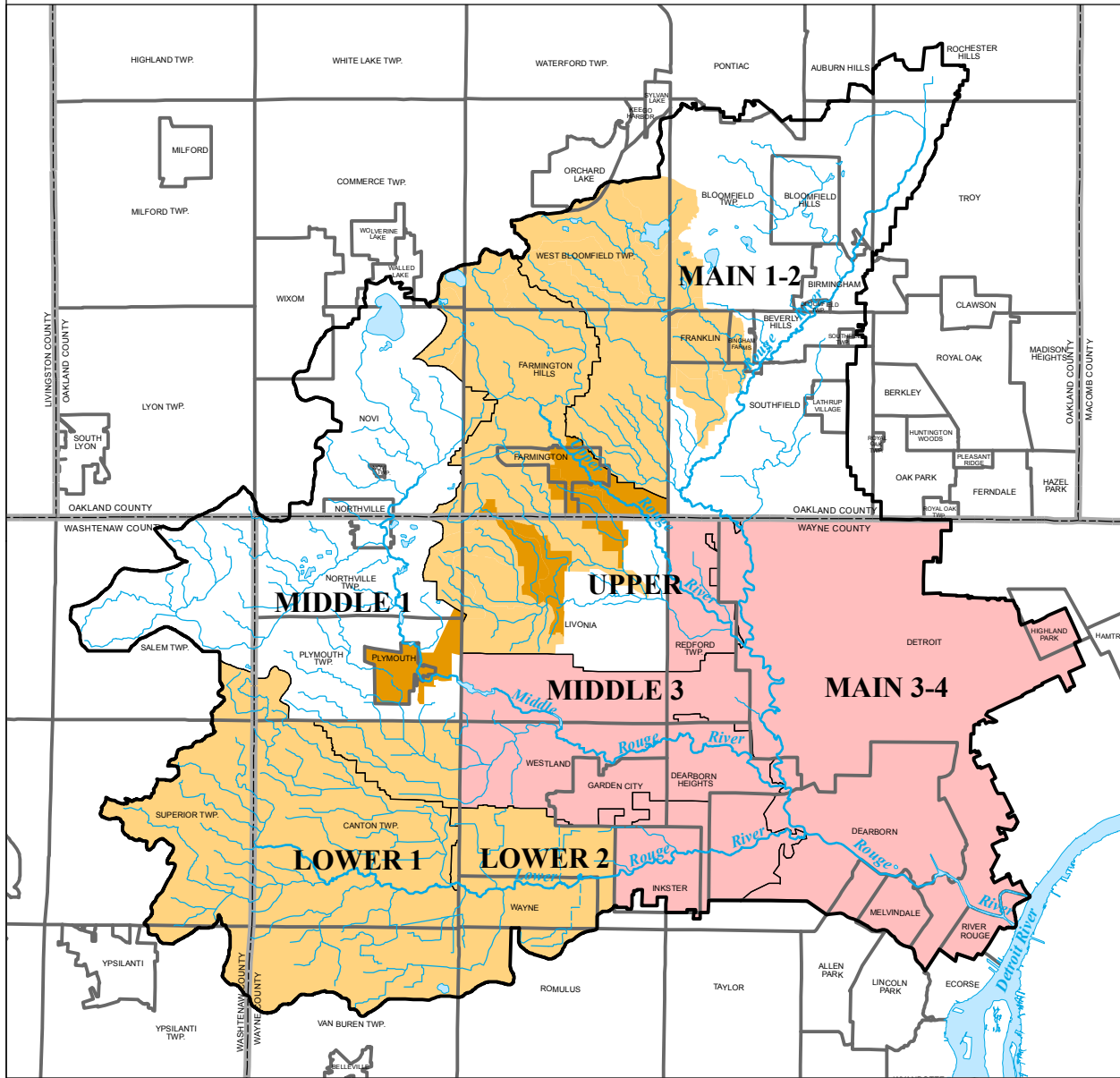
Task 4: Investigative Monitoring and Residential Dye Testing.

Three locations in the Middle and Upper Rouge Subwatersheds were sampled for *E. coli*, surfactants, ammonia, and conductivity to determine if additional investigative efforts are required. Attachment B: *Illicit Discharge Elimination Investigation (IDEP) Monitoring Report* is the report on this effort.

Task 5: Reporting

WQMD staff prepared activity reports for the ARC as requested and tracked costs to the ARC.

Figure 1
ROUGE RIVER WATERSHED
Priority Areas for *E. coli* TMDL in 2009-15



LEGEND

- Rouge watershed boundary
- Rouge River main branch
- Tributary
- Enclosed drain
- Lake
- County boundary
- Community boundary
- IDEP / PEP 1st priority areas
- IDEP / PEP 2nd priority areas
- CSO / SSO priority areas
- Routine IDEP / PEP areas

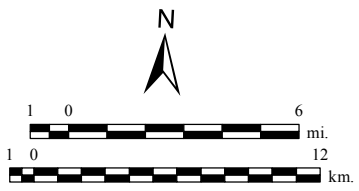
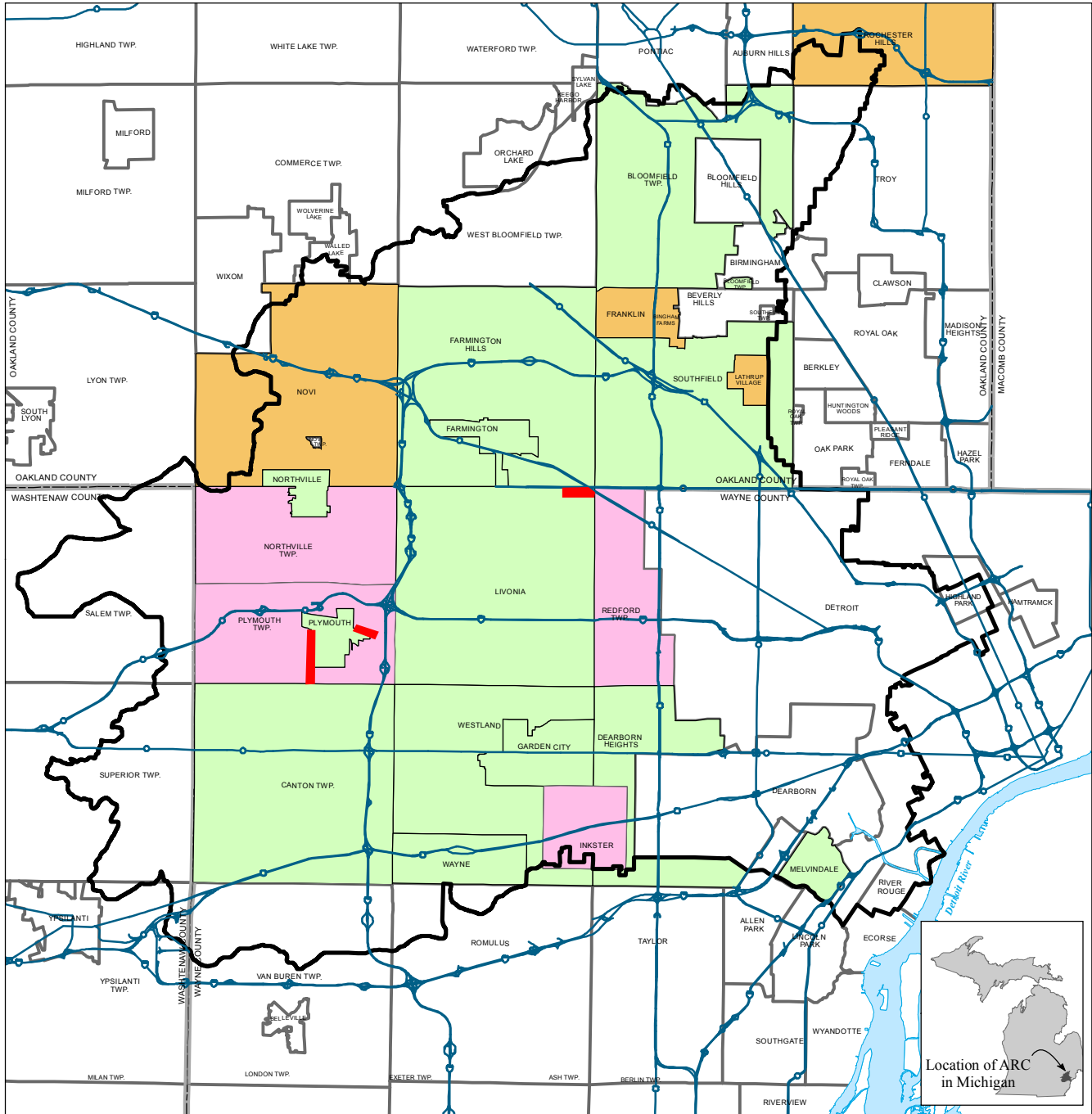









Figure 2

ALLIANCE OF ROUGE COMMUNITIES

Municipal Facility Dye Testing 2011 through 2014



LEGEND

-  County boundary
-  Community boundary
-  Rouge River Watershed
-  Municipal Facility Dye Tested
-  Areas Selected for Commerical/Industrial Dye Testing Activities
-  Municipal Facility DyeTesting requested Determined not necessary
-  Partial Municipal Facility DyeTesting via other funding sources

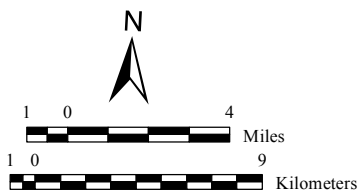


Figure 3: Types of Illicit Connections/Discharge

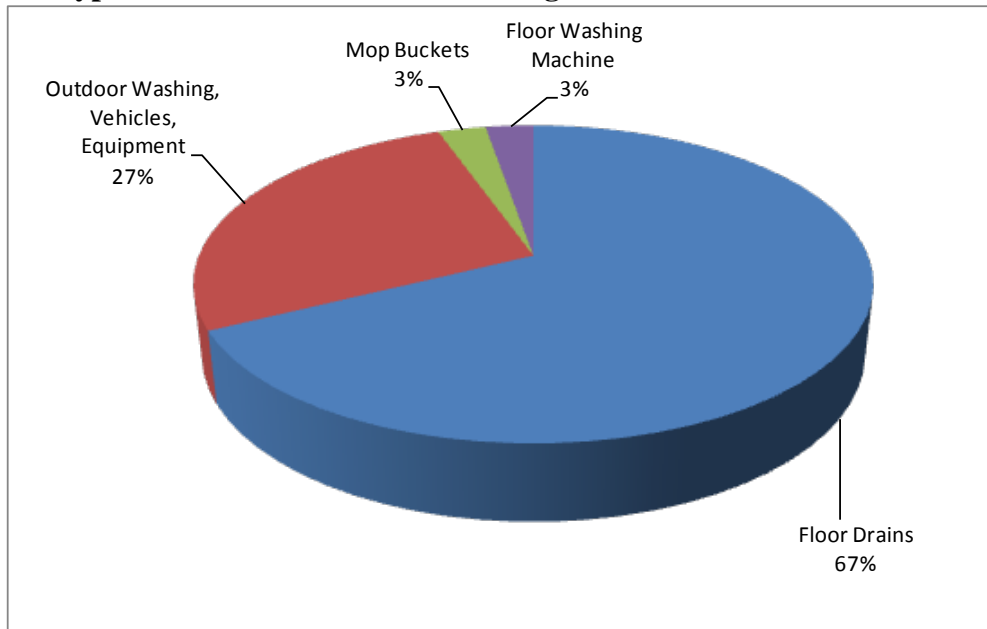


Figure 4: Private Storm Sewer Discharge to the Johnson Creek



Attachment A

Municipal facilities dye tested 2011-2014

**2011
Bloomfield Township
Dye Test Reports**

1	10/20/11	BLOOMFIELD SENIOR CENTER (Swimming Pool)	Andover Road	Bloomfield Township	Dye Test OK
2	10/20/11	BLOOMFIELD FIRE STATION	4200 Telegraph Rd	Bloomfield Township	Dye Test OK
3	10/20/11	BLOOMFIELD DPW ANNEX	4200 Telegraph Rd	Bloomfield Township	Dye Test OK
4	10/20/11	BLOOMFIELD DPW MAIN YARD	4200 Telegraph Rd	Bloomfield Township	Dye Test OK

2011 Canton Township ARC
DYE TEST REPORT

#	Facility	Facility	City	Type of	Status
		Address		Illicit Discharge	
1	CANTON FLEET MAINT.	1120 Canton Center	CANTON		Dye Test OK
2	CANTON FIRE STATION # 1	1100 Canton Center	CANTON		Dye Test OK
3	CANTON PARKS MAINT.	Heritage Park Road	CANTON	Equipment Washing	Violation
4	CANTON PHEASANT RUN GOLF COURSE	46500 Summit Parkway	CANTON	Golf Cart Washing	Violation
5	CANTON CITY HALL	1150 Canton Center	CANTON		Dye Test OK
6	CANTON FIRE STATION # 2	41500 Warren	CANTON		Dye Test OK
7	CANTON PUBLIC LIBRARY	1200 Canton Center	CANTON		Dye Test OK
8	CANTON FELLOWS CREEK GOLF COURSE CLUB HOUSE	2963 Lotz Road	CANTON		Dye Test OK
9	CANTON FELLOWS CREEK GOLF COURSE MAINT. SHOP	2963 Lotz Road	CANTON	Golf Cart/Equipment Washing	Violation
10	CANTON DPW	4847 S.Sheldon Road	CANTON		Dye Test OK

**Dye Test Report
City Of Farmington**

#	Site Eval Date	Facility Name	Facility Address	City	Status	Comments
1	6/12/14	FARMINGTON CITY OFFICES	23600 Liberty Street	Farmington	Dye Test OK	
2	6/12/14	FARMINGTON CITY PUBLIC SVC	33720 W 9 Mile Road	Farmington	Dye Test OK	Farmington DPS staff indicated that Water pump/pressure station building drainage connected to storm system

FARMINGTON HILLS
DYE TEST REPORT

#	Site Eval	(ongoing) 1st Insp.	Last Insp.	Follow Up	Facility <input type="checkbox"/>	Facility	Pr	Status
	Date	Date	Date	Date		Address		
1			4/9/12		FARMINGTON HILLS FIRE STATION #1	35725 Nine Mile Road	1	Dye Test OK
2		4/9/12	4/16/12		FARMINGTON HILLS FIRE STATION #2	28225 Middle Belt	1	Incomplete *
3			4/9/12		FARMINGTON HILLS FIRE STATION #3	29260 Grand River	1	Dye Test OK
4	4/12/12		4/16/12		FARMINGTON HILLS FIRE STATION #4	28711 Drake Road	1	Dye Test OK
5			4/9/12		FARMINGTON HILLS FIRE STATION #5	31455 Eleven Mile Road	1	Dye Test OK
6	4/16/12		4/19/12		FARMINGTON HILLS POLICE STATION GARAGE	31655 Eleven Mile Road	1	Dye Test OK

* Could not verify dye in the Sanitary Sewer System, Could not find Sanitary Manhole/Plans shows connected to Sanitary System.
See details in the field notes

DYE TEST REPORT

GARDEN CITY

	Site Eval	2 nd Insp.	Last Insp.	Facility	Facility	# of	Type	Status
#	Date	Date	Date		Address	IC	of IC	
1	5/10/12		5/15/12	GARDEN CITY DPS GARAGE	31800 Beechwood	2	CB	Corrected
2	5/10/12		5/14/12	GARDEN CITY PARK MAINT GARAGE	200 Log Cabin			Dye Test OK
3	5/10/12	5/14/12, 5/15/12	5/16/12	GARDEN CITY ICE ARENA	200 Log Cabin			CB Dye Could not found
4	7/21/08		5/17/12	GARDEN CITY MAPLE CENTER	31735 Maple wood			Dye Test OK
5	5/15/12	05/17/12	5/23/12	PARKWAY CARWASH	29043 Warren			Dye Test OK
6	5/10/12	05/15/12	09/20/12	GARDEN CITY FIRE STATION	6000 Middle Belt Road			Dye Test OK

City OF Livonia 2014
DYE TEST REPORT

#	Facility	Facility	# of	Type	# of	Type of	# of	Type of	Status	Follow-up
		Address	IC	of IC	Illicit Discharges	Illicit Discharge	EC	EC		
9	LIVONIA DPS BLD #12 South Barn Trench	12973 Farmington Road							Dye Test OK	
10	LIVONIA DPS BLD #12 P & R Area	12973 Farmington Road	1	Catch Basin					Violation	Converted to San Line 11/11/13
11	LIVONIA DPS BLD EQUIPMENT / CAR WASH	12973 Farmington Road			2	Catch Basin			Violation	Converted to San Line 11/11/13
12	LIVONIA DPS BLD #12 Forestry	12973 Farmington Road	1	Floor Drain					Violation	Converted to San Line 11/11/13
13	LIVONIA DPS BLD #13 Building Maint East Garage	12973 Farmington Road							Dye Test OK	
14	LIVONIA DPS BLD #13 Building Maint West Garage	12973 Farmington Road							Dye Test OK	
15	LIVONIA DPS BLD #13 Building Maint	12973 Farmington Road							Dye Test OK	
16	LIVONIA DPS BLD # 31	12973 Farmington Road							Dye Test OK	
17	SWEEPER/VECTOR TRUCK DISCHARGE	12973 Farmington Road					1	Sweeper Wash	Env.Concern	

City OF Livonia 2014
DYE TEST REPORT

#	Facility	Facility	# of	Type	# of	Type of	# of	Type of	Status	Follow-up
		Address	IC	of IC	Illicit Discharges	Illicit Discharge	EC	EC		
18	EDDIE EDGAR ICE ARENA	33841 Lyndon St.							Dye Test OK	
19	REGIONAL STREET WASTE TRANSFER FACILITY	Glendale Ave							Survey	
20	LIVONIA POLICE GARAGE	15050 Farmington Road	1	Floor Drain					Violations	Pending/12/2/14 will install solid cover
21	LIVONIA SALLY PORT	15050 Farmington Road	1	Floor Drain					Violations	Pending/12/2/14 will install solid cover
22	LIVONIA POLICE GARAGE	15050 Farmington Road							Incomplete	Pending
23	LIVONIA BUILDING MAINT. SIGN SHOP	12973 Farmington Road							Dye Test OK	
24	LIVONIA PARKS MAINT. BUILDING #52	Farmington Road					1	Power Washing Outside	Dye Test Incomplete/ EC	
25	LIVONIA CITY HALL PARKING GARAGE	33000 Civic Center	3	Catch Basin					Violations	Provide Decals to install
26	LIVONIA FIRE STATION #4	12300 Middle Belt	2	Trench Drain					OK	Dye Test OK/11/11/13

City OF Livonia 2014
DYE TEST REPORT

#	Facility	Facility	# of	Type	# of	Type of	# of	Type of	Status	
		Address	IC	of IC	Illicit Discharges	Illicit Discharge	EC	EC		Follow-up
27	FOX CREEK GOLF COURSE	36000 Seven Mile Road			1	Cart/Equipment Washing			Violations	New Directions issued from Building Maintenance Dept to change BMPs
28	WHISPERING WILLOW GOLF COURSE	20500 Newburgh Road					1	Equipment Washing	Dye Test OK/EC	New Directions issued from Building Maintenance Dept to change BMPs
29	IDYL WYLD GOLF COURSE	35780 Five Mile Road			2	Cart/Equipment Washing/Mop Bucket			Violations	New Directions issued from Building Maintenance Dept to change BMPs

City OF Livonia 2014
DYE TEST REPORT

#	Facility	Facility	# of	Type	# of	Type of	# of	Type of	Status	Follow-up
		Address	IC	of IC	Illicit Discharges	Illicit Discharge	EC	EC		
1	LIVONIA DPS BLD # 8	12973 Farmington Road							Dye Test OK	
2	LIVONIA DPS BLD # 9	12973 Farmington Road	2	Catch Basin					Violation/No Water Source/ No Dye Test	Solid Covers/11/11/13
3	LIVONIA DPS BLD # 10 East- Garage	12973 Farmington Road							Dye Could not found/According to City Official Broken Line	Corrected/Connected to San Sewer Line11/11/13
4	LIVONIA DPS BLD # 10 East- Garage (Rest Room)	12973 Farmington Road							Dye Test OK	
5	LIVONIA DPS BLD # 10 West Garage	12973 Farmington Road							Dye Test OK	
6	LIVONIA DPS BLD # 11	12973 Farmington Road							Vacant/ No Water	
7	LIVONIA DPS BLD # 12 Locker Room	12973 Farmington Road							Dye Test OK	
8	LIVONIA DPS BLD # 12 North Barn	12973 Farmington Road							Dye Test OK	

List Of Melvindale Inspections MAY 2014

#	Site Eval Date	(ongoing) 1st Insp. Date	Last Insp. Date	Follow Up Date	Facility Name	Facility Address	City	Pr	# of Visits	# of IC	Type of IC	# of Illicit Discharges	Type of Illicit Discharge	# of	Type of	Status
1	5/6/14	05/20/14	5/21/14		CITY OF MELVINDALE- City Hall	3100 OAKWOOD BLVD	Melvindale	3	3							Dye Test OK
2	5/6/14	05/20/14	5/21/14		MELVINDALE POLICE DEPARTMENT	3100 OAKWOOD BLVD	Melvindale	2	3							Dye Test OK
3	5/6/14	05/20/14	5/21/14		MELVINDALE FIRE DEPARTMENT	3100 OAKWOOD BLVD	Melvindale	1	3	5	Trench Dr.					Violations

**Dye Test Report
City Of Northville 2014**

DTOct12

#	Site Eval	(ongoing) 1st Insp.	Last Insp.	Follow Up	Facility Name	Facility	City	Pr	# of	Type	# of	Type of	Status		
	Date	Date	Date	Date										Visits	IC
1	11/7/14		11/10/14		NORTHVILLE DPW	650 Doheny Drive	NORTHVILLE	1	2				Dye Test OK		
2	11/11/14		11/12/14		NORTHVILLE SCHOOL TRANSPORTATION	504 W 8 Mile	NORTHVILLE	1	2			2	Equipment Washing/Salt Storage Corrected		
3	11/13/14	12/08/14	12/12/14		HILLSIDE MIDDLE SCHOOL	775 N. Center Street	NORTHVILLE	3	1				Dye Test OK		
4	12/4/14			12/10/14	ALLEN TERRACE	401 High Street	NORTHVILLE				4	FD	Violations		
5	12/3/14			12/8/14	MILL RACE	215 Griswold Street	NORTHVILLE					2	FD	Violations	
6	12/12/14	12/15/14	12/16/14		AMERIMAN SCHOOL	847 N Center Street	NORTHVILLE							Dye Test OK	
7	12/12/14		12/15/14		COOK SCHOOL	21200 Taft Road	NORTHVILLE				4	4	4	FD	Violation

City Of Plymouth Inspections 2013

DTOct12

#	Site Eval	(ongoing) 1st Insp.	Last Insp.	Follow Up	Seven Mile Road	Facility	City	Pr	# of	# of	Type	# of	Type of	# of	Type of	Status
Date	Date	Date	Date	Date	Address	Address		Visits	IC	of IC	Disc harg es	Illicit Discharge	EC	EC		
1	11/13/13		11/14/13		PLYMOUTH FIRE STATION # 3	187 E. Spring	Plymouth									Dye Test OK
2	11/13/13		11/14/13		PLYMOUTH MAIN FIRE STATION	201 Main Street	Plymouth									Dye Test OK
3	11/13/13		11/15/13		TONQUISH CREEK MANOR	1160 Sheridan	Plymouth									Dye Test OK

Special Status
WC

City Of Southfield
DYE TEST REPORT

	Facility	Facility	Type	Type of	Status
		Address	of IC	Illicit Discharge	
1	BEECH WOOD GOLF COURSE MAINT. SHOP	22200 Beech Wood Road	FD (May be connected to the Ground)		Need To Be corrected or Sealed
2	BEECH WOOD Golf Course GYM	22200 Beech Wood Road			Dye Test OK
3	BEECH WOOD Golf Course PROSHOP STORAGE	22200 Beech Road			Dye Test OK
4	BEECH WOOD Golf Course MAIN BUILDING (Kitchen)	22200 Beech Road			Dye Test OK
5	BEECH WOOD Golf Course DRIVING RANGE REST ROOMS	22200 Beech Road			Dye Test OK
6	FIRE STATION # 1	18400 W 9 Mile		Unsecured Sump Pump	Env.Concern
7	JOHN GRACE CENTER	21030 Indian Street			Incomplete
8	FIRE STATION # 2	25753 W 9 Mile			Incomplete
9	MARY THOMPSON HOUSE & FARM	25630 Evergreen Road			Dye Test OK
10	INGLENOOK PARK	20901 12 mile Road			Dye Test OK
11	PEBBLE CREEK PARK	26300 American Drive			Dye Test OK
12	SOUTHFIELD DPW YARD	25501 Clara Lane			Dye Test OK
13	SOUTHFIELD FIRE STATION # 4	25120 12 Mile Road			Dye Test OK
14	SOUTHFIELD FIRE STATION #5	24477 Lahser Road			Incomplete
15	BURGH	23960 Civic Center Drive			Incomplete
16	SOUTHFIELD FIRE STATION #2	25753 W 9 Mile Road			Incomplete
17	SOUTHFIELD CIVIC CENTER	26000 Evergreen			Dye Test OK
18	SOUTHFIELD ASSESSOR'S OFFICE	26000 Evergreen			Dye Test OK
19	SOUTHFIELD MAYORS OFFICE	26000 Evergreen			Dye Test OK
20	SOUTHFIELD TREASURES OFFICE	26000 Evergreen			Dye Test OK
21	SOUTHFIELD PARKS & RECREATION	26000 Evergreen			Dye Test OK
22	SOUTHFIELD YOUTH CENTER	26000 Evergreen			Dye Test OK
23	SOUTHFIELD LIBRARY	26300 Evergreen			Dye Test OK
24	SOUTHFIELD SPORTS & ICE ARENA	26000 Evergreen			Dye Test OK

Special Status

WC

City Of Southfield
DYE TEST REPORT

	Facility	Facility	Type	Type of	Status
		Address	of IC	Illicit Discharge	
25	SOUTHFIELD TENNIS AREA	26000 Evergreen			Survey
26	SOUTHFIELD POLICE DEPARTMENT	26000 Evergreen			Dye Test OK
27	SOUTHFIELD 46 DISTRICT COURT	26000 Evergreen			Dye Test OK
27	EVERGREEN GOLF COURSE	26000 Evergreen			Dye Test OK
28	SOUTHFIELD PARKS MAINTENANCE YARD	26000 Evergreen		Outside Washing	Need To Be corrected

City Of Wayne
DYE TEST REPORT

#	Site Eval	Last Insp.	Facility	Facility	# of	Type	Status	
	Date	Date		Address	IC	of IC		Comments
1	6/1/12	1/14/13	CITY OF WAYNE DPW YARD	35200 Forest			Dye Test OK	
2	6/1/12	6/4/12	CITY OF WAYNE ANIMAL SHELTER	4000 Biddle Ave			Dye Test OK	
3	6/1/12	6/4/12	CITY OF WAYNE ENGINEERING GARAGE 1	4001 S. Wayne Road			Dye Test OK	
4	6/1/12	6/4/12	CITY OF WAYNE ENGINEERING GARAGE 2	4001 S. Wayne Road			Dye Test OK	

Westland ARC 2011
DYE TEST REPORT

#		Facility	Facility	City	Status	Special
	Date of Inspection		Address			Status
		Mr Kevin L. Buford- City Of Westland, Department Of Public Service				
1	11/15/2011	WESTLAND DORSEY COMMUNITY CENTER	32715 Dorsey	WESTLAND	Dye Test OK	ARC
2	11/29/2011	WESTLAND FIRE STATION # 2	1850 Northgate	WESTLAND	Dye Test OK	ARC
3	10/3/2011	WESTLAND FAUST LIBRARY	6123 Central City Parkway	WESTLAND	Dye Test OK	ARC
4	10/28/2011	WESTLAND GOLF COURSE	500 South Merriman	WESTLAND	Dye Test OK	ARC
5	9/22/2011	WESTLAND SENIOR RESOURCES CENTER	1119 North Newburgh Road	WESTLAND	Dye Test OK	ARC
6	9/22/2011	CABLE DEPARTMENT	33455 Warren	WESTLAND	Dye Test OK	ARC
7	9/23/2011	WESTLAND FIRE STATION	37200 Palmer Road	WESTLAND	Dye Test OK	ARC

Attachment B
Illicit Discharge Elimination
Investigation (IDEP)
Monitoring Report
December 2014

**Illicit Discharge Elimination
Investigation (IDEP)
Monitoring Report**

December 2014



Contents

<i>Project Background</i>	3
<i>Monitoring Project Summary</i>	3
<i>Recommendations for Continued Investigation</i>	4
<i>Appendix A – Site Maps</i>	
<i>Appendix B – Photographs</i>	
<i>Appendix C – Monitoring Data</i>	
<i>Appendix D – Investigation Field Data Sheets</i>	

This report outlines the 2014 dry weather monitoring project performed during December 2014 on behalf of the Alliance of Rouge Communities (ARC).

Project Background

In 2009, the Alliance of Rouge Communities (ARC) Technical Subcommittee identified four areas as high priority to address the *E. coli* total maximum daily load. Wayne County targeted two of the areas for intensive IDEP efforts between 2010 and 2013. The goal of this monitoring project was to revisit these areas where elevated IDEP parameters were identified in previous investigations or monitoring projects. The data will be used as a basis for determine if additional investigation is needed in these areas to find and eliminate illicit discharges. The three sampling sites selected are located in the City of Livonia in the Beitz Drain subwatershed and the Park Street Outfall, located in Plymouth Township. The locations are listed in Table 1. Maps of the sampling sites are in *Appendix A*.

Table 1 ARC Monitoring Sites and Locations

Field ID	Sample Site	Water Body	Location	Community
1	Beitz Drain Outlet	Beitz Drain	outlet near Myron/Vallencia Drive	Livonia
2	Beitz Drain/6 Mile	Beitz Drain	west of Farmington Road	Livonia
3	Park Street outfall	Middle Rouge	west of Haggerty Road on Hines Drive	Plymouth

The three sites were monitored during three dry weather monitoring events. Dry weather for this project is defined as 48 hours without precipitation in excess of 0.1 of one inch.

The water quality parameters selected for the IDEP monitoring project are: ammonia, surfactants (detergents), conductivity, temperature, *Escherichia coli* (*E. coli*) and visual observations made by field staff. The *E. coli* samples were analyzed by ALS Environmental Laboratory and surfactant and ammonia concentrations analyzed with chemical test kits. Water temperature and conductivity were measured in the field with a conductivity/temperature meter.

Monitoring Project Summary

WQMD sampled at each monitoring site three times: December 5, 2014, December 12, 2014 and December 15, 2014, collecting nine samples in total. Replicates or field blanks were collected for quality assurance at each of the three sites, one during each monitoring event. All sampling events met the dry weather criteria defined for the project. The volume of precipitation received in the project area from December 5, 2014 through December 15, 2014 was 0.16 inches, received during December 8-9, 2014. A light intermittent rain occurred during the December 15, 2014 event, but the rain did become

heavy enough to cause runoff until after the sampling was completed. *Appendix B* includes the data for each monitoring site. *Appendix C* includes the photographs of each site and *Appendix D* includes the field data sheets.

The monitoring data from each site was reviewed and sampling sites with elevated parameters should be selected for follow up investigations. Sites with elevated *E. coli*, surfactant, ammonia, and depressed dissolved oxygen were given highest priority.

Elevated IDEP parameters used for the purposes of this project are: *E. coli* concentrations greater than or equal to 1,000 colony forming units per 100 milliliters of sample (CFU/100mL); detergents (surfactant) greater than or equal to 0.5 parts per million (ppm); and ammonia greater than or equal to 1.0 ppm. Visual observations field staff made at the sites while collecting samples were also a factor in determining follow up investigation priorities.

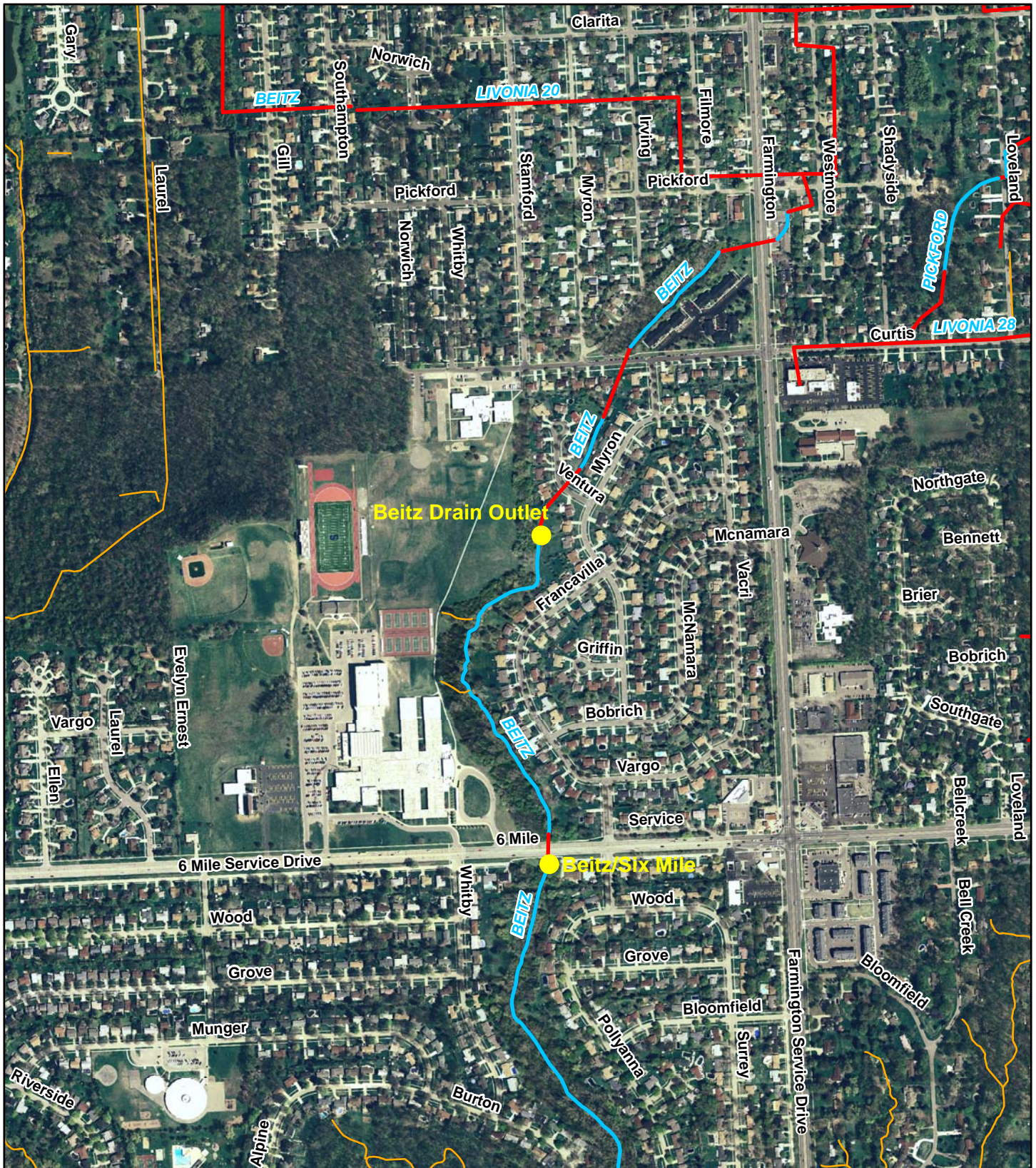
The Beitz was sampled at two locations, three times with one replicate sample over a ten day period. The *E. coli* levels range from 20 to 460 cfu/100mLs with a median of 40 cfu/100mLs. These low levels do not demonstrate a significant source of sewage. The samples were collected at a time when ground water infiltration and other sources of potable water were minimized, therefore, dilution of bacteria sources would be also be minimized. These results allow us to conclude that further intense investigation of this area is not required and the area can be re designated from a high priority area to routine priority area for IDEP efforts.

Recommendations for Continued Investigation

Based on the water quality data collected during the ARC IDEP monitoring project, there are areas in the Rouge River watershed where additional investigation is necessary to identify and eliminate illicit discharges. The sampling site 3, the Park Street Outfall, a storm sewer outfall that drains a portion of the City of Plymouth, is an area of concern based on multiple *E. coli* samples in excess of 1,000 CFU/100mL. Investigations are recommended to identify and eliminate the illicit discharge sources. WQMD will meet with the City of Plymouth to discuss this sampling project and its results. Follow up activities should include investigation of storm and sanitary sewer infrastructure for infiltration, leaking pipes, failing bulkheads in areas where there were combined sewers, sewers for infiltration and cross connections. Facility dye testing of commercial facilities in this area is also recommended. WQMD has performed facility dye test inspections in the City of Plymouth in the past as part of other illicit discharge elimination projects. Human Biomarker monitoring study may also be considered as an investigative technique that could assist with identifying the source of elevated *E. coli* in the Park Street storm sewer system.

Appendix A

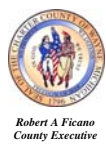
Site Maps



Beitz Drain Sampling Locations December 2014

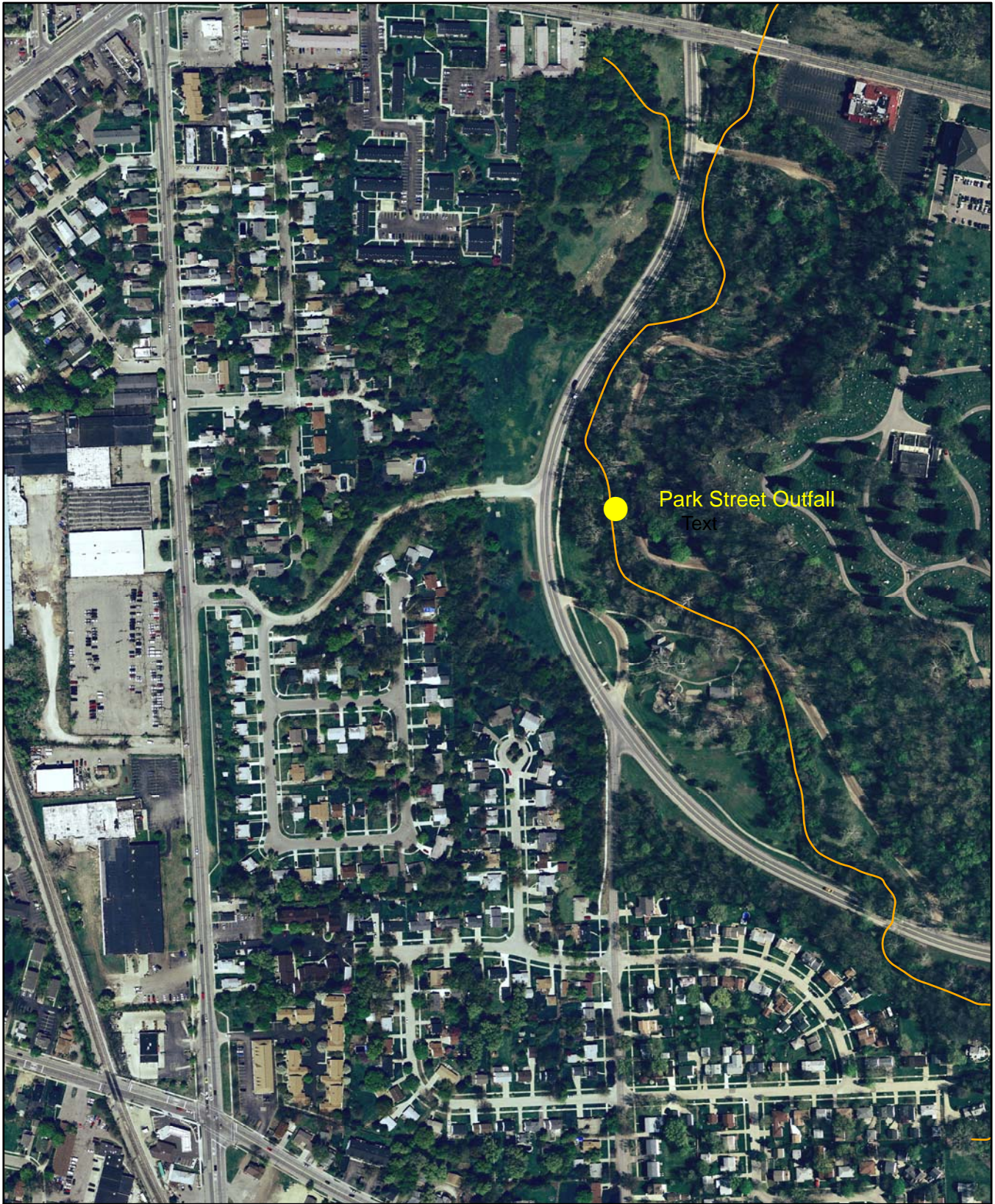


- Drains
- Not county drain
 - Enclosed county drain
 - Open county drain

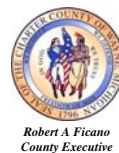
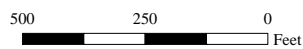


Department of Public Services
Wayne
County

Robert A Ficano
County Executive



Park Street Outfall Sampling Locations December 2014



Robert A. Ficano
County Executive



Appendix B

Photographs

Appendix B Illicit Discharge Elimination Monitoring Project

Site Photos
December 2014



Site 1 Beitz Drain Outlet



Site 1 Beitz Drain Outlet downstream view



Site 2 Beitz Drain at Six Mile looking downstream



Site 2 Beitz Drain at Six Mile looking upstream



Site 3 Park Street Outfall

Appendix C

Monitoring Data

**Appendix C
ARC IDEP
Investigation Data
December 2014**

Field ID	Site Location	Date	Time	Meter DO (mg/L)	Temperature °C	Ammonia (NH ₃) ppm	Detergent(ppm)	Conductivity (mS/cm)	pH	E. coli (cfu/100 mL)	E. coli (cfu/100 mL) replicate	Observations
1	Beitz Drain Outlet	12/5/14	12:30	NA	6.4	0	1.5	1.212	NA	230		water flowing from outlet, some clam shells on gravel bar
1	Beitz Drain Outlet	12/12/14	10:45	NA	5.3	0	<0.25	1.233	NA	20		some clear flow from a small outfall on left bank, some iron bacteria sheen present on bank. Flow from Beitz Drain outlet
1	Beitz Drain Outlet	12/15/15	11:05	NA	7.1	0.00	0.25	1.145	NA	40		Some woody debris behind trash rack. Discharge from small outfall left bank (clear with iron bacteria present)
2	Beitz/6 Mile	12/5/14	12:50	NA	5.8	0	0.25	1.317	NA	460		some iron bacteria at site, logjams under 6 Mile Road bridge
2	Beitz/6 Mile	12/12/14	11:05	NA	4.4	0	0.5	1.402	NA	20	40	some iron bacteria at site, logjams under 6 Mile Road bridge
2	Beitz/6 Mile	12/15/14	11:25	NA	7.1	0.00	<0.25	1.208	NA	120	0 (field blank)	iron bacteria present on bottom/banks. Logjam under bridge, logjam downstream of bridge. Two large outfalls under bridge discharging
3	Park Street Outfall	12/5/14	13:20	NA	5.4	0	0.25	1.733	NA	20000	16000	outfall flowing clear water
3	Park Street Outfall	12/12/14	11:35	NA	3.1	0	0.75	1.540	NA	22000		outfall flowing clear water, some bubbles present. River looks greenish near outfall
3	Park Street Outfall	12/15/14	12:00	NA	5.8	0.00	<0.25	1.819	NA	14000		Discharge with light white bubbles from right side of outfall. River flow clear, but greenish near outfall

Appendix D
Investigation Field Data Sheets

Wayne County Department of Public Services (Environment) Water Quality Management Division

Field Observation Worksheet River Aesthetics

Date: 12/15/14
M D Yr

Time: 12:30
Military

Site I.D.: BIGTZ DRAIN OUTLET (1)

Location: VALLENCIA DRIVE

Sub Area: _____

Conductivity: 1212 mS Water Temp.: 6.4 °C E-coli: 230

Ammonia: 0W/STRIPS / 0 TEST KIT SURFACTANT: 1.5
Field Representative(s): Trompson

Weather: CLOUDY

Rain Yesterday: No Rain Today: No

Depth of Stream: 6'

Water Clarity

Clear _____
Slightly Turbid _____
Moderately Turbid _____
Highly Turbid _____
Opaque _____

Odor

None/Natural _____
Musty: Faint _____ Strong _____
Sewage/Fishery: Faint _____ Strong _____
Anaerobic/Septic: Faint _____ Strong _____

Water Color

Clear _____ Brown: _____
Green _____ Light _____
Gray _____ Medium _____
Black _____ Dark _____
Milky/White _____

Visible Debris/Obvious Pollution

None _____ Natural _____
Foam _____ (leaves, limbs, weeds)
Trash: Floating _____ Fixed _____
Sewage Solids: Floating _____ Fixed _____
Floating Green Scum _____

Additional Comments:

WATER FLOWING FROM OUTLET, SOME CLAM SHELL ON GRAVEL BAR

Wayne County Department of Public Services (Environment) Water Quality Management Division

Field Observation Worksheet River Aesthetics

Date: 12 / 18 / 14
M D Yr

Time: 12:50
Military

Site I.D.: BIGTZ/6 MILE (2)

Location: DOWNSTREAM SIDE 6 MILE

Sub Area: _____

Conductivity: 1319 Water Temp.: 58 °C E-coli: 460

Ammonia: 0ppm strips, 0ppm TEST KIT SURFACTANT: 0.25 ppm
Field Representative(s): TRIMPSON

Weather: CLOUDY

Rain Yesterday: No Rain Today: No

Depth of Stream: 3"

Water Clarity
Clear _____
Slightly Turbid _____
Moderately Turbid _____
Highly Turbid _____
Opaque _____

Odor
None/Natural _____
Musty: Faint _____ Strong _____
Sewage/Fishery Faint _____ Strong _____
Anaerobic/Septic Faint _____ Strong _____

Water Color
Clear _____
Green _____
Gray _____
Black _____
Milky/White _____
Brown: Light _____
Medium _____
Dark _____

Visible Debris/Obvious Pollution
None _____ Natural _____
Foam _____ (leaves, limbs, weeds)
Trash: Floating _____ Fixed _____
Sewage Solids: Floating _____ Fixed _____
Floating Green Scum _____

Additional Comments:
SOME LOW BACTERIA AT SITE, LOGJAMS UNDER 6 MILE BRIDGE

Date entered: _____
Initials: _____

Wayne County Department of Environment Watershed Management Division

REPLICATE
TAKEN HERE

Field Observation Worksheet River Aesthetics

Date: 12 / 5 / 14
M D Yr

Time: 1320
Military

Site I.D.: 3

Location: PARK STREET OUTFALL

Sub Area: _____

Conductivity: 1.733mS Water Temp.: 5.4 °C E-coli: 20,000 / 16,000

SURFACTANT: 0.25ppm

AMMONIA TEST STRIPS: 0 ppm

AMMONIA TEST KIT: 0 ppm

REPLICATE

Field Representative(s): ST

Weather: CLOUDY

Rain Yesterday: No Rain Today: No

Depth of Stream: 1.2 FT

Water Clarity

Clear x

Slightly Turbid _____

Moderately Turbid _____

Highly Turbid _____

Opaque _____

Odor

None/Natural x

Musty:
Faint _____ Strong _____

Sewage/Fishery
Faint _____ Strong _____

Anaerobic/Septic
Faint _____ Strong _____

Water Color

Clear x Brown: _____

Green _____ Light _____

Gray _____ Medium _____

Black _____ Dark _____

Milky/White _____

Visible Debris/Obvious Pollution

None x Natural _____

Foam _____ (leaves, limbs, weeds)

Trash:
Floating _____ Fixed _____

Sewage Solids:
Floating _____ Fixed _____

Floating Green Scum _____

Additional Comments:

OUTFALL FLOWING - CLEAR WATER

Date entered: _____

Initials: _____

Wayne County Department of Environment Watershed Management Division

Replicate
Collected Here

Field Observation Worksheet River Aesthetics

Date: 12 / 12 / 14
M D Yr

Time: 10:45
Military

Site I.D.: 1

Location: BEITZ DRAW OUTLET

Sub Area: _____

Conductivity: 1.233 Water Temp.: 53 °C E-coli: 20 / 40 REPLICATE

SURFACTANT: < 0.25ppm

AMMONIA TEST STRIPS: 0ppm

AMMONIA KIT: 0ppm

Field Representative(s): ST

Weather: CLOUDY

Rain Yesterday: N/A Rain Today: N/A

Depth of Stream: 6"

Water Clarity

Clear x
Slightly Turbid _____
Moderately Turbid _____
Highly Turbid _____
Opaque _____

Odor

None/Natural x
Musty:
Faint _____ Strong _____
Sewage/Fishery
Faint _____ Strong _____
Anaerobic/Septic
Faint _____ Strong _____

Water Color

Clear x Brown:
Green _____ Light _____
Gray _____ Medium _____
Black _____ Dark _____
Milky/White _____

Visible Debris/Obvious Pollution

None _____ Natural x
Foam _____ (leaves, limbs, weeds)
Trash:
Floating _____ Fixed _____
Sewage Solids:
Floating _____ Fixed _____
Floating Green Scum _____

Additional Comments:

SOME CLEAR FLOW FROM SMALL OUTFALL LEFT BANK SOME IRON BACTERIA GREEN PRESENT ON BANK
FLOW FROM LARGE DRAW OUTFALL

Wayne County Department of Environment Watershed Management Division

Field Observation Worksheet River Aesthetics

Date: 12 / 12 / 14
M D Yr
Time: 11:05
Military

Site I.D.: BEITZ/6MINE (2)

Location: 6 MINE BRIDGE

Sub Area: _____

Conductivity: 1.402 Water Temp.: 4.4 °C E-coli: 20

SURFACTANTS: 0.5 ppm

AMMONIA TEST STRIPS: 0 ppm

AMMONIA KIT: 0 ppm

Field Representative(s): ST

Weather: CLOUDY

Rain Yesterday: N/A

Rain Today: N/A

Depth of Stream: 8"

Water Clarity

Clear _____
Slightly Turbid _____
Moderately Turbid _____
Highly Turbid _____
Opaque _____

Odor

None/Natural _____
Musty:
Faint _____ Strong _____
Sewage/Fishery
Faint _____ Strong _____
Anaerobic/Septic
Faint _____ Strong _____

Water Color

Clear _____ Brown:
Green _____ Light _____
Gray _____ Medium _____
Black _____ Dark _____
Milky/White _____

Visible Debris/Obvious Pollution

None _____ Natural _____
Foam _____ (leaves, limbs, weeds)
Trash:
Floating BOTTLES _____ Fixed _____
Sewage Solids:
Floating _____ Fixed _____
Floating Green Scum _____

Additional Comments:

IRON BACTERIA ON BOTTOM, BANKS AT SITE
LARGE LOGJAM DOWNSTREAM OF BRIDGE

Wayne County Department of Environment Watershed Management Division

Field Observation Worksheet River Aesthetics

Date: 12 / 12 / 14
M D Yr

Time: 11:35
Military

Site I.D.: PARK ST OUTFALL (3)

Location: PARK ST OUTFALL

Sub Area: _____

Conductivity: 1,540 Water Temp.: 3.1 °C E-coli: 22,000

Field Representative(s): ST

Weather: CLOUDY

Rain Yesterday: No Rain Today: No

Depth of Stream: 12"

Water Clarity

Clear X
Slightly Turbid _____
Moderately Turbid _____
Highly Turbid _____
Opaque _____

Odor

None/Natural X
Musty:
Faint _____ Strong _____
Sewage/Fishery
Faint _____ Strong _____
Anaerobic/Septic
Faint _____ Strong _____

Water Color

Clear X Brown:
Green X Light _____
Gray _____ Medium _____
Black _____ Dark _____
Milky/White _____

Visible Debris/Obvious Pollution

None _____ Natural X
Foam _____ (leaves, limbs, weeds)
Trash:
Floating _____ Fixed _____
Sewage Solids:
Floating _____ Fixed _____
Floating Green Scum _____

Additional Comments:

* RIVER IS LIGHT GREEN BY OUTFALL
OUTFALL IS DISCHARGING, SOME BUBBLES PRESENT

Wayne County Department of Environment Watershed Management Division

Field Observation Worksheet River Aesthetics

Date: 12/15/14
M D Yr
Time: 1105
Military

Site I.D.: 1

Location: BEITZ DRAIN OUTLET

Sub Area: _____

Conductivity: 6145 mS Water Temp.: 7.1 °C E-coli: 40

SURFACTANT: 0.25 ppm

AMMONIA TEST STRIP: 0 ppm NH₃ (K+) & 0 ppm

Field Representative(s): ST

Weather: CLOUDY

Rain Yesterday: No Rain Today: YES - LIGHT SPRINKLES

Depth of Stream: 6"

Water Clarity

Clear x
Slightly Turbid _____
Moderately Turbid _____
Highly Turbid _____
Opaque _____

Odor

None/Natural x
Musty:
Faint _____ Strong _____
Sewage/Fishery
Faint _____ Strong _____
Anaerobic/Septic
Faint _____ Strong _____

Water Color

Clear x Brown:
Green _____ Light _____
Gray _____ Medium _____
Black _____ Dark _____
Milky/White _____

Visible Debris/Obvious Pollution

None _____ Natural x
Foam x (leaves, limbs, weeds)
Trash:
Floating _____ Fixed _____
Sewage Solids:
Floating _____ Fixed _____
Floating Green Scum _____

Additional Comments:

CLAM SHELS ON GRAVEL SAND BANK AT SITE

DISCHARGE FROM SMALL DUTFALL ON LEFT BANK (CLEAR W/ IRON BACTERIA)

FLOW FROM BEITZ DRAIN OUTLET; SOME FOAM BEHIND TRASH RACK, AND SOME WOODY DEBRIS

Date entered: _____
Initials: _____

Wayne County Department of Environment Watershed Management Division

FIELD BLANK
TAKEN HERE
(TOP WATER):
NON DETECT

Field Observation Worksheet River Aesthetics

Date: 12 / 15 / 14
M D Yr
Time: 11:25
Military

Site I.D.: 2

Location: Bertz / 6 mile

Sub Area: _____

Conductivity: 1208 Water Temp.: 7.1 °C E-coli: 120

SURFACTANT: < 0.05ppm

AMMONIA TEST STRIPS: 0ppm NH₃ TEST KIT: 0ppm

Field Representative(s): ST

Weather: CLOUDY

Rain Yesterday: No Rain Today: No

Depth of Stream: 8'

Water Clarity

Clear X
Slightly Turbid _____
Moderately Turbid _____
Highly Turbid _____
Opaque _____

Odor

None/Natural X
Musty:
Faint _____ Strong _____
Sewage/Fishery
Faint _____ Strong _____
Anaerobic/Septic
Faint _____ Strong _____

Water Color

Clear X Brown:
Green _____ Light _____
Gray _____ Medium _____
Black _____ Dark _____
Milky/White _____

Visible Debris/Obvious Pollution

None _____ Natural X
Foam _____ (leaves, limbs, weeds)
Trash:
Floating X ^{COFFEE CUP} Fixed _____
Sewage Solids:
Floating _____ Fixed _____
Floating Green Scum _____

Additional Comments:

IRON BACTERIA ON BOTTOM/BANKS

DISCHARGE FROM 2 LARGE OUTFALL UNDER 6 MILE BRIDGE

LOGJAM UNDER BRIDGE, LARGE LOG JAM DOWNSTREAM OF BRIDGE

Wayne County Department of Environment Watershed Management Division

Field Observation Worksheet River Aesthetics

Date: 12 / 15 / 14
M D Yr
Time: 12:00
Military

Site I.D.: 3

Location: PARK STREET OUTFALL

Sub Area: _____

Conductivity: 1.819 Water Temp.: 5.8 °C E-coli: 14,000

SURFACTANT: 0.25ppm

AMMONIA TEST STRIPS: 0ppm

NH₃ TEST KIT: 0ppm

Field Representative(s): ST

Weather: CLOUDY

Rain Yesterday: No Rain Today: No

Depth of Stream: 1.0 FT

Water Clarity

Clear X
Slightly Turbid _____
Moderately Turbid _____
Highly Turbid _____
Opaque _____

Odor

None/Natural X
Musty:
Faint _____ Strong _____
Sewage/Fishery
Faint _____ Strong _____
Anaerobic/Septic
Faint _____ Strong _____

Water Color

Clear X Brown:
Green _____ Light _____
Gray _____ Medium _____
Black _____ Dark _____
Milky/White _____

Visible Debris/Obvious Pollution

None _____ Natural X
Foam X LT BUBBLES (leaves, limbs, weeds)
Trash:
Floating _____ Fixed _____
Sewage Solids:
Floating _____ Fixed _____
Floating Green Scum _____

Additional Comments:

DISCHARGE W/LIGHT WHITE BUBBLES FROM RIGHT SIDE OF OUTFALL
*WATER IN RIVER BY OUTFALL HAS LIGHT GREEN COLOR, REST OF RIVER FLOWS CLEAR