

Wayne County Illicit Discharge Elimination Program ARC IDEP Services 2022 Report

Executive Summary

Wayne County Department of Public Services Environmental Services Division (ESD) performed source identification advanced investigations in the Cities of Plymouth, Inkster, and Livonia (Table 1). Other tasks completed in 2022 included IDEP Training and activity reporting.

Table 1: Findings and recommended actions for illicit discharge investigations

Community	Outfall/ target area	Findings	Recommendations
Plymouth	PY8	Elevated <i>E. coli</i> , <i>Bacteriodes</i> and <i>HF183</i> marker	Continued investigations in 2023 including dye testing residential properties located in storm sewer segments identified by televising/manhole sampling and manhole sampling for <i>E. coli</i> and HR183 marker as needed
Plymouth	PY5	Elevated <i>E. coli</i> and HF183 marker	Continued investigations in 2023 including dye testing residential properties located in storm sewer segments identified by televising/manhole sampling and manhole sampling for <i>E. coli</i> and HR183 marker as needed
Plymouth	Holbrook Street	Elevated <i>E. coli</i> , low HF183 marker in wet weather, no evidence of illicit discharge other than sewage odor	No further investigation recommended in 2023. Based on televising and field investigations, the only possible source is a leaking sanitary sewer. Plans to replace the sanitary sewer in 2024 are in the process of being developed.
Plymouth	Mill/Park Street	The illicit connection at 150/152 S. Mill Street was confirmed corrected. Communications and compliance actions with the City and the property owners of the 3 remaining illicit connections continued.	Re-issue the notice of violation to the new property owner at 195 S. Mill and continue communications and compliance actions to correct remaining violations. Once corrections are made perform follow-up <i>E. coli</i> monitoring.
Livonia	U2008221	Sewage sources suspected and identified in 2022	ARC staff to continue investigation of this outfall in 2023
Livonia	L-1619	Elevated <i>E. coli</i> and HF183 marker. <i>E. coli</i> and HF183 sampling in 2022 and storm sewer televising	ARC staff to continue investigation of this outfall in 2023

Task 1: Field Investigations

ESD conducted IDEP investigations at various outfalls and upstream storm sewer manholes. Water samples were tested for *E. coli* and observations were recorded regarding water clarity, color, odor, and debris. In addition to ESD's typical IDEP investigation methods, select samples were analyzed for the Human Source (HF183) marker. The presence of the marker above 1,000 gene copies/100 mL is used as a threshold to indicate potential human source of bacteria present when correlated with elevated *E. coli* levels.

City of Plymouth

ESD coordinated with ARC staff and the City of Plymouth to continue investigations of outfalls PY8, PY5, Holbrook Street, and the Park Street municipal separate storm sewer systems (MS4). The PY8 and PY5 outfalls discharge to the North Branch Tonquish Creek. The Park Street MS4 captures the Mill Street drainage and discharges to the Rouge River Middle Branch, as does the outfall discharging the drainage from the Holbrook Street investigation area.

Outfall PY8

ESD did not perform any manhole and storm sewer lateral investigations upstream of the outfall in 2022. Elevated HF183 marker was identified in a segment of storm sewer during manhole sampling in 2021 as reported in the 2021 Wayne County ARC IDEP Workplan Summary. This segment is the furthest upstream segment of the Blunk Street storm sewer (between Junction and Farmer Streets). The sanitary sewer was televised in sections that were accessible and that footage was used to account for sanitary sewer taps. Dye testing the residences with no evidence of sanitary sewer taps identified by the televising is planned to for 2023.

Outfall PY5

ESD performed sampling in manholes and storm sewer laterals upstream of the outfall on May 13, November 3, and November 9, 2022, building upon the 2021 investigative effort.

Elevated *E. coli* and HF183 markers were detected in two manholes in the upstream storm sewer system at the intersection of Arthur and William Streets and one manhole on Pacific Street between William and Blanche Streets. The storm sewer lines of Outfalls PY5 and PY4 cross over each other downstream of William Street intersection, so the storm sewer on the east side of Arthur Street upstream of William Street was also investigated to ensure that there is no elevated *E. coli* or HF183 detected above the William Street intersection.

The City of Plymouth dye tested four out of seven residences in the investigation area on William Street during 2022. The residences dye tested were determined to be connected to the sanitary sewer. The City also televised the storm sewer on Pacific Street and there are suspicious taps noted on this line.

The storm sewer televising and the manhole investigations detailed above determined that there are suspicious taps that need further verification on William Street between Arthur and Pacific Streets and Pacific Street upstream of the William/Pacific Street intersection. Dye testing of selected residences and manhole sampling (*E. coli* and HF183), as needed, is planned for this investigation area in 2023.

The investigation area and dry weather screening data is shown in *Figure 1* and the investigation data is included in Appendix A, Table A1.

Holbrook Street

The City of Plymouth Holbrook Street storm sewer segment between Spring Street and its terminal manhole south of the railroad tracks (north of Liberty Street) was investigated on June 29, 2022 after a wet weather event. There was no flow present in this section of storm sewer during dry weather in previous investigations. Elevated *E. coli* concentrations were present in the samples collected from the Holbrook/ Spring Street storm manhole and its north inlet, but the HF183 concentrations were very low in both samples.

The storm sewer segment was investigated again on November 3, 2022. A sewage odor was detected at the storm sewer at the Holbrook/Spring Street intersection, and a water sample collected from an upstream catch basin that had also had an odor and contained discolored water. The concentrations of *E. coli* and HF183 were low in the sample collected at this location.

The City of Plymouth televised the storm and sanitary sewers on Holbrook Street in the investigation area. No illicit or suspicious taps were identified, and the sanitary sewer televising determined that the line has leaky joints. Based on the televising and field investigation results, the only possible human source is the leaky sanitary sewer and infiltration into the storm sewer. The source of elevated *E. coli* in the wet weather sample is likely an animal source. Plans to replace the sanitary sewer in 2024 are in the process of being finalized.

No further investigation in this area is recommended in 2023.

The investigation area is shown in Figure 2 and the screening data is shown in *Figure 2* and the data is included in Appendix A, Table A2.

Park Street/Mill Street Investigation Area

During previous years of investigation, there were four residences with illicit connections identified in the Mill/Park Street investigation area. In 2022, the duplex located at 150/152 S. Mill Street was confirmed corrected by the City. Three residences with illicit connections remain. Two of these discharge into the Wayne County Mill Street MS4 (195 S. Mill and 485 S. Mill). The third, a residence on Amelia Street (175 Amelia), discharges into the City of Plymouth MS4. Amelia Street is tributary to the Mill Street storm sewer. Efforts are ongoing to resolve the remaining illicit connections. This will include reissuing the notice of violation to the new property owner at 195 S. Mill as well as continuing to work with the City and the property owners to ensure the proper sanitary sewer connections are made and the illicit connections eliminated.

Once the illicit connections are corrected, the Mill Street storm sewer laterals and the Park Street storm sewer outfall will be resampled.

City of Livonia

ESD provided ARC staff support in the investigations of outfall L-1619 and outfall U2008221 during 2022 and details of these investigations are included in the 2022 IDEP Investigation Summary prepared by ARC staff.

Task 2 IDEP Training

Four IDEP training workshops were presented in 2022 in partnership with the Southeast Michigan Council of Governments (SEMCOG) Partners for Clean Water and the ARC. ESD provides support to ARC and SEMCOG in these training efforts. Due to the ongoing COVID-19 pandemic, the workshops were

held virtually. The Alert Observer training, that was redesigned for the virtual platform in 2020, was offered as a virtual and in-person option in October 2022. The Advanced Investigator training workshop returned to in-person only in October 2022. Due to the demand, a second day of training was held in November for both workshops.

Alert Observer

The IDEP Alert Observer training workshop is a one-hour session that includes a question and answer session at its conclusion. This training introduces illicit discharges, why it is important to identify and report, and reporting procedures. The virtual and in-person training workshop was held virtually and in-person at the HAWK Center Farmington Hills on October 18, and November 10, 2022 with a total of 218 persons from 72 organizations attending the sessions. One-hundred of the 218 attendees (46 percent) were representatives of (or consultants representing) ARC member communities.

Advanced Investigator

The IDEP Advanced Investigator training workshop is a two-hour session that included a question and answer session at its conclusion. This training details the various techniques used to investigate, identify and eliminate illicit discharge sources. The Advanced Investigator training in-person training workshop was held on October 18, and November 10, 2022 at the HAWK Farmington Hills with a total of 83 persons from 43 organizations attending the sessions. Twenty-eight of the 83 attendees (34 percent) were representatives of (or consultants representing) ARC member communities.

Appendix B contains the attendance lists for the Alert Observer and Advanced Investigator workshops. Attendees representing ARC communities are highlighted.

Task 3 Reporting

Written progress summaries of IDEP activities were provided. The 2021 IDEP Activities Summary was completed and the 2022 activities summary drafted.

Figures
2022 ARC IDEP Field Investigations

Figure 1: Outfall PY5 Investigation Area Map

Figure 2: Holbrook Street Investigation Area Map



11/3/2022
10 *E. coli*
95 HF183

11/3/2022
10 *E. coli*
N/A HF183
11/9/2022
12997 *E. coli*
1979 HF183

5/13/2022
52 *E. coli*
N/A HF183

5/13/2022
31 *E. coli*
N/A HF183

5/13/2022
1046 *E. coli*
94,315.8 HF183

5/13/2022
1187 *E. coli*
131,578.9 HF183

11/3/2022
86 *E. coli*
N/A HF183
11/9/2022
2755 *E. coli*
95 HF183

11/3/2022
185 *E. coli*
95 HF183
11/9/2022
481 *E. coli*
95 HF183

11/3/2022
199 *E. coli*
N/A HF183
11/9/2022
N/A *E. coli*
N/A HF183

11/9/2022
DRY

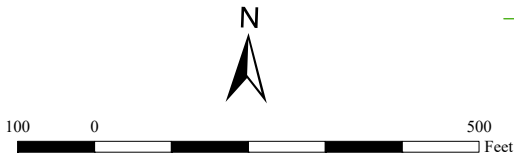
11/3/2022
52 *E. coli*
N/A HF183
11/9/2022
52 *E. coli*
N/A HF183

11/3/2022
10 *E. coli*
95 HF183
11/9/2022
10 *E. coli*
N/A HF183

11/3/2022
75 *E. coli*
95 HF183
11/9/2022
1314 *E. coli*
95 HF183



CITY OF PLYMOUTH
2022 IDEP Investigation
Outfall PY5 / Arthur Street



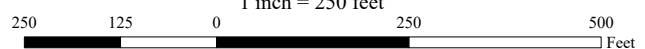
- Stormwater Gravity Mains
- Sanitary Gravity Main & Lateral Lines
- Stormwater Manholes
- Sanitary Manhole
- Sampling units - CFU / 100 ml



CITY OF PLYMOUTH
2022 IDEP Investigation
Holbrook Street



1:3,000
1 inch = 250 feet



- | | |
|-------------------------|---------------------------------------|
| Stormwater Gravity Main | Sanitary Gravity Main & Lateral Lines |
| Stormwater Manhole | Sanitary Manhole |
| Stormwater Catch Basin | |

Sampling units - CFU / 100 ml

Appendix A
2022 ARC IDEP Field Investigation Data
City of Plymouth

Table A1: Outfall PY5/Arthur Street Investigation Area

Table A2: Holbrook Street Investigation Area

Number	Date	Time (military)	Investigation Location	Site Location	<i>E. coli</i> (colony-forming units (CFU)/100mL) or MPN/100mL	HF183 Gene copies (GC)/100mL	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
1	6/29/2022	NA	Holbrook St Storm Sewer	Spring/Holbrook St	5172	212.6	NA	NA	NA	NA	Sample collected after a rain event by ARC staff. Flow from north inlet. Sample collected in manhole sump	No	No
2	6/29/2022	NA	Holbrook St Storm Sewer	Spring/Holbrook St - North inlet	>24,196	217.9	NA	NA	NA	NA	Sample collected after a rain event by ARC staff. Flow from north inlet. Sample collected from the north inlet flow	No	No
3	11/3/2022	9:30	Holbrook St Storm Sewer	Spring/Holbrook St Storm Sewer	NA	NA	NA	NA	NA	NA	Manhole dry, musty odor, inlets dry. Some standing water in catch basin (Holbrook east side). West side catch basin dry with leaves	No	Yes
4	11/3/2022	9:30	Holbrook St Storm Sewer	Spring/Holbrook St East Catch Basin (north of Spring St Storm)	63	95	NA	NA	NA	NA	East catch basin has leaves, debris, full of stagnant water. Sewage odor. Plymouth DMS cleaned catch basin sump and sample collected in remaining water	No	Yes
5	11/3/2022	10:00	Holbrook St Storm Sewer	Holbrook St/Liberty St	NA	NA	NA	NA	NA	NA	Manhole and inlets dry	No	No
6	11/3/2022	10:15	Holbrook St Storm Sewer	882 Holbrook St/Railroad Tracks-terminal manhole	NA	NA	NA	NA	NA	NA	Manhole and inlets dry	No	No

Number	Date	Time (military)	Investigation Location	Site Location	<i>E. coli</i> (colony-forming units (CFU)/100mL)	HF183 Gene copies (GC)/100mL	Ammonia (PPM)	Surfactant (PPM)	Conductivity (mS/cm)	Temperature (degrees Celsius)	Observations	Sanitary Flow Evidence	Odor
1	5/13/2022	9:20	Outfall PYS	William/Pacific	31	NA	NA	NA	NA	NA	Clear water in sump, inlets dry except for north inlet.	No	No
2	5/13/2022	10:00	Outfall PYS	295 Pacific	52	NA	NA	NA	NA	NA	Clear water in sump; slow flow from outlet/inlet. Trickle flow from CB outlet on east side of the street/some foam. Catch basin contains standing water/organic debris	No	No
3	5/13/2022	9:40	Outfall PYS	1251 William	1187	131578.9	NA	NA	NA	NA	Some musty odor, water has some discoloration. Sediment in sump	No	Yes
4	5/13/2022	10:25	Outfall PYS	Arthur/William North Inlet	1046	94315.8	NA	NA	NA	NA	Cloudy flow from William Street inlet; clear flow from north inlet of Arthur. Sample collected from north inlet flow	No	No
5	11/3/2022	12:50	Outfall PYS	Blanche/Pacific	10	95	NA	NA	NA	NA	Steady slow flow in inlet, some calcium deposits. Water clear, musty odor	No	No
6	11/9/2022	12:10	Outfall PYS	Blanche/Pacific	10	NA	NA	NA	NA	NA	Water in sump clear, clear flow from north inlet, trickle flow from west inlet. Some leaf decomposition odor present	No	No
7	11/9/2022	12:20	Outfall PYS	333 Pacific	12997	1979	NA	NA	NA	NA	Clear water in sump. Slow flow from east inlet (green pipe)	No	No
8	11/3/2022	11:15	Outfall PYS	197 Arthur	199	NA	NA	NA	NA	NA	Clear flow in storm	No	No
9	11/9/2022	10:45	Outfall PYS	197 Arthur	NA	NA	NA	NA	NA	NA	Standing water in storm; not enough to sample. Water clear, some leaves	No	No
10	11/3/2022	11:20	Outfall PYS	William/Arthur East	185	95	NA	NA	NA	NA	Trickle flow in manhole; clear water	No	No
11	11/9/2022	10:50	Outfall PYS	Arthur/William East	481	95	NA	NA	NA	NA	Clear, low flow with some leaves; some decaying leaf odor; all inlets dry	No	No
12	11/3/2022	11:50	Outfall PYS	324 Arthur	86	NA	NA	NA	NA	NA	Clear dry weather flow; this manhole receives flow from two structures to the north	No	No
13	11/9/2022	11:05	Outfall PYS	324 Arthur	2755	95	NA	NA	NA	NA	Clear dry weather flow; this manhole receives flow from two structures to the north. Heard sump running in manhole	No	No
14	11/3/2022	12:15	Outfall PYS	396 Arthur(Blanche/Arthur)	75	95	NA	NA	NA	NA	Clear water in storm. Some calcium deposits	No	No
15	11/9/2022	11:25	Outfall PYS	396 Arthur(Blanche/Arthur)	1314	95	NA	NA	NA	NA	Clear flow from north manhole. No flow from inlets. Flow less than 1/4." Leaf decomposition odor present.	No	No
16	11/3/2022	12:25	Outfall PYS	492 Arthur (Arthur/Farmer)	10	95	NA	NA	NA	NA	Clear water in storm	No	No
17	11/9/2022	11:40	Outfall PYS	492 Arthur (Arthur/Farmer)	10	NA	NA	NA	NA	NA	Clear water in storm; leaves, grass clippings; trickle flow from west inlet	No	No
18	11/3/2022	12:35	Outfall PYS	700 Arthur	52	NA	NA	NA	NA	NA	Water clear in sump; some trickle flow from west catch basin	No	No
19	11/9/2022	11:50	Outfall PYS	700 Arthur	52	NA	NA	NA	NA	NA	Water clear in sump; some trickle flow from west catch basin	No	No
20	11/9/2022	12:00	Outfall PYS	Arthur/Junction	NA	NA	NA	NA	NA	NA	All inlets dry, some sediment in sump; north inlet and outlet partially blocked by sediment	No	No

Appendix B
2022 Partners for Clean Water Regional IDEP Training Workshop
Alert Observer Training
Investigator Training
Attendee Lists

October 18, 2022 Alert Observer Attendee List
October 18, 2022 Advanced Investigator Training Attendee List
November 10, 2022 Alert Observer Attendee List
November 10, 2022 Advanced Investigator Training Attendee List