



Wayne County, Michigan

Annual Report

For Reporting Period January 1, 2016 – December 31, 2016

Certificate of Coverage MIG610040 General Storm Water Discharge Permit (MIG619000)

Submitted to:

Michigan Department of Environmental Quality - Water Bureau

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SECTION 1
DETERMINATION OF EFFECTIVENESS

Background

Under the federal Clean Water Act, the Phase II regulations for small municipal storm sewer systems (MS4) state that operators of small MS4s must obtain coverage under an NPDES storm water permit which requires development and implementation of a storm water management program that “must:

- Reduce the discharge of pollutants to the "maximum extent practicable" (MEP);
- Protect water quality; and
- Satisfy the appropriate water quality requirements of the Clean Water Act.

MEP is a standard that establishes the level of pollutant reductions those MS4 operators must achieve through implementation of a storm water management program. The definition of "MEP" should adapt continually to both current conditions and BMP effectiveness, but ultimately, successive iterations of the mix of BMPs and measurable goals should be made to achieve the objective of meeting water quality standards”.

“...identifying overarching goals for your entire storm water management program is also useful. Establishing objectives for each of the minimum measures can help put each program component into perspective within the framework of your overall program. One way to evaluate program success at either the minimum measure- or overall program-level is through the use of environmental indicators.

Useful indicators are often indirect or surrogate measurements where the presence of the indicator points to a likelihood that the program area was successful. Indicators can be a cost-effective method of assessing the effectiveness of a program because direct measurements sometimes can be too costly or time-consuming to be practical.” (EPA, “Measurable Goals Guidance for Phase II Small MS4s”,

<http://cfpub.epa.gov/npdes/stormwater/measurablegoals/index.cfm>)

Michigan General Storm Water Discharge Permit (MIG619000) requires a determination of the effectiveness of the various public education activities (Section A.3.b), illicit discharge elimination activities (Section A.3.a), the watershed management plan(s) (Section B.1) and the Storm Water Pollution Prevention Initiative (Section B.2). The methods for evaluation of progress “may include chemical or biological indicators, flow measurements, erosion indices, and public surveys”.

Effectiveness of Wayne County's Storm Water Management Program

Wayne County uses an innovative combination of measurable goals for some watershed management activities and evaluations through ecosystem health monitoring programs to assess the effectiveness of our storm water management program implemented under our Certificate of Coverage MIG610040. Sections 2 through 5 of this report present a summary of the implementation of watershed management activities and other BMPs. Evaluations of improvements in ecosystem health in Wayne County watersheds are presented below.

Rouge River Watershed. The Rouge River Watershed Monitoring Database, developed by Wayne County's Rouge River National Wet Weather Demonstration Project (Rouge Project), is available on CD/DVD upon request. The *2013 Rouge River Monitoring and Assessment Report*, previously published annually by the Rouge Project and the Alliance of Rouge Communities, is available at <http://www.allianceofrougecommunities.com> and presents the trend analysis of monitoring data through 2013.

A summary of the water quality trends in each of the seven Rouge subwatersheds, based on water quality data collected through 2013 and ecosystem health data collected through 2016, is presented in Table 1. As noted in the footnotes to Table 1, data for various water quality parameters were collected at different time periods. The most recent data reflected in the table were collected in 2013 and include continuous monitoring of level and flow at six locations throughout the watershed and continuous monitoring of dissolved oxygen (DO) and temperature at Plymouth Road (US7) in the Main Branch and at Military Road (L05D) in the Lower Branch.

From Table 1, all of the watershed areas show either a "no change" or "improving" trend for the monitored parameters of stream flow, temperature, dissolved oxygen (DO), total phosphorus, E.coli bacteria, fish communities, stream habitat, macroinvertebrates, and amphibians, with the following exceptions: Middle 1 for stream flow; Lower 1 for dissolved oxygen; the Middle 1 and Middle 3 for fish community; the Main ½ and Upper Rouge for macroinvertebrates; and the Middle 3 for amphibians. In particular, trend analysis indicates stream flow to be improving or has not changed in 6 of the 7 Rouge subwatershed areas. DO trend analysis shows improvement or no change in 6 of the 7 subwatershed areas and E.coli trend analysis indicates an improving or no change in all 7 watershed management areas. In 2015, at least seven of the eight amphibian species monitored were observed in 4 of the 7 watershed management areas.

Water Quality and Flow Monitoring: The most recent comprehensive water quality monitoring data for the Rouge River was collected in 2013. Water quality monitoring is conducted according to the monitoring program described in the 2012 Rouge River Watershed Management Plan (WMP) prepared by the Alliance of Rouge Communities (ARC). The five-year Rouge River Monitoring Plan for the period 2009 through 2013 included the collection of several types of data throughout the watershed, which were used to measure the improvements in Rouge River water quality and ecosystem health. Precipitation, streamflow, and biological health monitoring data were collected each year of the plan. Collection of monitoring data for dissolved oxygen, temperature, bacteria, and nutrients occurred during at least one year of the plan.

A key element of a healthy river ecosystem is adequate dissolved oxygen (DO). Instream DO concentrations (over 5 mg/L) are essential for healthy fish and other aquatic life. Even brief declines in DO concentrations to levels below 5 mg/L can have a detrimental effect on aquatic

organisms. In general DO and temperature are in compliance with minimum water quality standards on a routine basis throughout the watershed and have remained fairly stable at most locations.

Table 1: Analysis of Rouge River Conditions
Developed from *Rouge River Ecosystem Monitoring and Assessment Reports*

Parameter	Rouge Subwatershed						
	Main ½	Main ¾	Upper	Middle 1	Middle 3	Lower 1	Lower 2
Stream Flow¹	↑↑	↔	↑↑	↓↓	↔	↔	↔
Temperature²	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑
Dissolved Oxygen³	↑↑	↑↑	↑↑	↔	↑↑	↓↓	↑↑
Total Phosphorus⁴	↔	↔	↔	↔	↑↑	↑↑	↑↑
E.coli⁵	↔	↔	↔	↔	↑↑	↔	↔
Fish Community⁶	↔	NA ⁷	↑↑	↓↓	↓↓	↔	NA ⁷
Habitat⁸	↔	NA ⁷	↔	↔	↔	↑↑	↔
Macroinvertebrates⁹	↓↓	↔	↓↓	↑↑	↑↑	↔	↔
Frogs & Toads¹⁰	↑↑ 8	↔ 6	↑↑ 7	↑↑ 8	↓↓ 2	↑↑ 8	↑↑ 6

- 1) Trend arrow is based on frequency of peak flow decreasing as reported in *2013 Rouge River Ecosystem Monitoring and Assessment Report*.
- 2) Michigan water quality standards for temperature, developed to protect warm water fisheries are established only for streams receiving heated effluents with 29.4°C being the maximum temperature allowed during any month. Up arrow indicates continuous temperature monitoring did not exceed this value as reported in *2007 Rouge River Ecosystem Monitoring and Assessment Report*.
- 3) Arrow is based on daily average DO trend analysis as reported in Table 1 from the *2013 Rouge River Ecosystem Monitoring and Assessment Report* of the most downstream monitoring station.
- 4) Arrow is based on Total Phosphorus trend analysis as reported in *2007 Rouge River Ecosystem Monitoring and Assessment Report*.
- 5) Arrow is based on the majority of sampling points having an improving trend as reported in *2007 Rouge River Ecosystem Monitoring and Assessment Report*.
- 6) Trend arrow is based on comparing reported MDNR 1995 fish community survey results to MDEQ 2005 fish community survey results as reported.
- 7) Not Applicable - Lack of data to perform trend assessment.
- 8) Trend arrow was established by comparing MDEQ 2000 study ratings with MDEQ 2005 study ratings.
- 9) Arrow was established based on Friends of the Rouge and Wayne County macro-invertebrate monitoring trend analysis spring and fall 2001 – 2016. Arrows reflect a significant trend in either spring or fall data. **Bold arrows** reflect a significant trend in both spring and fall. All subwatersheds are scoring in the “Fair” range.
- 10) Arrow indicates either an increase or decrease in number of species heard in the watershed from the prior year or minimum 7 species heard in the watershed during Friends of the Rouge 2015 Frog & Toad Survey.

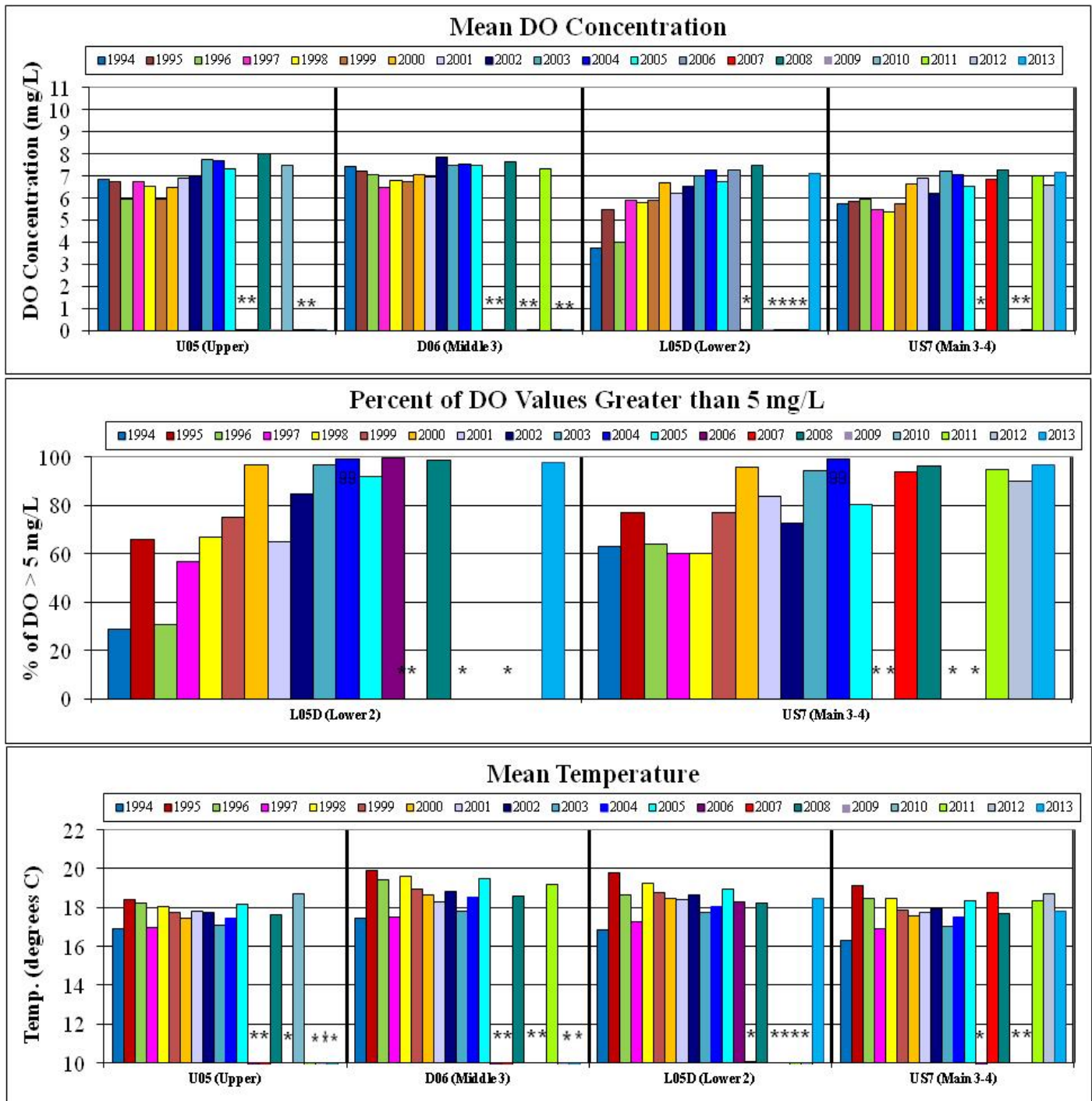
DO has been monitored in the river for almost two decades and is very useful in determining spatial and temporal water quality trends. Prior to 2006, there was at least one continuous DO and water temperature monitoring location in each of the seven Storm Water management Areas (SWMAs) in the Rouge River watershed, and two in the Main 3-4 SWMA. From 2007 through 2012, continuous DO and temperature were monitored in at least one location in the watershed with the exception of 2009. In 2013, DO and temperature were monitored at Plymouth Road (US7) in the Main Branch and at Military Road (L05D) in the Lower Branch.

Figure 1 shows the mean DO values, the percent of DO values greater than 5.0 mg/L, and the mean temperature values from 1994 through 2013 at Telegraph Road (U05), Plymouth Road (US7), Hines Drive/Ford Road (D06), and Military Road (L05D). The percent of the time DO concentrations were in compliance with the minimum 5 mg/L warm water State standard show an upward trend. Based on a rating scale developed by the Rouge Project, since 2008 the DO data at the four previously mentioned monitoring locations are all rated good ($\text{DO} \geq 5 \text{ mg/L}$, $\geq 95\%$ of the time) with the exception of Plymouth Road (US7) in 2012 when the rating was fair ($\text{DO} > 5 \text{ mg/L}$, $< 95\%$, but $> 5 \text{ mg/L}$, $> 75\%$ of the time). 2013 was one of the 5th wettest years since 1960. DO values of less than 5 mg/L at Plymouth Road (US7) in 2013 occurred 13 times: nine times after small rainfall events (ranging from 0.04 inches to 0.67 inches) with water temperatures ranging from 2°C – 8.6 °C above the average water temperature of 17.8°C. Once after a medium rainfall event of 0.86 inches and 0.6°C below the average water temperature of 17.8°C and three times after large rainfall events (ranging from 0.92 inches to 1.39 inches) with water temperature ranging from 2.2°C–7.6°C above the average water temperature of 17.8°C. DO values of less than 5 mg/L at Plymouth Road (US7) were not observed during low flow conditions in 2013.

DO values of less than 5 mg/L at Military Road (LO5D) in 2013 occurred 19 times: 12 times after small rainfall events (ranging from 0.04 inches to 0.39 inches) with water temperatures ranging from 1.4°C below–6.7° C above the average water temperature of 18.5°C. One medium rainfall event of 0.78 inches of rainfall with water temperature ranging from 3.7°C – 4.2°C above the average water temperature of 18.5°C, and one large rainfall event of 0.91 inches with water temperature ranging from 0.6°C -1.1°C below the average water of 18.5°C. DO values of less than 5 mg/L occurred five times under low flow conditions with water temperatures ranging from 0.7°C–5.8°C above the average water temperature of 18.5°C.

Regression analyses (1994 – 2013) of the continuous DO daily averages at Plymouth Road (US7) were updated with 2013 data and as in previous years continued to show improvement. The improvement at Plymouth Road (US7) from 1994 through 2013 is calculated as 0.08 mg/L/year. A regression analysis (May - October 1999 – 2013) of the continuous DO daily averages at Military Road (L05D) was updated with 2013 data and, as in previous years, shows improvement. The improvement at Military Road (L05D) from 1999 through 2013 is calculated as 0.083 mg/L/year. Trend analyses were previously performed on historical continuous daily average DO data collected from 1994 to 2012 (data not collected at each location in all years) at the six other continuous monitoring locations and in general they show improvement or no significant trend (Table 2).

Figure 1
Rouge River Continuous DO and Temperature Annual Mean Data
May – October 1994 – 2013
Stations U05, D06, L05D, US7



Note: * indicates no data available for year.
 2013 DO percent completeness US7=97.3%
 2013 DO percent completeness L05D=99.9%

Table 2
Trend Analyses: Rouge River Daily Average Dissolved Oxygen Concentrations

Daily Average DO Trend Analyses for the Rouge River Watershed			
SWMA	Site ID	Period of Record	Trend
Main 1-2	US5	1997-2005	Improvement of 0.15 mg/L/year
Main 3-4	US7	1994-2005, 2007, 2008, 2011-2013	Improvement of 0.08 mg/L/year
Main 3-4	US8	2001- 2005, 2007	No significant change
Upper	U05	1994-2005, 2008, 2010	Improvement of 0.10 mg/L/year
Middle 1	US10	2003-2005	No significant change
Middle 3	D06	1994-2005, 2008, 2011	Improvement of 0.04 mg/L/year
Lower 1	US9	2002-2006	Degradation of 0.04 mg/L/year*
Lower 2	L05D	1994-2006, 2008, 2013	Improvement of 0.17 mg/L/year**

*Since data collection began at US9 in 2001 (May – Oct) DO mean is ≥ 7.7 mg/L and the percent ≥ 5 mg/L is 100%.

**Excluding data 1994-1998

Rouge River Flow Monitoring: Moderate, stable streamflows are generally best for aquatic life and stream habitats. Extreme variation of flow rate and volume during storm events can result in severe bank erosion and sediment resuspension, which can significantly degrade fish habitats. In 2013, continuous flow and level monitoring data were collected at six locations in the watershed by the United States Geological Survey (USGS). Data were collected in cooperation with Oakland County and the Michigan Department of Environmental Quality (MDEQ) at Maple Road (US4), Beech Road (US5), Plymouth Road (US7), Shiawassee Road (US3), Inkster Road (US2), and John Daly Road (US1). Additional continuous flow and level monitoring data were collected May – October at two locations (US9 and L05D) on the Lower Branch by USGS. Flow and level monitoring was discontinued by the USGS in October 2009 at Evans Ditch (US6). A tabular summary by SWMA of the streamflow data for the period of record are shown in Table 3 as well as the 2013 precipitation totals (as percent of long-term average from 1994 through 2013).

High stream flow variability continues to negatively impact the water quality and ecosystem health of the Rouge River Watershed. Trend analyses generally indicate that the frequency of high flow is holding steady in the Middle 3 and Lower Rouge River subwatersheds. However, an increase in the frequency of high flow was calculated in the Middle 1. In the Main and Upper Rouge River, a decrease in the frequency of high flow was indicated.

Table 3
Streamflow Trend Analyses Summary and 2013 Precipitation Totals

SWMA	Site ID	Low Flow (Base Flow)	Average Flow	Peak Flow Exceeding Gage-Specific Threshold ²	Streamflow Period of Record	2013 Precipitation Total (as percent of long-term average, 1994-2013) ¹
Main 1-2	US4	↑ to mid 1990s, then ↓	↑ from mid 1960s to mid 1990s, then no change	↑ from mid 1960s to mid 1990s, then no change	1951-2013	110.34% (average of gages R15- R20, R30-R33) ³
	US5	↑ to mid 1990s, then ↓ to mid 2000s, then no change	↑ from mid 1960s to mid 1990s, then no change (cyclical)	↑ from mid 1960s to mid 1990s, ↓ begin 2000s, recent cyclical	1959-2013	
	US6	↑ to mid 1990s, then ↓	↑ from mid 1960s to mid 1990s, then no change	↑ from mid 1960s to mid 1990s, then ↓	1959-2009	
Main 3-4	US7	↑ from mid 1960s to mid 1990s, then ↓ to mid 2000s, then no change	↑ from mid 1960s to mid 1990s, then cyclical	Cyclical	1931-2013	109.01% (average of gages R37-R39) ³
Upper	US3	↑ to mid 1990s, then ↓ in late 1990s, then no change in recent years	↑ since data collection began in 1959	Cyclical	1959-2013	104.17% (average of gages R21, R29) ³
	U05	↓ since mid 1990s	↓ since mid 1990s, but no change in recent years	↓ since mid 1990s	1994-2011	
Middle 1	US10	No change	↑	↑	2002-2005, 2011 (2002 partial year)	106.09% (average of gages R11, R12, R28) ³
Middle 3	US2	↑ since mid 1980s to mid 1990s, then ↓ in late 1990s, then no change since mid 1990s	No change to mid 1990s, then ↑	No change (cyclical) since the mid 1980s	1948-1977 1984-2013	106.09% (average of gages R11, R12, R28) ³
	D06	No change since mid 1990s	No change	No change	1994-2008, 2011	
Lower 1	US9	No change	No change	No change	2001-2006* (2001 partial year)	104.17% (average of gages R13, R14, R27) ³
Lower 2	US1	No change 1948 to 1995, then ↑ in 1996, then ↓	No change to mid 1990s, then ↑ since 1995	↓ 1948 to 1995, then no change (cyclical)	1948-2013*	104.17% (average of gages R13, R14, R27) ³
	L05D	No change since 1996	No change since 1996	No change since 1996	1994-2006, 2008, 2013*	

Note: ↑=increasing trend, ↓=decreasing trend,

*YCUA WWTP began discharging in upstream end of Lower Rouge in 1996.

¹Rouge River Watershed rain gages used for calculation of precipitation totals.

²The discharge exceeded 1% of the time (calculated in the mid-1990s over the period of record).

³Partial month not included in calculation of average.

A goal for the watershed defined in the 2012 WMP is to control the volume of urban storm water runoff as well as the flow rate. The ARC's Rouge River Monitoring Plan (2009-2013) included monitoring of continuous river level and flow, which was used to evaluate progress of the best management practices towards establishing stable streamflow and habitat conditions that are supportive of diverse aquatic life communities. The ARC received a Stormwater, Asset Management, and Wastewater (SAW) grant from MDEQ in October 2015, and it is anticipated that the funding will be used in part to for new comprehensive watershed monitoring in 2017.

Rouge River Macroinvertebrate Monitoring: The Wayne County Water Quality Management Division (WQMD) continues its partnership with the Friends of the Rouge (FOTR) to complete benthic macroinvertebrate monitoring at numerous locations in the Rouge River on behalf of the Alliance of Rouge Communities (ARC). Winter Stonefly Searches were held in February 2016. Ninety-two volunteers braved the bitter cold during Friends of the Rouge's 2016 Winter Stonefly Search on February 13 to sample a total of 26 sites; volunteer efforts on additional days sampled an additional seven sites. WQMD sampled an additional six sites in February for a total of 38 sites sampled in winter 2016. Stoneflies were found at 10 of the 38 sites (26 percent)

The majority of stoneflies found were slender winter stoneflies, family Capniidae, found at six sites in the Johnson Creek watershed. Perlodid stoneflies (family Perlodidae) were found at two sites, one on an unnamed tributary, and the two Sump Creek sites, both Johnson Creek tributaries. Stoneflies were collected at three of the twelve sites sampled in the Lower Rouge subwatershed. Stoneflies were present at seven of the 12 Johnson Creek sites sampled. No stoneflies were found at the four sites sampled in the Upper Rouge watershed. No stoneflies were found at the one Main, two Tonquish Creek, and seven Middle Rouge sites sampled.

During spring 2016, macroinvertebrates were monitored at 53 sites; 32 by FOTR, six by volunteers and local colleges, and 15 sites by the Wayne County WQMD. Approximately 102 volunteers participated in the spring event, held April 16, 2016. Figure 2 identifies the site locations and ratings for the spring 2016 monitoring. In fall 2015, macroinvertebrates were monitored at 44 sites (30 by FOTR volunteers and 14 by WQMD). Approximately 89 volunteers participated in the fall event held on October 15, 2016. Figure 3 identifies the locations and site ratings for the fall 2016 monitoring.

Notable Rouge River watershed macroinvertebrate findings for 2016 include:

- *2016 Winter Stonefly Search:* Stoneflies were found at ten of the 38 sites sampled during the winter Stonefly Search. This was the coldest day for the mild winter and temperatures were below freezing. Slender winter stoneflies (Family Capniidae) were the most common type found, collected at nine sites. Perlodid stoneflies (Family Perlodidae) were found at two sites in the Sump Creek and an unnamed tributary (both Johnson Creek tributaries). The percentage of sites with stoneflies is higher than in the last two years. A freelifing caddisfly (family Rhyacophilidae) was collected at John1 (Johnson Creek at Five Mile/Salem Road) during the Stonefly Search. This is the earliest that this sensitive insect was collected, as it is usually found in the spring. Stoneflies were collected at Fowl2 (Fowler Creek), a Lower Rouge tributary, for the first time since 2011.
- *2016 Spring Bug Hunt:* Seven sensitive families were found at eight sites. The sensitive families are: Stoneflies (families Capniidae, Perlidae, and Perlodidae), Pronggill mayflies (family Leptophlebiidae), free living caddis flies (family Rhyacophilidae), Hellgrammite

larvae (family Corydalidae), and Gomphid dragonflies (family Gomphidae). Five Johnson Creek sites had at least one sensitive family present, and four sites had two sensitive families present. Freelifing caddisflies, first documented in the Lower Rouge in spring 2003, were found at LR-8 (Ridge Road) in the Lower Rouge.

- *2016 Fall Bug Hunt*: Three sensitive families were found at four sites. Pronggill mayflies (family Leptophlebiidae) were found at one Johnson Creek site. Net-tube caddisflies (family Psychomyiidae) were found at one Middle Rouge site. Dobsonfly larvae (family Corydalidae) were collected at two sites in the Main Rouge. A new dragonfly species, a Royal River Cruiser (family Macromiidae, *Macromia taeniolata*), was found for the first time in the watershed. The two sites where the dragonfly was collected are MR-4 (Levan Knoll) and MR-3 (Plymouth Riverside). The large Macromiidae specimen collected at MR-4 was donated for inclusion in the University of Michigan Zoological Museum insect collection in Ann Arbor.

Rouge River Macroinvertebrate Data Trend Analysis: Trend analysis was performed on the Rouge River benthic macroinvertebrate data collected during 2001 - 2016. The data were subdivided into the seven primary Rouge River subwatersheds and the Johnson Creek subwatershed for analysis. Johnson Creek is recognized as a coldwater stream and unique from the rest of the Rouge River system. The data analyzed was the Stream Quality Index (SQI) which is the score that is calculated by combining the number and type of macroinvertebrates found. The higher the SQI the better the water quality is at the site. Evaluation of the data to determine trends is accomplished by evaluating spring and fall data separately and for sites with a minimum of three years of data. A standard significance test ($p < 0.05$) was applied to the linear regression analysis to determine trend significance. The slope of the linear regression trend line is expressed as a number, either positive or negative. A positive slope suggests an upward (improving) trend in the data. A negative slope suggests a downward (declining) trend in the data. The direction of the trend line is recognized as significant if the p-value is equal to or less than 0.05. If there is no statistical significant trend, either positive or negative, the subwatershed trend is considered stable. Table 4 summarizes the results of the data trend analysis since FOTR/WQMD macroinvertebrate monitoring began in 2001. Table 4 also presents the average score calculated from all scores for each subwatershed and the subsequent water quality rating. The ratings are based on the following: >48 =Excellent, 34-48=Good, 19-33=Fair, <19 =Poor. All eight Rouge River subwatersheds have average scores in at least the "Fair" rating range, in both the spring and fall seasons. The Johnson Creek has a subwatershed average score in the "Good" rating range for both seasons.

In spring 2016, two sites had a statistically positive trend: John2 (Five Mile NV) and Ton2 (Ann Arbor Rd). One site, Peb3 (Pebble D/S Dam) has a statistically significant downward trend. During fall 2016, three sites demonstrated statistically downward trends: Peb 3 (Pebble D/S Dam), Ing1 (Ingersoll Creek) and Main8 (Fordson Island).

Figure 2: Rouge River Benthic Monitoring Sites and Scores, Spring 2016

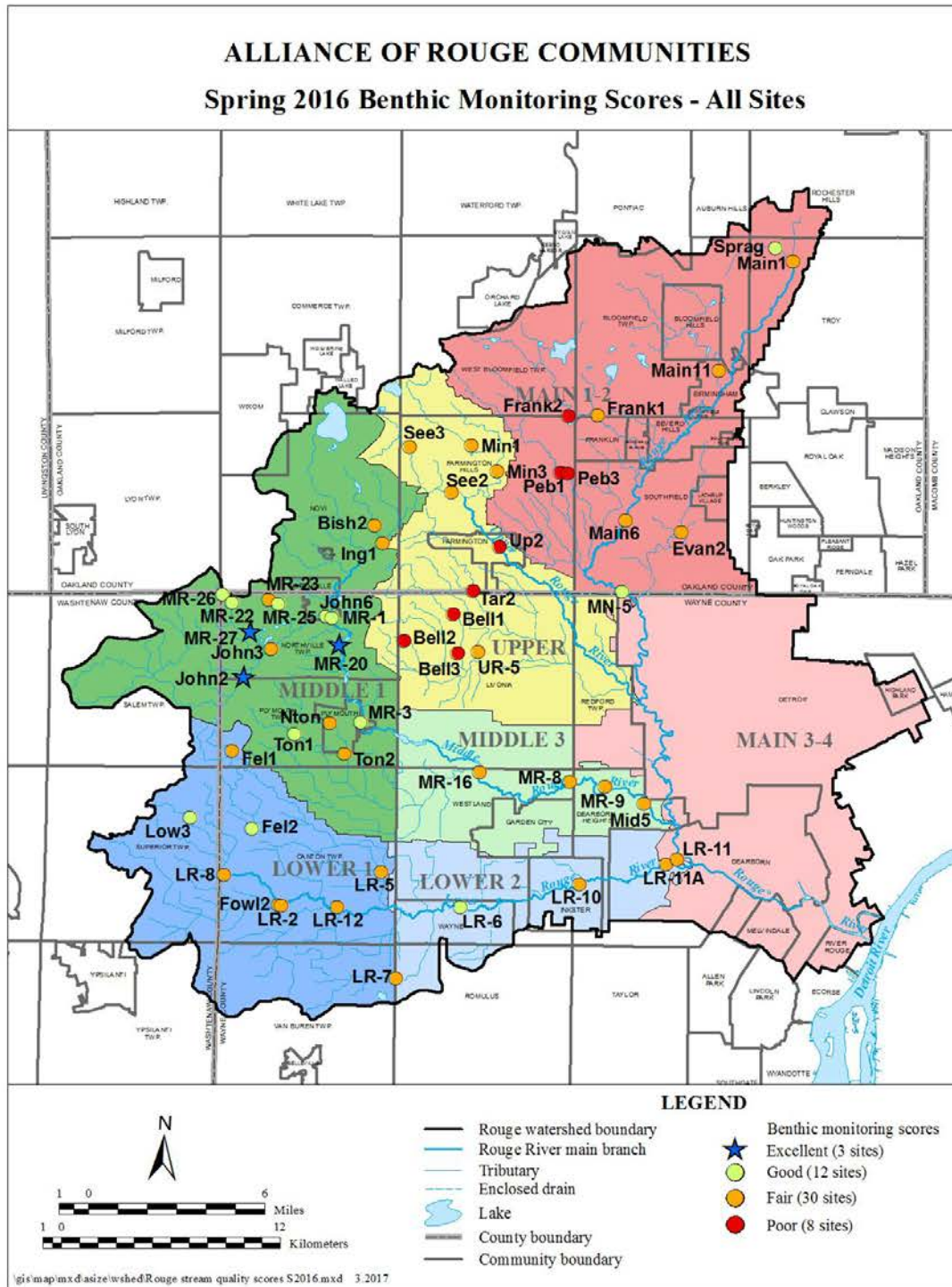


Figure 3: Rouge River Benthic Monitoring Sites and Scores, Fall 2016

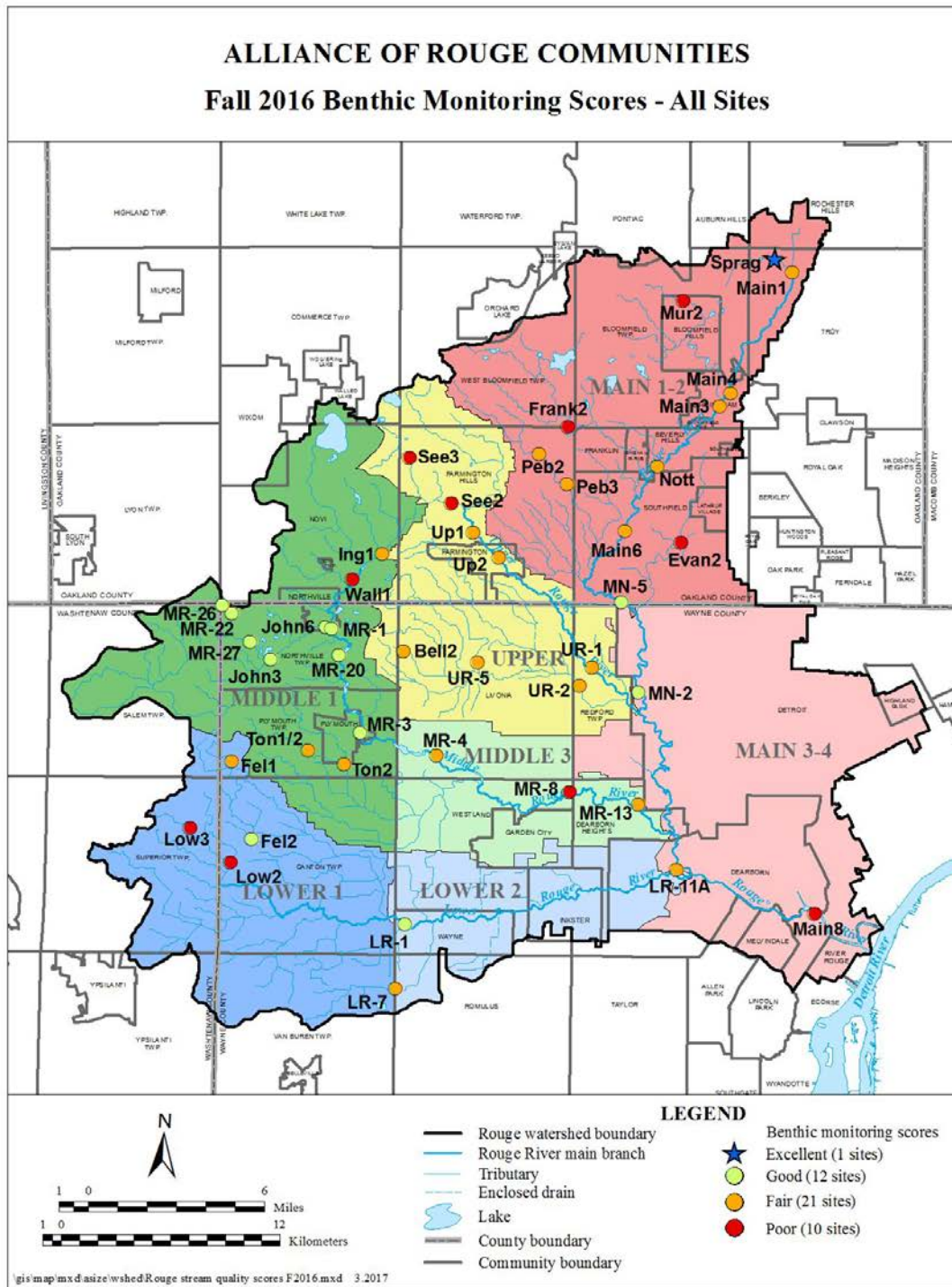
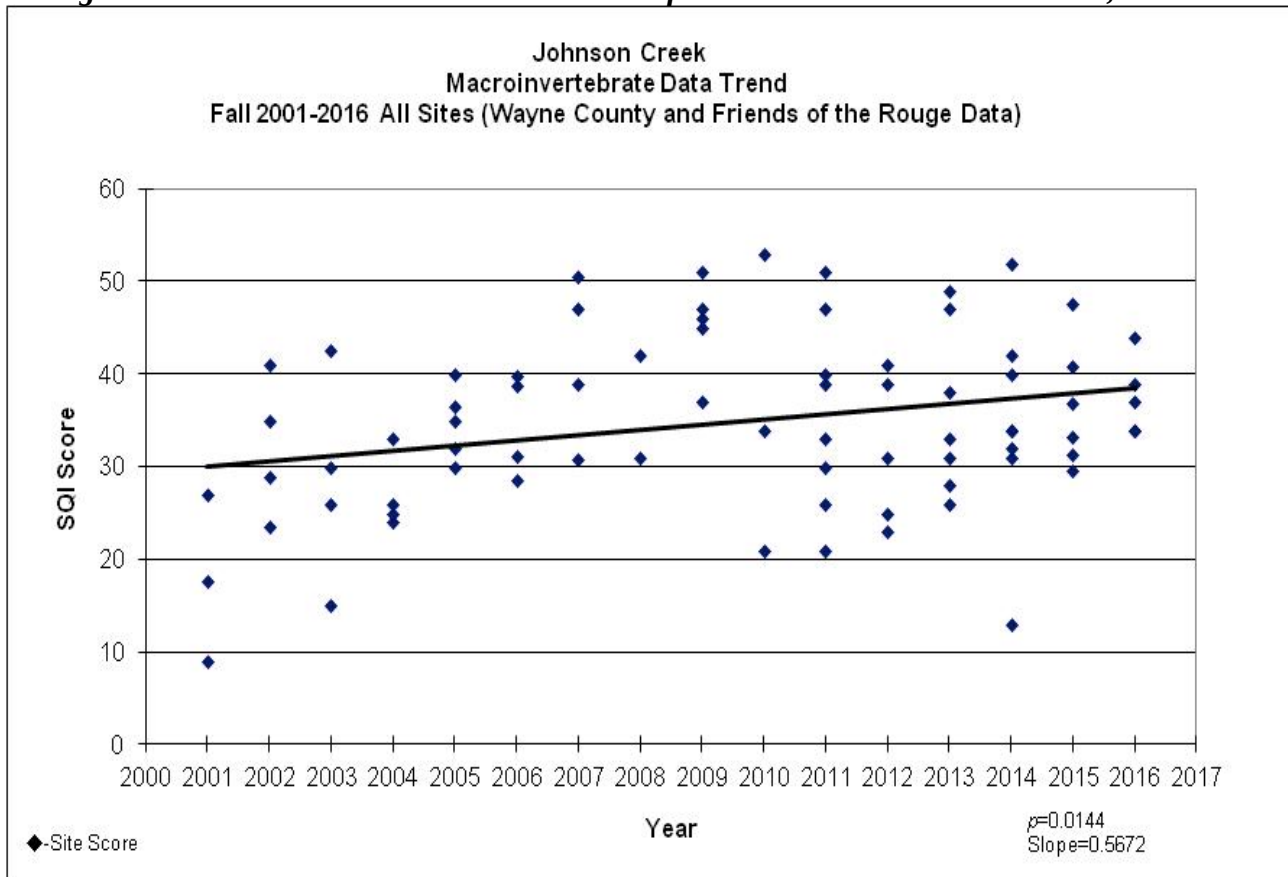


Table 4: Rouge River Macroinvertebrate Trend Analysis, 2001 – 2016

Spring Data Trend				Subwatershed Average Score (SQI)	Water Quality Rating
Subwatershed	slope	p-value	Significant trend		
Main 1-2	0.4081	0.1219	Stable	27	Fair
Upper	-0.1824	0.2698	Stable	24	Fair
Johnson Creek	0.6414	0.0045	Yes, positive	39	Good
Middle 1	0.7322	0.0017	Yes, positive	29	Fair
Middle 3	0.8782	0.0042	Yes, positive	20	Fair
Lower 1	0.0959	0.6126	Stable	30	Fair
Lower 2	0.1170	0.6690	Stable	26	Fair
Main3-4	NA	NA	NA	25	Fair
Fall Data Trend				Subwatershed Average Score (SQI)	Water Quality Rating
Subwatershed	(SQI)	p-value	Significant trend		
Main 1-2	-0.4707	0.0164	Yes, negative	30	Fair
Upper	-0.4366	0.0046	Yes, negative	25	Fair
Johnson Creek	0.5672	0.0144	Yes, positive	35	Good
Middle 1	0.0229	0.9091	Stable	32	Fair
Middle 3	0.5983	0.0013	Yes, positive	22	Fair
Lower 1	-0.3044	0.1103	Stable	29	Fair
Lower 2	0.0731	0.7723	Stable	27	Fair
Main3-4	-0.7843	0.1687	Stable	28	Fair

Figure 4 presents a graphic representation of the linear regression analysis completed for macroinvertebrate data collected in Johnson Creek during the fall for the period 2001-2016 (see *Section 1: List of Attachments* for the linear regression graphics for the spring and fall data analysis for each of the subwatersheds). Based on this analysis, three of eight subwatersheds are showing significant improving trends for spring macroinvertebrate monitoring data. Two of eight subwatersheds have significant improving data trends for fall monitoring, and two have significant declining data trends. One of the subwatersheds (the Upper Rouge) had a significant declining data trend in fall 2015. Detailed information about the 2016 macroinvertebrate sampling in the Rouge River is available online at <http://www.therouge.org/our-work/volunteer/benthic-macroinvertebrate-sampling>.

Figure 4: Fall Macroinvertebrate Data Trend for Johnson Creek Subwatershed, 2001-2016



Rouge Fish Monitoring: WQMD also assisted Friends of the Rouge (FOTR) with fish survey work within the Lower Rouge subwatershed during 2016 as part of an evaluation of the fish populations in the Rouge River watershed being conducted by FOTR staff and volunteers with grant support from the University of Michigan Water Center. Sixty-one fish species were identified during sampling between 2012 and 2016. Six fish species found were native species that were not listed in the Michigan Department of Natural Resources (MDNR) 1998 report. These six species included three sensitive darter species (Iowa Darter, Least Darter, and Logperch), two shiners (Striped and Mimic Shiners) and Bowfin. Two new non-native species were found: Mummichog (Mudminnow) and Round Goby. The Mummichogs were found at one location in Farmington Hills. Their presence was reported to the MDNR and the fish were removed. Fish monitoring reports are available on the FOTR website at <http://www.therouge.org/our-work/volunteer/fish-monitoring>.

Rouge River Insecticide Monitoring Project: This project, funded by a grant from the Michigan Department of Environmental Quality (MDEQ), under the Clean Michigan Initiative – Clean Water Fund, enables the WQMD to collect water column and sediment samples throughout the Rouge River watershed to determine if insecticides commonly used on pets and around the home are making their way into the Rouge River at concentrations that are toxic to macroinvertebrates. WQMD initiated water sampling in July 2016. The first event was a wet weather event and four locations in four separate watersheds (the Lower, Middle, Main and Upper) were

collected. A dry weather event at eight locations (two each on the Main, Upper, Middle and Lower) was performed on August 10, 2016. Due to an accident in the contract laboratory that broke the majority of the sample bottles, the sample were not analyzed, negating the event. On August 31, 2016, the dry weather event was repeated at the eight locations. Another dry weather sampling event was conducted on September 21. Sediment sampling at four sites, one in each watershed, was performed on November 16, 2016. A grant extension to complete the monitoring into 2017 was requested.

Downriver Watersheds. During 2016, Wayne County WQMD continued its partnership with the Downriver teachers and the Huron River Watershed Council (HRWC) to implement environmental indicator monitoring on behalf of the Alliance of Downriver Watersheds (ADW).

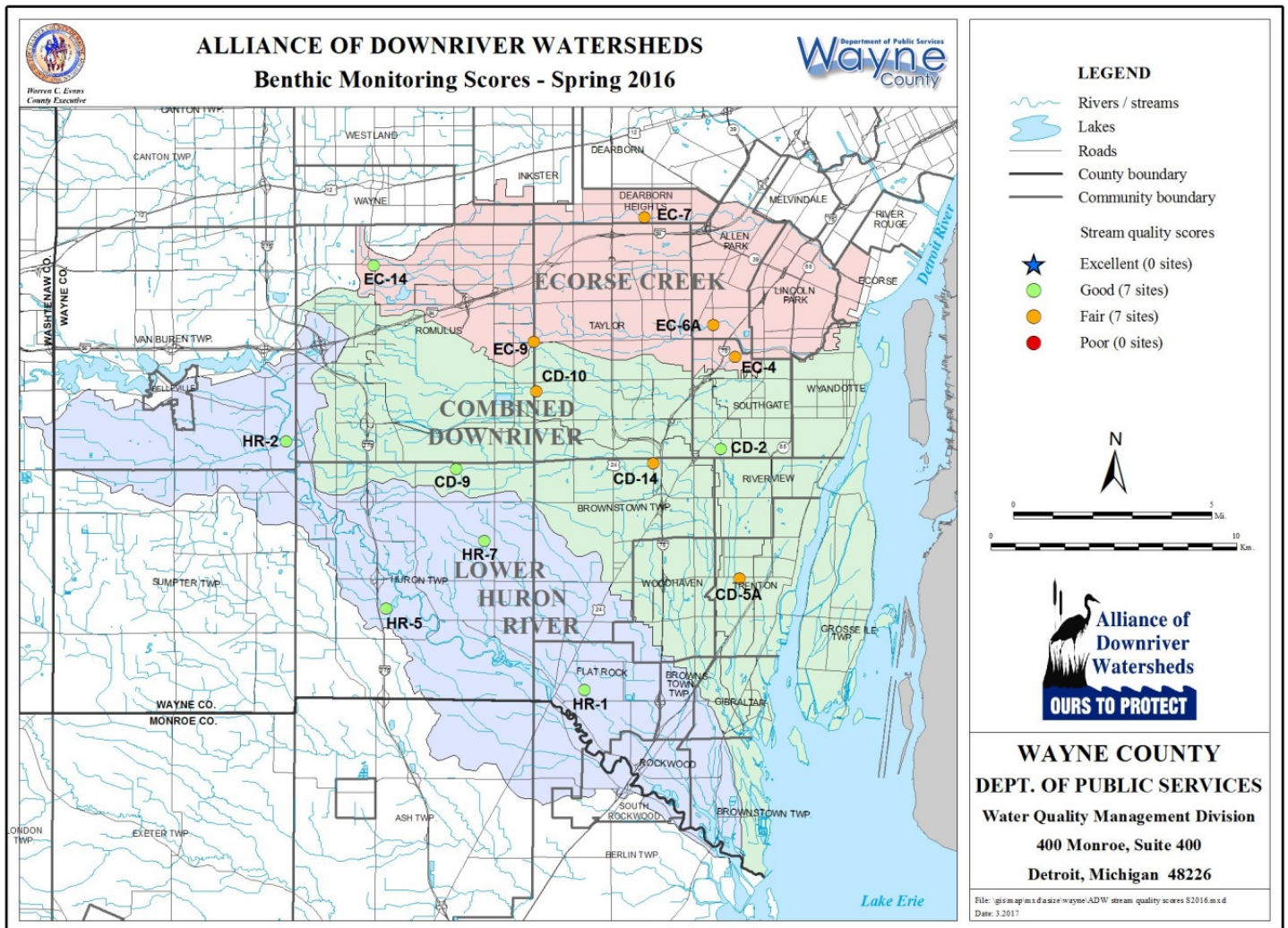
Downriver Watersheds Macroinvertebrate Monitoring: During 2016, Wayne County WQMD continued its partnership with the Downriver teachers and the Huron River Watershed Council (HRWC) to implement environmental indicator monitoring on behalf of the Alliance of Downriver Watersheds (ADW).

Downriver Watersheds Macroinvertebrate Monitoring: On January 21, 2016 the HRWC Winter Stonefly Search took place. HRWC volunteers sampled two sites in the Lower Huron River watershed. Stoneflies were found at one of the two sites. The sites sampled were Woods Creek site in the Lower Huron Metropark and the Huron River at Huroc Park in Flat Rock. One stonefly family was collected, the broadback winter stonefly (family Taenioptergiidae) at Huroc Park. WQMD did not conduct an ADW winter stonefly search in 2016.

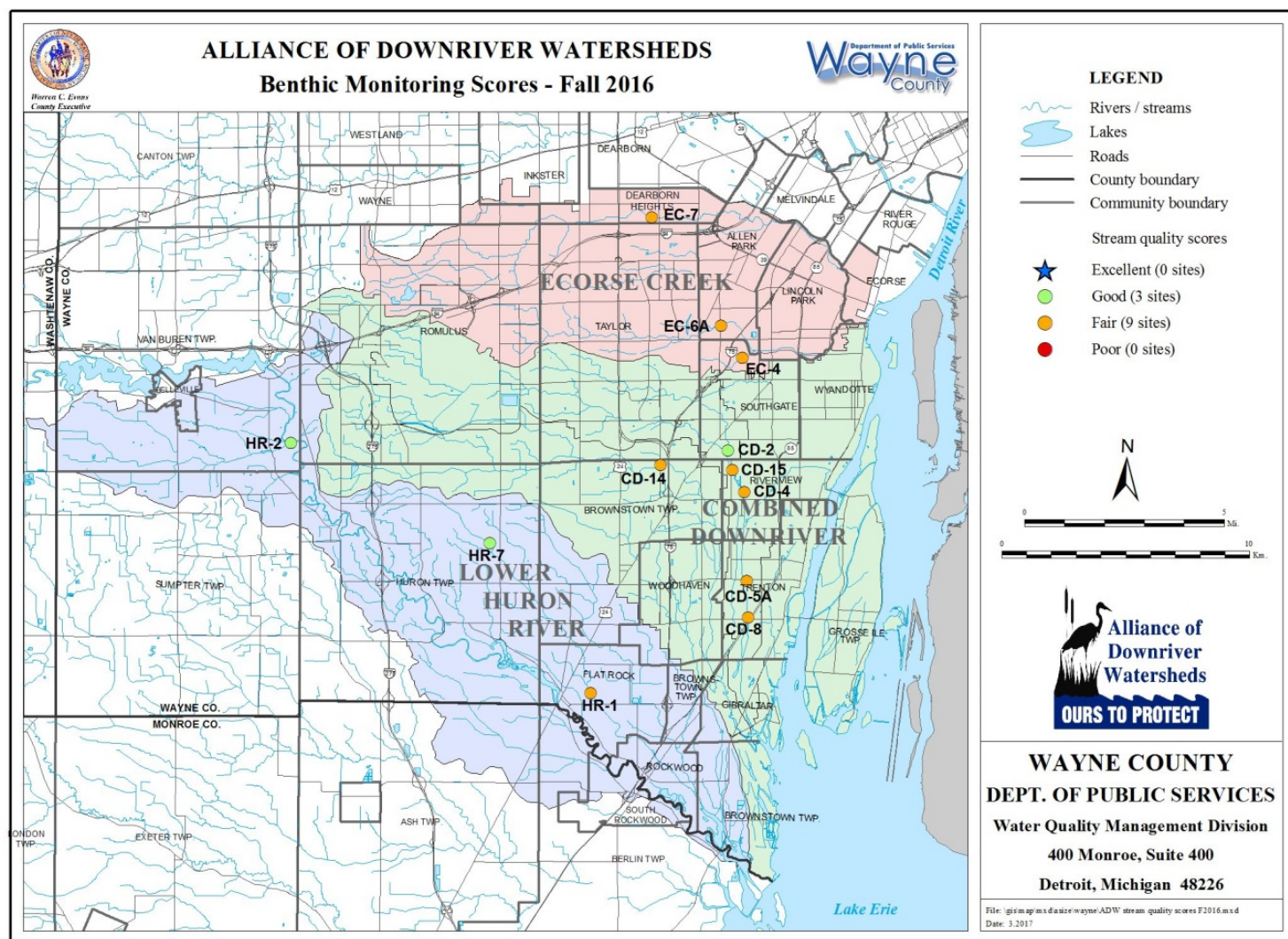
In spring 2016, macroinvertebrate monitoring was performed by WQMD and HRWC at 17 locations in the ADW watersheds of Ecorse Creek, Combined Downriver and the Lower Huron River during April-May. Thirteen ADW sites were monitored by WQMD, including seven sites with student volunteers assisting. Southgate Anderson High School, Southgate Creative Montessori, Flat Rock High School, Pardee Elementary, Barnes Elementary, Brown Elementary, and Trenton High School participated in the monitoring, providing 190 student volunteers. One school sampled two different sites. Figure 5 identifies the spring 2016 locations and their site ratings for the 14 sites monitored by WQMD. The HRWC sampled three additional Lower Huron River watershed sites with River Roundup volunteers on April 16, 2016. Three HRWC sites were sampled. One scored “good,” and two sites “poor.” One site, Huroc Park in Flat Rock, is experiencing a statistically significant declining trend.

In fall 2016, macroinvertebrate monitoring was performed by WQMD and HRWC at 11 locations in the ADW watersheds of Ecorse Creek, Combined Downriver and the Lower Huron River during October and November. Eleven ADW sites were monitored by WQMD, including eight sites with student volunteers assisting. Southgate Creative Montessori, Southgate Anderson High School, Pardee Elementary, Barnes Elementary, Riverview High School, Seitz Middle School, Brown Elementary, and Trenton High School participated in the monitoring, providing 179 student volunteers. Figure 6 identifies the fall 2016 locations and their site ratings for the 11 sites monitored by WQMD. The HRWC did not sample sites in the Lower Huron River watershed sites with River Roundup volunteers on October 8, 2016.

**Figure 5: Downriver Watersheds,
Benthic Monitoring Sites and Scores, Spring 2016**



**Figure 6: Downriver Watersheds,
Benthic Monitoring Sites and Scores, Fall 2016**



Notable macroinvertebrate findings in the Downriver Watersheds during 2016 include:

- Three of the thirteen sites sampled in spring had sensitive families, one in the Lower Huron one in the Combined Downriver, and at a new site in the Ecorse Creek watershed.
- Sensitive Dobsonflies, or Hellgrammites, (family Corydalidae) were collected at a new site in the Ecorse Creek watershed for the second time in spring 2016. This is the third time Hellgrammites were collected in the Ecorse Creek watershed.
- Perlodid stoneflies (family Perlodidae) were collected at CD-9 (Blakely Drain/Merriman Road) for the first time at a Combined Downriver watershed site in Spring 2016.
- Two stonefly families, Perlodid and Broadback (Family Taenioptergidae) were collected in at HR-2 at the Lower Huron Metropark in the Lower Huron River watershed.
- The Southgate Anderson High School site on the Frank and Poet Creek in the Combined Downriver watershed scored a “Good” and this is the highest score for the site during Fall monitoring events.

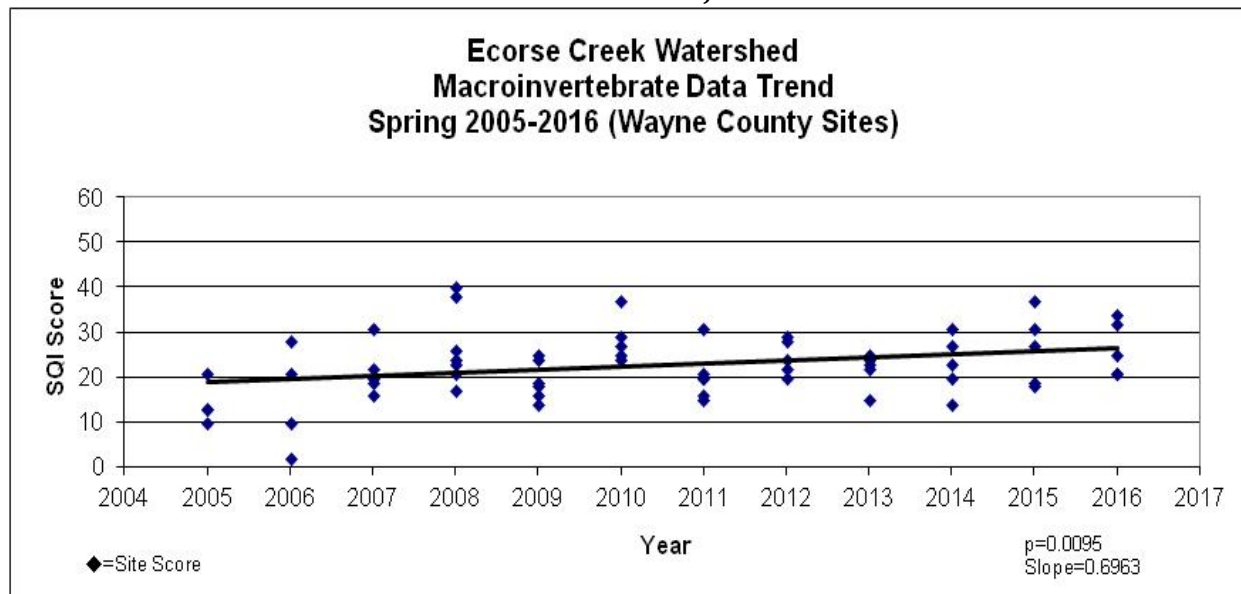
Downriver Watersheds Macroinvertebrate Data Trend Analysis: Trend analysis was performed on the macroinvertebrate data collected during 2004 – 2016 in the ADW watersheds. The data were subdivided into the three primary watersheds of Ecorse Creek, Combined Downriver and the Lower Huron River for analysis. The data analyzed is the Stream Quality Index (SQI) which is the score that is calculated by combining the number and type of macroinvertebrates found. The higher the SQI the better the water quality is at the site. Evaluation of the data to determine trends is accomplished by evaluating spring and fall data separately and for sites with a minimum of three years of data. A standard significance test ($p < 0.05$) was applied to the linear regression analysis to determine trend significance. The slope of the linear regression trend line is expressed as a number, either positive or negative. A positive slope suggests an upward (improving) trend in the data. A negative slope suggests a downward (declining) trend in the data. The direction of the trend line is recognized as significant if the p -value is equal to or less than 0.05. If there is no statistical significant trend, either positive or negative, the subwatershed trend is considered stable. Table 5 summarizes the results of the data trend analysis since ADW macroinvertebrate monitoring began in 2004. Table 5 also contains an average of all water quality rating site scores in each watershed and a water quality rating based on the following water quality rating: >48 =Excellent, $34-48$ =Good, $19-33$ =Fair, <19 =Poor. Ecorse Creek and the Combined Downriver watersheds have a Fair water quality rating in both seasons (spring and fall). The Lower Huron River is rated as Good for the spring and fall 2016. Two of the three watersheds (Ecorse Creek and Combined Downriver) demonstrate a statistically significant positive trend in spring 2016. The three watersheds demonstrated a stable trend in fall 2016. Two sites demonstrated a statistically significant downward trend in 2016: HR-5 (Reagan Drain) in Lower Huron River watershed in fall 2016, and CD-9 (Blakely Drain/Merriman Road) in the Combined Downriver watershed in spring 2016.

Table 5: Downriver Watersheds Macroinvertebrate Trend Analysis, 2004-2016

Spring Data Trend				Watershed Average Score (SQI)	Water Quality Rating
Watershed	slope	p -value	Significant trend		
Ecorse Creek	0.6963	0.0095	Yes, positive	23	Fair
Combined Downriver	1.0129	0.0003	Yes, positive	25	Fair
Lower Huron River	0.7030	0.1768	Stable	38	Good
Fall Data Trend				Watershed Average Score (SQI)	Water Quality Rating
Watershed	slope	p -value	Significant trend		
Ecorse Creek	-0.1724	0.5645	Stable	27	Fair
Combined Downriver	-0.0268	0.9084	Stable	27	Fair
Lower Huron River	-0.2650	0.4950	Stable	36	Good

Figure 7 presents a graphic representation of the linear regression analysis completed for the macroinvertebrate monitoring data collected in the Ecorse Creek watershed during spring conditions. *Section 6: List of Attachments* presents the linear regression graphics for the spring and fall data analysis for the Ecorse Creek, Combined Downriver, and Lower Huron River. Detailed information about the watershed health monitoring conducted during 2016 is provided in the report *2016 Monitoring Report Alliance of Downriver Watersheds* available online at <http://www.allianceofdownriverwatersheds.com/initiatives/>.

Figure 7: Spring Macroinvertebrate Data Trend
Ecorse Creek Watershed, 2004 – 2016



Wayne County SAW Grant Monitoring: In 2015, WQMD began implementing monitoring under the County’s Stormwater, Asset Management, and Wastewater (SAW) grant received from MDEQ. Physical and chemical monitoring was performed in the ADW watersheds and Big Swan Creek. During 2016, the chemical monitoring was performed in the Rouge River watershed and benthic macroinvertebrate monitoring in the Swan Creek watershed. Monitoring parameters sampled were: dissolved oxygen, temperature, conductivity, *E. coli* and total dissolved solids (TSS).. Samples were collected in various weather conditions (dry and wet weather). The data from the monitoring are being analyzed will be utilized in selecting IDEP investigation priority areas for 2017 and beyond.

SAW Water Chemistry Monitoring 2015: Twenty-one sites were sampled on a monthly basis throughout the sampling season (April-September 2015) in the southern Wayne County watersheds which include Ecorse Creek, the Combined Downriver, Huron River, and Swan Creek. Four Ecorse Creek, four Combined Downriver, one Middle Huron, and five Lower Huron River sites were sampled. Seven sites were sampled in the Big Swan Creek watershed in addition to these. A total of 125 samples were collected.

SAW Water Chemistry Monitoring 2016: Twenty-three sites were sampled throughout the sampling season (April-September 2016) in the Rouge River watershed. Nineteen of the sites

were sampled monthly and four less frequently. Four Upper, two Johnson Creek, 10 Middle, and seven Lower Rouge sites were sampled. A total of 120 samples were collected.

SAW Swan Creek Macroinvertebrate Monitoring: The first bug hunt in the Swan Creek watershed was performed on April 21, 2015 at three sites: one site in the Big Swan Consolidated Drain, one site in the Desbrow Consolidated Drain, and one site in the Bradshaw Intercounty Drain. Two of the three sites were sampled in spring 2016. During the spring 2016 sampling, the two sites sampled scored “Excellent” with scores ranging from 51-58. Twenty-six different taxa were collected at the Bradshaw Drain site. Three sensitive families were collected at two different sites: Clubtail dragonflies (family Gomphidae), Perlodid stoneflies (Family Perlodidae), and Perlid stoneflies (Family Perlidae). One site had three sensitive families (SSC-6 Oakville-Waltz Road, Bradshaw Consolidated Drain), and the other site had one (SSC-2 Bell Road) on the Bradshaw Consolidated). Clubtail dragonflies, Perlodid stoneflies, and Perlid stoneflies were collected at SSC-6 and Perlid stoneflies collected at SSC-2.

The data will be used to establish baseline macroinvertebrate data for the three waterways similar to the baseline data that has been established in the Alliance of Rouge Communities (ARC) and Alliance of Downriver Watershed (ADW) municipal separate storm sewer system (MS4) areas and will be used in preparing the Storm Water Management Plan to be developed under the SAW grant.

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SECTION 2
WAYNE COUNTY
ILLICIT DISCHARGE ELIMINATION PLAN
SUMMARY OF ACTIVITIES

This section summarizes Illicit Discharge Elimination Plan (IDEP) activities completed by Wayne County during the time period **January 1, 2016 – December 31, 2016**, in compliance with the County's Certificate of Coverage MIG610040 under the Michigan Department of Environmental Quality (MDEQ) General Storm Water Discharge Permit MIG619000. All activities were conducted County-wide, unless otherwise noted. Table 6 presents a summary of the results of Wayne County's IDEP.

Table 6
Environmental Concerns Investigated/Illicit Discharges Identified by Wayne County,
January 1 through December 31, 2016

<i>Method of Identification and Type of Illicit Connection</i>	<i>Number Handled or Investigated</i>	<i>Number of Confirmed Illicit Discharges</i>
Total Number of Environmental Concerns Handled or Investigated		
Calls into Wayne County Hotline	831	NT
Water Quality Complaints into DPS-Water Quality Division	41	11
Drainage Complaints directly into DPS-FMD Drain Office	142	NT
Environmental Complaints directly into DPS-LRMD (14 SESC)	106	10
OSDS Complaints directly into EHD Office	4	4
<i>Subtotal, Complaints Handled</i>	293	25
Types of Environmental Concerns or Illicit Discharges Identified during Complaint Investigations (WQMD, FMD and LRMD)		
Illicit Discharge Concern - Grease/Oil/Fuel	9	4
Illicit Discharge Concern - Sewage/Grey Water	4	3
Illicit Discharge Concern – Other	12	3
Requesting Information/Technical Assistance	1	0
Soil Erosion Sedimentation Control	14	7
Landfill Odor	69	0
Illegal Dumping	3	3
Logjams/Woody Debris	100	0
Catch basin/Manhole Issue	4	0
Flooding/Poor Drainage	10	0
OSDS	4	4
Excessive vegetation	14	0
Miscellaneous – track out, noise, excessive vegetation	49	1
<i>Subtotal, Complaint Investigation</i>	293	25
Emergency Spill Response		
<i>Subtotal, Emergency Spill Response</i>	0	0

Table 6 (Continued): 2016 Wayne County Environmental Concerns/Illicit Discharges

Environmental Concerns Identified during Routine Field Operations	<i>Number Handled or Investigated</i>	<i>Number of Confirmed Illicit Discharges</i>
Road structure issue (Roads)	1	1
Illicit Discharge (Drains, Permits, Roads, WQMD, LRMD)	9	8
Excessive Erosion (Roads, LRMD)	7	7
<i>Subtotal, Field Operations</i>	17	16
Illicit Discharges Identified during Facility Dye Test and Onsite Sewage Disposal System Inspections		
Floor Drains/Trench Drains	2	2
Sump Drain	1	1
Onsite Sewage Disposal System Failures (EHD)	35	35
<i>Subtotal, Facility Inspections</i>	38	38
Pollution Prevented or Removed by Activity	<i>Amount</i>	<i>Sites/Events</i>
Pollutant Load Reductions from Dye-Testing (WQMD)	1.54 lbs/yr 2,000 gals/yr	3
Pollutant Load Reductions from Onsite Sewage Disposal System Program (EHD)	31,239 lbs/yr 2,829,206 gals/yr	39
Cleanup of illegal dump sites (LRMD - C.L.E.A.N. program)	660 cu yds including 8,152 tires	20
Household Hazardous Waste Collection Days (4 days – LRMD)	476.8 tons (953,600 lbs)	4
Cleanup of material dumped on County property, street sweepings and catch basin spoils (DPS-Roads)	9,535.91 tons (19,671,820 lbs) 3,330 miles swept	NT
County Drain debris disposal (FMD)	900 cu yds	30
TOTAL POLLUTION PREVENTED AND/OR ILLICIT DISCHARGES IDENTIFIED	20,655,660.5 lbs¹	>79²

NT = Not Tracked separately

DPS = Department of Public Services

LRMD = Land Resource Management Division

FMD = Facilities Management Division

WQMD = Water Quality Management Division

EHD = Environmental Health Division, Wayne County Department of Health, Veterans and Community Wellness

C.L.E.A.N = County Lending Environmental Assistance to Neighborhoods program

OSDS = Onsite Sewage Disposal System

SESC = Soil Erosion and Sedimentation Control

1 - Does not include activities reported in cubic yards.

2 – Number of confirmed illicit discharges (25+16+38), does not include number of LRMD or FMD cleanup/collection events.

County-Based 24-Hour Hotline and Coordinated Complaint Response (WCIDEP #1)

24 Hour Hotline/Complaint Response

The Wayne County Department of Public Services (WCDPS) maintained the County's telephone "Environmental Hotline" (888-223-2363) during the reporting period. The hotline is operated 24 hours per day seven days a week, to log and coordinate responses to environmental concerns and information requests of all types. During the reporting period, 831 calls were handled through the WCDPS Environmental Hotline as follows:

- 107 calls required technical assistance;
- 13 calls were referred to outside agencies;
- 724 inquiries were addressed by staff over the telephone, without need for a field investigation; and
- 7 calls were transferred to WCDPS field operations staff in the Land Resource Management Division (LRMD), the Facilities Management Division (FMD) or the Water Quality Management Division (WQMD). As summarized below, complaints regarding environmental matters are also received directly by these WCDPS divisions as well as by the Wayne County Environmental Health Division and Roads Division.

Coordinated Complaint Response

The WQMD handled a total of 41 complaints during the reporting period as follows: 10 were referred to other agencies or County Departments (4 illicit discharges: 1 was a leaking septic tank that was referred to EHD, 1 was an ongoing unknown substance discharging that was referred to the community for investigation, 1 was a resident that dumped a petroleum product into the storm drain that was referred to the MS4 community, and 1 was a plugged landfill SSO that overflowed into the storm water pond that was referred to LRMD) and 31 were investigated by WQMD. Of the 31 investigated by WQMD, 19 were illicit discharge complaints with 7 being confirmed as illicit discharges as follows: 2 sanitary sewer overflow (SSO), green dye in a County Drain, oil in storm drain and road ditch, oil dump into leaking dumpster, brown turbid water, and Oil sheen on river from storm drain outfall. All 7 confirmed discharges have been removed or referred to others for correction follow-up.

The Facilities Management Division (Drain Office) handled a total of 142 complaints concerning County Drains during the reporting period, categorized as follows: log jams/woody debris – 100, debris – 3, catch basin/manhole – 4, flooding/poor drainage – 10, sink hole – 1, excessive vegetation – 14, and miscellaneous - 10.

LRMD received and responded to 106 complaints in 2016, categorized as follows: 69 landfill odors, 14 soil erosion sedimentation control, 7 landfill track out, and 16 miscellaneous/other. Additionally, LRMD staff responded to numerous information requests regarding the recycling and/or disposal of household hazardous waste materials.

County-Based Illicit Discharge Advanced Investigation and Correction (WCIDEP #2)

Illicit Discharge Investigations, Facility (Dye-Test) Inspections

Dye-testing of facilities to identify improper connections of plumbing fixtures to the storm sewer system/waterways took place in three watersheds during 2016: Rouge River, Ecorse Creek, and Combined Downriver. Plumbing fixtures at 29 facilities were dye-tested, resulting in the

identification of three illicit connections at one facility, and one environmental concern at one facility. During the reporting period, corrective actions of identified illicit connections, illicit discharges, and environmental concerns were verified at 21 facilities.

Table 7 provides a summary of the facility dye test inspections by watershed. Table 8 summarizes the types of illicit connections and illicit discharges found by Wayne County during facility inspections for this reporting period. Table 9 presents a summary of illicit discharge investigations performed independently of facility dye testing activities. Table 10 presents an estimate of the pollutant loading reductions to Wayne County waterways that will be achieved per year when all of the illicit discharges identified in 2016 by dye-test (WCIDEP #2) and onsite sewage disposal system inspections (WCIDEP #5) are eliminated. Wayne County's 2016 illicit discharge elimination efforts (WC IDEP #2 and #5) will prevent over 31,040.5 pounds of pollutants and over 2,831,206 gallons of polluted water per year from entering Wayne County waterways.

**Table 7: Wayne County Watersheds Facility (Dye Test) Inspection Summary
January 1 through December 31, 2016**

	Annual Total	Watershed			
		Rouge River Watershed	Ecorse Creek Watershed	Combined Downriver Watershed	Huron Watershed
Number of Facilities Inspected	29	5	24	0	0
Number of Facilities with Illicit Connections	1	1	0	0	0
Number of Illicit Connections	3	3	0	0	0
Number of Facilities with Illicit Discharges	0	0	0	0	0
Number of Illicit Discharges	0	0	0	0	0
Number of Environmental Concerns	1	0	1	0	0
Number of Facilities with Environmental Concerns	1	0	1	0	0
Number of Facilities with Confirmed Corrections	21	8	5	5	0
Number of Illicit Connections Corrected	49	4	41	4	0
Number of Illicit Discharges Corrected	9	6	2	1	0
Number of Environmental Concerns Corrected	3	1	0	2	0

Since the inception of the Illicit Discharge Elimination Program in 1987, Wayne County staff have inspected 10,003 facilities and identified 2,602 illicit connections at 654 facilities. WQMD confirmed corrections of illicit connections, illicit discharges and environmental concerns at a total of 647 facilities through 2016. Assuming correction of all illicit discharges identified to date, WQMD's illicit discharge facility dye-testing elimination efforts since 1987 have prevented

over 1,001,523,058 gallons of polluted water and more than 7,655,635 lbs of contaminants from entering Wayne County waterways.

Environmental concerns are material storage / handling and housekeeping issues that have the potential for creating illicit discharges. These items are identified and depending on the severity may be referred to the MDEQ for enforcement or if the owner agrees to correct the deficiencies, WQMD may perform a follow up inspection to ensure corrective action. Corrections of outstanding illicit connections, illicit discharges, and environmental concerns were confirmed at 22 facilities during 2016. Table 2.1 provided in Section 6: List of Attachments; Section 2 summarizes these corrections. Table 2.2 provided in Section 6; Section 2 is a list of facilities with outstanding illicit connections, illicit discharges, and environmental concerns. Confirmation of corrective action is pending at 30 facilities. Four of these facilities are vacant and two were referred to the local community or appropriate state agency for enforcement action.

Table 8
Types of Illicit Discharges Found Within Wayne County
During Facility (Dye-Test) Inspections January 1 through December 31, 2016

<i>Type of Illicit Connection</i>			WATERSHED		
	<i>Percent of Total Identified</i>	County Total	Rouge River	Ecorse Creek	Huron River
Floor/Trench drains	67	2	2		
Sump drain	33	1	1		
TOTAL	100	3	3		
<i>Type of Illicit Discharge</i>					
	<i>Percent of Total Identified</i>	County Total	Rouge River	Ecorse Creek	Huron River
None in 2016 via Facility Dye-Testing					
TOTAL					

Table 9
Summary of Illicit Discharge Investigations Performed Independently of Wayne County
Facility Dye Testing Activities: January 1 through December 31, 2016

	Annual Total 2015	WATERSHED			
		Rouge River	Ecorse Creek	Combined Downriver	Swan Creek
Number of Onsite Sewage Disposal Systems (OSDS) with Illicit Discharges	39	NT	NT	NT	NT

NT: Not Tracked. EHD tracks OSDS by community and not by watershed

Table 10
Summary of Illicit Connections and Estimated Pollutant Load Reductions to Wayne
County Watersheds: January 1 through December 31, 2016

Parameter	Estimated Amount of Polluting Material Prevented from Entering Wayne County Waterways (annually in pounds)*		
	Annual Loads Pounds/year	Facility Dye-Testing	Failed OSDS
Surfactant	318.82	0.82	318
Potassium	141.72	0.72	141
Suspended Solids	5,725	0	5,725
Total Phosphorus	212	0	212
Total Solids	16,256	0	16,256
Total Organic Carbon	1,107	0	1,107
Ammonia	200.004	0.004	200
Biochemical Oxygen Demand	5,206	0	5,206
Fats, Oils and Grease	2,073	0	2,073
Total Annual Pounds per Year	31,040.5	1.54	31,239
Flow (gallons/year)	2,831,206	2,000	2,829,206

*These loading reductions assume the removal of all illicit discharges identified during the reporting period.
OSDS = Onsite Sewage Disposal System

Rouge Watershed Facility Inspections (Dye-Testing)

In 2016, WQMD performed 5 facility dye test inspections in the Rouge River watershed (see Table 7 above). Dye testing was performed in the Wayne County communities of Dearborn and Wayne. Wayne County confirmed corrections of four illicit connections, six illicit discharges and three environmental concerns previously identified at eight facilities. Communities where follow up inspections were performed include the cities of Livonia and Northville. At the close of 2016, there were 21 facilities with outstanding illicit discharges (including illicit connections) and environmental concerns in the Rouge River watershed. Eleven of these facilities are municipal and the respective communities are proceeding with corrections to be in compliance with their storm water permit. Two of the facilities were vacant at the time of the follow up inspection. One facility is pending confirmation of all of an environmental concern pending MDEQ enforcement. (See Table 2.2 in the Attachments for further details).

Alliance of Rouge Communities Dry Weather Screening

WQMD staff utilized funding from the ARC identified 18 sites for monitoring, procured lab services, collected water samples and provided data management and analysis. Samples collected were analyzed for E. coli, dissolved oxygen, conductivity, water temperature and visual observations were also recorded at each site. The sites sampled were within established priority areas within the ARC's Collaborative IDEP. The purpose of the sampling was to help further

isolate/refine source identification priority areas for future collaborative IDEP advanced investigations. The samples were collected from within the Lower 1, Middle 1-Tonquish Creek, and the Upper Rouge (Beitz Drain). The communities where the sampling occurred are: Canton Township, Superior Township, Plymouth Township, Cities of Plymouth and Livonia. The sampling was performed during dry weather (48 hours or more without precipitation greater than 0.10 inches) over two days, November 14-15, 2016.

Alliance of Rouge Communities Advanced Investigations

In response to the elevated *E. coli* concentrations at sites identified during the dry weather screening in 2015, WQMD continued advanced investigations in the City of Plymouth. These investigations focused on the Park Street and the Harvey Street MS4 areas.

WQMD worked with ARC staff and the City of Plymouth to perform manhole inspections, sample collection and lab data analysis of tributary storm sewer segments to the Harvey Street and Park Street MS4 to either target them or eliminate them for closed circuit televising and/or residential dye testing. The Harvey Street MS4 is tributary to Byron Creek which flows into the South Branch of Tonquish Creek. The Park Street MS4 discharges into the Middle Branch of the Rouge River.

Harvey Street – August and November 2016

Storm sewer manholes on Harvey Street from the Byron Street intersection to Linden were investigated for dry weather flow on August 4, 2016. Four of the 12 manholes investigated had dry weather flow and samples were taken. Evidence of sanitary debris was observed in the Palmer Street west inlet. The evidence reconfirms there are illicit connections to the storm sewer on Palmer identified during a previous investigation. Manholes on Beech Street, where evidence of sewage was previously detected, were not accessible on August 4, 2016. Two inlets, Simpson east, and Linden west, had *E. coli* concentrations in excess of 1,000 most probable number (MPN)/100 ml). On November 11, 2016, storm sewer manholes on Simpson, Linden and Jener streets within the Harvey Street MS4 area were investigated for dry weather flow. Four of the six manholes investigated had dry weather flow and samples were taken. The Linden/Jener manhole had two inlets with *E. coli* concentrations in excess of 1,000 MPN. None of the manholes investigated on Linden had visible evidence of sanitary debris.

Park Street – August and November 2016

On August 4, 2016, WQMD conducted dry weather screening of storm sewer manholes beginning with Mill Street at Union and proceeding upstream on the north inlet, and also upstream on Ameila Street, which drains into the Mill/Union Street manhole through the west inlet. There was dry weather flow in the Mill Street storm sewer and heavy dry weather flow in the Amelia Street storm sewer. Four samples were collected and all four have *E.coli* concentrations in excess of 1,000 MPN/100 ml. Storm sewer manholes on Mill and Amelia streets within the Park Street MS4 area were also investigated for dry weather flow on November 11, 2016. Four of the eight manholes investigated that day had dry weather flow and samples were taken. The manhole adjacent to 141 N. Mill had an *E. coli* concentration in excess of 1,000 MPN. This manhole also had a noticeable film and odor suggestive of sanitary sewage.

Recommendations/Investigation Plan

The WQMD and ARC staff met with the City of Plymouth, on December 5, 2016, to review the storm sewer investigation results and developed a plan for follow up activities. The investigation plan the parties devised is as follows:

Harvey Street

The City will arrange for a contractor to televise the following storm sewer segments:

- Palmer Street west of Harvey Street to the terminal manhole east of McKinley Street,
- Beech Street west of Harvey Street to the terminal manhole east of McKinley Street,
- Linden Street west of Harvey Street to the terminal manhole east of Herald Street,
- Jener Street from the Linden/Jener Street intersection north on Jener Street to first manhole upstream.

Based on the televising work the WQMD staff may perform residential dye-testing of select homes with assistance from the City.

Mill Street

The City will arrange for a contractor to televise the following storm sewer segments:

- Amelia Street west of Mill Street upstream to the Farmer Street intersection,

The City will also survey residences along Mill Street between Union Street and Plymouth Road and make contact with property owners to coordinate access for dye testing. The WQMD will perform the dye testing with the assistance from the City of Plymouth staff.

An investigative plan was developed and submitted to the ARC for review, approval and implementation in 2017.

Alliance of Downriver Watersheds (ADW Dye-Testing)

Under contract to the ADW, WQMD staff assessed municipal facilities of select ADW members for illicit connections and illicit discharges during 2016. The results of this effort, along with other dye-testing efforts are described below by watershed.

- *Ecorse Creek Watershed*

No ADW municipal facilities were inspected in 2016 within the Ecorse Creek watershed. Twenty-four commercial facilities were inspected, all in the City of Dearborn Heights. No illicit connections, illicit discharges and one environmental concern were found at one facility. WQMD also performed follow up facility inspections to confirm corrections of outstanding illicit connections and discharges in the communities of Lincoln Park, Romulus and Taylor. Corrections were confirmed at nine facilities; 45 illicit connections and two illicit discharges corrected (see Table 7 above). At the end of 2016, there was one facility with an outstanding environmental concerns located within the Ecorse Creek watershed (see Table 2.2 in the Attachments). Correction of remaining outstanding violations continues to be pursued in 2017.

- *Combined Downriver Watershed Facility Inspections (Dye Testing)*
No dye test inspections were performed in the Combined Downriver in 2016. Follow up to confirm corrections were performed in the communities of Romulus, Southgate, and Taylor within the Combined Downriver watershed. Five facilities corrected four illicit connections, one illicit discharge, and two environmental concerns. Currently there are six facilities with outstanding illicit connections, illicit discharges or environmental concerns in the Combined Downriver Watershed (see Table 2.2 in the Attachments). Correction of these outstanding violations will continue to be pursued in 2017.
- *Lower Huron River Watershed (Dye Testing)*
No facilities within the Lower Huron River watershed were inspected in 2016. One facility, a Woodhaven Community Schools high school pool, has an illicit connection; the swimming pool backwash drain that is connected to the storm sewer. There is one facility with outstanding illicit discharges in the Lower Huron River watershed and that is the pool. The pool area, and another section of the school is scheduled for renovation in 2016 at which time the illicit connection will be corrected during the construction.
- *Middle Huron River Watershed (Dye Testing)*
No facilities within the Middle Huron River watershed were inspected in 2016. One facility, a private swimming pool, has an illicit connection; the swimming pool foot-wash drain. The pool is closed and no plans to open or renovate were received by the Wayne County Environmental Health Division.

Compliance Plan

WQMD continues follow up visits to facilities with outstanding illicit discharges and continues its efforts to achieve voluntary compliance. Table 2.2 “Facilities with Outstanding Illicit Discharges” within the Section 6: Attachments – Section 2 provides a listing of outstanding facilities. If voluntary compliance efforts fail, the County enlists the assistance of the local community to seek compliance through their plumbing code. The County may also initiate enforcement under its civil infraction ordinance. If voluntary compliance and local enforcement efforts are unsuccessful, the facility will be referred to the MDEQ. The local communities are responsible for correction of outstanding illicit discharges that were identified at their respective facilities during inspections performed by WQMD.

IDEP Training Workshops (WCIDEP #3)

In 1999, the WQMD initiated a program designed to provide training for county and local community staff responsible for locating and eliminating illicit discharges to surface waters. To date, five modules and two specialty sessions have been developed and presented to 2,329 municipal staff and other interested parties. The five modules are: (A) *Overview*, (B) *Basic Investigations*, (C) *Construction-Related Illicit Connections*, (D) *Advanced Investigations*, and (E) *Combined Basic/Advanced Investigation Training*. The *Specialty Training Session I: Recognizing and Reporting Illicit Discharges*, and *Specialty Training Session II: IDEP Problem Solving Exercise* were also developed. Each module or session includes key messages, technical information, an examination, and a certificate of successful completion.

In 2012, WQMD and the Alliance of Rouge Communities staff revised and shortened the full day *Combined Basic/Advanced IDEP Training Workshop* to a half day session titled *Illicit*

Discharge Investigators Training. In 2013, the five year Southeast Michigan Regional IDEP Training Plan was developed and recommends that the *IDEP Investigator Training* program be offered in the years 2013, 2015 and 2017. *Illicit Discharge Recognition & Reporting* along with *Municipal Good House Keeping Training* is to be provided in years 2014 and 2016. WQMD provided this workshop to Wayne County Roads Division Personnel in April 2016 at the Central Maintenance Yard (CMY) in Romulus. IDEP tip cards were prepared for distribution to the training participants.

Table 11
2016 Attendance
Wayne County Illicit Discharge Elimination Program Training Workshops

Community/Agency	Number
Wayne County staff	18
Oakland County community staff	
Oakland County staff	
Macomb County staff	
Washtenaw County community staff	
Washtenaw County staff	
Consultants representing communities	
School District staff	
University/community college staff	
Others not classified	
2016 Total	18

Minimize Infiltration of Seepage from Sanitary Sewers (WCIDEP #4)

In 2016, Wayne County continued to minimize seepage of sanitary sewage by training field staff to identify and report suspicious discharges (WCIDEP#3), by training citizen volunteers to identify and report suspicious discharges (WCIDEP#11), and by continued operation and maintenance of our sanitary sewer systems and implementation of sanitary sewer overflow (SSO) elimination activities as specified under the NPDES permit and consent agreements for the sanitary sewer systems operated by Wayne County.

Minimize infiltration of Seepage from Onsite Sewage Disposal Systems (WCIDEP #5)

During 2016, the Environmental Health Division (EHD) of the Wayne County Department of Health, Veterans and Community Wellness continued implementation of the Wayne County Onsite Sewage Disposal Systems (OSDS) Evaluation and Maintenance Ordinance (Enrolled Ordinance 99-527). In 2016, a total of 35 failed systems were identified by EHD via complaints, repair permit evaluations, and “time of sale” inspections. From Table 12, there were 185 “time of sale” evaluations of onsite sewage disposal systems performed during 2015, 35 of these systems were identified as failing, and with 30 systems corrected. Twenty-two inspectors were certified to perform OSDS “time of sale” evaluations in Wayne County during 2016.

Table 12
Summary of Onsite Sewage Disposal System Evaluations Performed
January 1 - December 31, 2016

Type of OSDS Inspection	Number of Inspections	Number of Failures
Time of Sale	185	35
Totals	185	35

As summarized in Table 13, the Wayne County EHD requires permits for the construction of new OSDS and for repair/replacement of existing OSDS. In 2016, a total of 83 new and repaired system permits were issued by Wayne County.

Table 13
Summary of Onsite Sewage Disposal System Permits Issued
January 1 - December 31, 2016

Permit Type Issued	Number of Permits
New Construction	20
Repair or Replace	63
Total	83

Table 14 provides a summary of OSDS-related complaints investigated in 2016.

Table 14
Summary of Onsite Sewage Disposal System Related Complaints Investigated
January 1 - December 31, 2016

Number of Complaints	4
Number of Complaints identified as failing OSDSs	4
Number of Complaints Resolved	4

As described in WCPEP#32 of this report, educational materials about proper maintenance of OSDS are distributed to homeowners at the time of permit issuance. Septage haulers have a responsibility under Ordinance #99-527 to file OSDS evaluation reports for all pump outs in Wayne County. Forty (40) reports were received in 2016; there were no significant findings to report. Table 15 summarizes the estimated pollutant loading reductions to Wayne County watercourses from the 35 failed OSDS that were identified in 2016 as illicit discharges.

Table 15
Summary of Estimated Pollutant Load Reductions to Wayne County Watersheds from
Onsite Sewage Disposal Systems: January 1 - December 31, 2016

Parameter	Loading Reductions (lbs/year)¹
Total Solids	16,256
Total Suspended Solids	5,725
Biochemical Oxygen Demand	5,206
Ammonia	200
Total Phosphorus	212
Surfactant	318
Potassium	141
Total Organic Carbon	1,107
Fats, Oils & Grease	2,073
Total pollutant reduction	31,239
Flow reduction (gals/year)	2,829,206

1. These loading reductions assume the repair of the failed OSDS identified during the reporting period.

The following is a list of all outstanding failing OSDSs with a status column identifying the re-evaluation date and/or correction target date and a column identifying the priority for correction.

ADDRESS	STATUS	CORRECTION TARGET DATE	PRIORITY DESCRIPTION
14441 Huron, Taylor	Failed 8/5/2016	May 2017	Permitted*, awaiting field installation
25360 Sumpter, Sumpter Twp.	Failed 10/27/2016	May 2017	Permitted*, awaiting field installation
16422 Elwell, Belleville	Failed 12/13/2016	May 2017	Permitted*, awaiting field installation
27663 Huron, Flat Rock	Failed 12/19/2016	May 2017	Permitted*, awaiting field installation

*The sewage is below grade.

Failed Septic- when residency is re-established in a vacant home, the expectation is the repair is completed before the home is reoccupied (for which there is escrow set aside to make the repair). Several septic systems that failed later in the year are awaiting warmer weather, and drier site conditions to make the repair (several sites are in fairly high water table areas). This is allowed if sewage is not surfacing. Normal repair is within 60 days during favorable weather.

Response to Emergency Spills to Waterways (WCIDEP #6)

In an effort to prevent pollution from entering County Drains and waters of the State, Wayne County WQMD has continued to assist with investigations of major oil spills, illegal dumping, odors, and other “emergency” water quality issues. During the reporting period, there were no major spill or other “emergency” water quality issues that required investigation assistance from Wayne County’s WQMD.

Illegal Dumping Control (WCIDEP #7)

The Wayne County Lending Environmental Assistance to Neighborhoods “C.L.E.A.N.” program, managed by the DPS-Land Resources Management Division (LRMD), is the centerpiece of the Wayne County’s efforts to control and clean-up illegal dumping. The County physically removes the waste illegally dumped at a site, and the local community then implements measures to stop future dumping. In 2016, the program conducted 12 neighborhood clean-ups and tire sweeps and 8 additional scrap tire collection events. A total of 660 cubic yards of waste and 8,152 scrap tires were cleaned up as a result of these events. Preventive efforts at these sites include neighborhood watch programs, volunteer clean up days, community gardens, signage and fencing. LRMD mails out C.L.E.A.N. project application packages twice a year to every mayor, township supervisor, clerk and public works director in Wayne County as well as 115 community groups, seeking their participation in the program. Approximately 200 CLEAN Program brochures were distributed in 2016 through direct mailings to every community in Wayne County, community organizations, neighborhood block clubs and churches. Distribution also took place and numerous block club meetings and public events.

Four household hazardous waste (HHW) collection events were conducted by Wayne County in 2016. A total of 476.845 tons of HHW and E-Waste was collected. For all events, informational flyers and press releases were sent to the news media and representatives of all Wayne County communities (e.g., mayors, managers, public works departments, and clerks). Notices were placed on the Wayne County website and on the LRM phone mail system. A summary of the results of Wayne County’s HHW and E-Waste collection days for 2016 is shown in Tables 16 and 17.

Table 16
Summary of Wayne County’s
2016 Household Hazardous Waste and E-Waste Collection Days

Date	Location	Number of Participants
April 23, 2016	Huron High School, Huron Township	1447
June 18, 2016	Henry Ford College, Dearborn	2,273
August 20, 2016	Westland Shopping Center, Westland	2,670
October 8, 2016	Wayne County Community College, Taylor	2,012
Totals	4 events	8,402

Table 17
Summary of Material Collected During
Wayne County's 2016 Household Hazardous Waste and E-Waste Collections

Materials	2016 (Tons)
Hazardous Waste	
Acids	2.451
Aerosols	15.3065
Antifreeze	7.7005
Batteries, lead acid	6.2605
Batteries, Lithium	0.299
Batteries, mixed/household	7.6305
Bio-medical sharps	0.6525
Caustics/Oxidizers	3.4955
Electronic Equipment	173.385
Expired medicines/pharmaceuticals	0.933
Fire Extinguishers	1.989
Flammable Liquid	12.9235
Fluorescent Lamps	4.4985
Herbicides & Pesticides	15.0965
Mercury Devices	0.0525
Oil	23.8265
Paint, latex	137.1415
Paint, oil	32.4915
PCB Ballast	0.216
Propane cylinder	3.0985
Smoke detectors	0.1615
Toxic Products	26.7625
Reactives	0.0405
Other Cylinders	0.4235
TOTAL TONNAGE	476.845

Land Resource Management Division Illegal Dumping Reports

Land Resource Management Division did not report any illegal dumping events during this reporting period.

Roads Division Illegal Dumping Reports

Roads did not report any illegal dumping events during this reporting period.

Parks Division Illegal Dumping Reports

There were multiple incidents of dumping in various Wayne County parks areas that were reported by Parks staff or by the Sheriff Park Patrol. The debris was immediately cleaned up by Parks maintenance staff for proper disposal. Common dumping areas are Koppernick, Holiday Nature Preserve, Levan Knoll and Kroger (Westland off Middlebelt, N. of Warren) back parking lot. With the exception of behind the Kroger site, any dumping is cleaned up immediately. A cleanup plan for behind the Kroger is being implemented. Crosswinds Marsh has had several incidents of household and construction trash being illegally dumped along the ditches surrounding the park. Typically dumped items include mattresses, tubs, shingles, drywall, wood, etc. The dumping of trash is reported to Parks maintenance and it is cleaned up and deposited in a parks dumpster or taken to the New Boston Yard for proper disposal. The shoulders and ditches along Arkona Road and Clark Road which border the park are problem areas. We will typically experience one to two illegal dumping instances per month. These are out of the way, isolated areas, and there is not much that can be done to prevent further dumping.

Facilities Management Division Illegal Dumping Reports

There were no incidents of illegal dumping recorded by Facilities Management Division (FMD) staff in 2016. As part of their regular duties, maintenance was performed by FMD on 30 County Drains resulting in the removal and proper disposal of 900 cubic yards of material from County Drains in 2016.

Swimming Pool Inspections (WCIDEP #8):

The Environmental Health Division (EHD) of the Wayne County Department of Health, Veterans and Community Wellness is responsible for inspections of public swimming pools located within Wayne County (excluding the City of Detroit). These inspections are performed each spring prior to opening for the swimming season. During the 2016 swimming season, EHD inspected 541 swimming pools.

EHD cooperates with the MDEQ in the issuance of permits for proposed new public swimming pools or for existing pools proposing extensive modifications. During the process of reviewing plans and specifications for these facilities, EHD specifically reviews the sewer connections to ensure that the modifications will not result in illicit connections. For this reporting period, nine newly constructed pools were inspected and the proper connection of the backwash water system to the sanitary sewer system for each was confirmed.

WQMD did not perform any facility dye-test inspections at facilities with swimming pools during 2016.

County-Owned Building Inspections (County-wide) (WCIDEP #9)

WQMD staff has previously completed dye-test inspections of all County-owned buildings that are located in areas of the County served by separate sanitary sewers. In 2016, WQMD performed a pollution prevention (P2) inspection and dye test follow up inspection at the Wayne County Sheriffs Park Patrol and Horse Stables in Hines Park in Livonia, Michigan. The P2 inspection came as a result of an unannounced site inspection conducted by the MDEQ Surface Waters Division that cited several good housekeeping and best management practices violations that were inspected and corrective actions suggested by WQMD and are being implemented or addressed by the Wayne County Sheriff and Wayne County Parks.

Visual Inspections During Routine Field Operations (WCIDEP #10)

Wayne County “field” staff have been trained to identify and report potential illicit discharges and other environmental concerns in the course of their duties. Training has been provided to personnel from the Department of Public Services (Facilities Management, Engineering, Roads, Parks, Land Resources, and Water Quality Management) and the Department of Health, Veterans and Community Wellness (Environmental Health Division). Table 18 presents a summary of the environmental concerns identified during routine Wayne County field operations. Table 19 summarizes the results of the follow up investigations to routine field operation reports. Descriptions of select investigations are summarized below:

- Drains office staff reported two obscure pipes coming into the edge of Fellows Creek. One of them smelled like sanitary sewer and the other didn’t appear to have an odor. After a conversation with the residents it was learned that the pipes discharged the kitchen sink and septic tank. WQMD staff reported this illicit discharge to Environmental Health Department and Canton Township for correction and follow up.
- Permits office staff reported illicit discharge of unknown material into an open drain. WQMD staff investigated and found the material to be roads fines discharging from a recent construction project in the area. No evidence of illegal dumping. Referral closed.
- Roads staff discovered oil in the storm drain and road ditch during a routine cleanout. WQMD staff investigated, a large amount of oil was observed in two storm drains on the property and three storm drains on the outside of the property. Oil was also observed in the road ditch downstream from the facility. WC Roads staff stated that they removed 3’ of oil sludge from the road ditch. There were not visible signs that the oil has reached the County Drain as the discharge is currently being contained by the vegetation within the roadside ditch. WQMD staff notified the facility, encouraging them to implement a clean-up. WQMD performed a follow up investigation to find that all storm drains have been cleaned out. A small amount of oil was found in one storm drain outside the property. The open road ditch was also cleaned or flushed out. A new set of absorbent booms were placed in the drain (not by county staff). WQMD staff completed a dye test of the facility - no violations found. Complaint closed. Surrounding storm drains will continue be monitored.

Table 18
Types of Environmental Concerns “Identified” during Routine Field Operations
January 1, 2016 - December 31, 2016

<i>Type of Environmental Concern</i>	
Road structure issue (Roads)	1
Illicit Discharge (Drains, Permits, Roads, WQMD, LRMD)	9
SESC	7
EHD	4
TOTAL*	21

* Numbers do not include issues identified via complaints or illegal dumping reported in WCIDEP #7.

Table 19
Environmental Concern Investigations Resulting from Routine Field Operations
January 1, 2016 - December 31, 2016

Reporting Division	Environmental Concerns Reported	Verified by WQMD	Source/Cause Identified	Referred To	Corrections Confirmed
DPS-Drains	1	1	1	WC EHD	1
DPS- Permits	1	1	1	n/a	n/a
DPS – Roads	3	2	0	n/a	1
DPS – LRMD	11	0 ¹	11	MDEQ ²	11
DPS-WQMD	1	1	0	n/a	n/a
EHD	4	0	4	n/a	4
TOTAL	21	5	16		16

1 – Due to snow cover verification could not be made.

2- Referred to and under the responsibility of MDEQ and counted as confirmed correction.

County Drain Inspections

There were no County Drain inspections reported in 2016.

IDEP Training for Volunteers (WCIDEP #11)

In 2008, WQMD staff prepared and provided a presentation regarding illicit discharge identification and reporting to the Friends of the Rouge (FOTR). The brief presentation introduces illicit discharges, contains suspicious discharge example photos, explains how important it is to report illicit discharges, and provides contact information for Wayne County and other local agencies. FOTR has incorporated this presentation into their orientation sessions for volunteers, teachers and team leaders. In 2016, FOTR held eight different training and/or volunteer monitoring sessions that provided IDEP training to approximately 408 people.

Huron River Watershed Council (HRWC) coordinates volunteer monitoring of sites in the Alliance of Downriver Watersheds (ADW). HRWC incorporated the WQMD presentation into their volunteer training orientations. HRWC held one volunteer orientation in 2016 and 29 people participated.

Methods to Evaluate Effectiveness: Storm Water Point Source Inspection – Alternative vs Traditional IDEP Comparison (WCIDEP #12)

Wayne County participated in and helped finance the Alliance of Rouge Communities (ARC) report "Comparison Analysis of Finding Illicit Discharges to Storm Water Systems", submitted to MDEQ on May 22, 2007. Based on the findings of this analysis, it is the position of Wayne County that scheduled inspections of points of discharge are not a safe nor effective method for evaluating the effectiveness of illicit discharge elimination activities.

Methods to Evaluate Effectiveness: Performance Tracking of IDEP Activities (WCIDEP #13). Please refer to *Table 6* and particularly *Table 10: Summary of Illicit Connections and*

Estimated Pollutant Load Reduction to Wayne County Watersheds: for an overall summary of the performance of Wayne County's IDEP Activities.

Methods to Evaluate Effectiveness – Instream Monitoring/Environmental Indicator Monitoring (WCIDEP #14). Please refer to Section 1 of this report, "Determination of Effectiveness", for a summary of this activity.

Updated Map of Known Storm Water Point Sources and Respective Receiving Waters or Drainage Systems (WCIDEP #15)

An updated GIS map of Wayne County's storm water system including County Drains, County Roads, County Parks, Maintenance Yards, known outfalls and County Road stream crossings was prepared and is included within the attachments for Section 2 of the 2017 report.

SECTION 3

WAYNE COUNTY PUBLIC EDUCATION PLAN

SUMMARY OF ACTIVITIES

The following Public Education Plan (PEP) activities were completed by Wayne County during the reporting period **January 1, 2016 – December 31, 2016** in compliance with the County's Certificate of Coverage MIG610040 under the MDEQ General Storm Water Discharge Permit MIG619000.

Educate Public Regarding Location of Residential Storm Drainage Systems and Waters of the State (WCPEP #1)

Nearly all of the activities performed by the County to comply with the Public Education Section of our SWPPI address this topic; see, in particular, the reports for activities WCPEP #4, #6, #7, #9, #11, #22 and #26.

Educate Public Regarding Animal Waste (WCPEP #2)

WCPEP activities #4, #6, #7, #11 and #22 address this topic.

Educate Public Regarding Pavement or Power Washing (WCPEP #3)

WCPEP activities #4, #6, #7, and #22 address this topic.

Distribute Pollution Prevention Literature and Messages (WCPEP #4)

Pollution Prevention Literature and Messages: Through various outreach efforts the WQMD provided over 1,000 pieces of public information materials relating to water pollution issues to numerous individuals and groups throughout the County in 2016. These materials included *The Value of Trees* flyer; *Rouge River* bookmark; *Tree Planting Instructions*, *ARC Information Flyer*, the ADW's 2016 calendar *A Year of Waterways – 12 Ways You Can Protect Our Water*, *Storm Drains Aren't Garbage Cans* brochures and bags; the *WCDPS 24-Hour Environmental Hotline* brochure; *Our Actions Affect the River* flyers; the *Rouge River Activity Book*, *River Friendly* brochure series; *7 Simple Steps to Clean Water* tip cards; *Riparian Corridor Management Principles and Practices* brochure, the *Storm Drains Aren't Garbage Cans* brochure, the *Rouge Watershed Recreational Map and Index*, and the *WCDPS 24-Hour Environmental Hotline* brochures are nearly always delivered and available with the *Our Recreational Resource Displays*, the *Our Actions Affect the River Display* and the *7 Simple Steps to Clean Water Display*. See WCPEP #6 & #7 below. Wayne County also supports the ADW's Pet Waste Outreach Program (see <http://www.allianceofdownriverwatersheds.com>) by distributing educational materials.

Other Wayne County divisions distribute additional educational materials at community events or festivals, staff training sessions, workshops, leadership presentations, departmental presentations, mailings, office display racks. During the reporting period, over 20,000 pieces of Pollution Prevention Literature/Public Education Handout information were distributed. Examples include *Resource Recovery Guide*, *Disposal Tips for Home Medical Waste and Pharmaceuticals*, *HHW/E-waste collection events*, *Green Living/Composting Education Wheel*, *Soil Erosion*, *Sediment Pollution and Your Home* brochures, and others. See WCPEP #24, #29, #30, #31, #32 below.

Publication Clearinghouse: The Wayne County Publication Clearinghouse was established to produce and distribute public information materials to local communities at cost. All communities have the option of using the “Rouge Products CD” to produce their own materials or they can order them at cost from the *Clearinghouse*. WCDPS-WQMD warehouses a large supply of the most requested items so that delivery takes place as the items are ordered. The *Clearinghouse* can also produce community specific products if the order is large enough to justify doing so. During the reporting period, the *Clearinghouse* filled orders placed by communities for over 600 public education items for subsequent distribution to others.

Newsletter Articles and Advertisements (WCPEP #5)

During this reporting period, the WQMD produced several public education and involvement activity summaries for posting to websites and publication in County or community newsletters. These included the *Hines Park Green Infrastructure (GI) Volunteer Work Day, 2016 Green Schools Program*, and the ADW and ARC *Trees for Green Schools* summaries. These summaries were provided to the communities and the public via the ARC and ADW websites (<http://www.allianceofrougecommunities.com/index.html> and <http://www.allianceofdownriverwatersheds.com/>, respectively) and included the Water Environment Federation’s *Water is Life* ad graphic.

Displays: Community/Agency Events (WCPEP #6) and Static (WCPEP #7)

During 2015, the WQMD planned, coordinated, promoted and/or participated in various community events, meetings, seminars and workshops with environmental displays and educational information, including:

- *Canton Home Expo, March 4-6, 2016;*
- *Allen Park City Hall, April 11-May 11, 2016;*
- *Detroit River Water Festival, April 28, 2016;*
- *19th Annual Rouge River Water Festival at University of Michigan-Dearborn, May 3, 2016;*
- *Riverview City Hall, June 1 – July 1, 2016;*
- *Gibraltar City Hall, June 1 – July 1, 2016;*
- *Wyandotte City Hall, July 1 – August 1, 2016;*
- *Grosse Ile Township City Hall October 1- 13, 2016*
- *Henry Ford, Dearborn – GLRI Celebration, October 26, 2016;*
- *Brownstown Township City Hall, November 8 – December 12, 2016;*
- *Flat Rock City Hall, December 16 – 31, 2016*

WCDPS Environmental Information Line (WCPEP #8)

Wayne County continues to promote the use of its *24-Hour Environmental Hotline* (888-223-2363) for water quality complaints throughout the County. A variety of products are used to educate the public about the *24-Hour Environmental Hotline*, including magnets (with the “Storm Drains Aren’t Garbage Cans” message, the Environmental Hotline number, and the WCDPS-WQMD web page address) several departmental and division brochures and the Wayne County website. During the reporting period these materials were distributed at display events, workshops, and presentations. In addition, the hotline number is advertized on the County’s website www.waynecounty.com.

Advertisements (WCPEP #9)

As a member of the Alliance of Rouge Communities (ARC), Wayne County supports the ARC's and Friends of the Rouge advertising, awareness/education give away items and social media outreach. See the Alliance of Rouge Communities *Executive Director 2016 Annual Report* at: <http://www.allianceofrougecommunities.com/documents.html>

Point of Sale Education (WCPEP #10)

During 2015, Wayne County continued its support of the *Earth-Friendly Fertilizer Sticker Program* initiated by the Southeastern Oakland County Water Authority (SOCWA). Efforts are targeted at educating the public about environmentally friendly home lawn and garden maintenance and included program planning and development, development and distribution of promotional flyers, and website promotions and information. During the reporting period, listings of the approved fertilizers and participating retailers were maintained and made available through the Wayne County (<http://www.waynecounty.com/doe/river-friendly-lawn-care.htm>). The Healthy Lawn Care Program for Watershed Protection (<http://www.landscape.org/healthylawncare.html>) was also promoted via websites and program flyer distribution.

Workshops and Demonstration Projects (WCPEP #11)

Wayne County co-sponsors and participates in numerous workshops each year to educate various stakeholders on a variety of topics related to managing storm water and protecting the environment. A summary of the Wayne County co-sponsored environmental education workshops or demonstration activities held during the reporting period follows.

ARC Green Infrastructure Workshops

Wayne County was once again an integral partner in the successful Green Infrastructure Education Campaign established by the ARC to assist with implementation of green infrastructure (lawn care & native plant) workshops. During 2016, the ARC workshop sub-committee scheduled and held four (4) workshops: two (2) *Healthy Lawn Care* and three (2) *Native Plants and Pollinator* green infrastructure workshops. A total of 63 people attended the workshops held in September and October 2016 at the following locations:

- September 27 in Farmington Hills;
- September 29 in Plymouth;
- October 4 in Novi in Livonia; and
- October 12 in Garden City.

ARC Septic System Maintenance Workshop

Twenty-three (23) people participated in the September 7, 2016 *Septic System Maintenance* workshop held in Bloomfield Township at Cranbrook Institute of Science. This workshop focused on informing ARC members and others on topics including how a septic system works, what can harm a septic system, how to maintain a septic system, and risks and costs of a malfunctioning septic system.

Middle Rouge Riparian Corridor Management: Bennett Arboretum Grow Zone Work Day

Wayne County Parks and WQMD again partnered with Wayne County Commissioner Terry Marecki to hold the eighth annual *Hines Park Green Infrastructure Volunteer Work Day* in May

of 2016. WQMD provided technical guidance to the Commissioner's staff prior to the event and Parks Division provided comfort station access and trash disposal in support of the event.

Wayne County Michigan Green Schools Program

Wayne County's WQMD staff has been working with the Wayne County Regional Educational Service Agency (Wayne RESA) since 2007 to promote and grow Wayne County's Green Schools Program. In 2016, 117 schools were recognized as "Wayne County Green Schools". These schools earned at least 10 points under the Michigan Green School legislation for implementing specific energy-saving and environmental activities within the 2015-16 academic year. Under Wayne County's Green School program, the activities are set up in four categories (A-D): Recycling, Energy Saving, Environmental Protection and Miscellaneous. A fifth category (E) allows schools to propose their own activity and a sixth category (X) allows students to create a logo and/or video to represent the Wayne County Green School Program. Points can be accumulated in any combination of categories, as long as there is a minimum of two from each Category A-D. Additional points can be earned from Category E. Emerald School designation can be achieved by successfully participating in 15 points and the Evergreen designation is achieved by successfully participating in 20 points. Information on Wayne County's Green Schools Program is available online at <http://www.waynecounty.com/doe/1136.htm>

Trees for Rouge Green Schools Program

With financial support from the ARC, the *Trees for Rouge Green Schools Program* was again implemented in 2016, with 30 trees purchased for distribution to 2016 Michigan Green Schools located within the Rouge River watershed. The tree species offered were all native to Michigan and included eastern redbud, sugar maple, and tulip tree. Wayne County offered the trees to 81 schools that were new to the Green School program or earned an Evergreen status during the 2016 program. These schools were located in the Oakland and Wayne County portions of the Rouge River watershed. Twenty seven (27) schools accepted a tree. Three (3) schools took a second tree.

ARC Tree Seedling and P2 Literature Distribution

In conjunction with community events in Farmington Hills, Bloomfield Hills, Canton and Inkster, 950 individual tree seedlings along with pollution prevention (P2) literature were distributed on April 20 (Farmington Hills), April 27 (Inkster), September 10 (Canton), September 24 (Farmington Hills), October 8 (Farmington Hills), and October 9 (Bloomfield Hills). The seedlings were provided as bare root seedlings. Informational material including planting instructions, the *Value of Trees* flyer, *Rouge River* bookmark, ARC flyer and instructions on registering the tree through the ARC's website were provided for each seedling.

Trees for Downriver Green Schools Program

During this reporting period there were no trees distributed to the *Trees for Downriver Green Schools Program*. ADW's financial support went toward the U-M Museum of Natural History River Residency Stream Table to provide vouchers to 5 Downriver Green Schools to bring the Stream Table to the schools for a day.

U-M Museum of Natural History River Residency Stream Table

With financial support from the ADW, the Stream Table Program was implemented in 2016. Bring a river into your school with a stream simulation table! The U-M Museum of Natural History offers three different workshops providing students hands-on opportunities to explore how water flows, erosion, effects of flooding, the consequences of human activities on water quality, and much more. Students work in small groups and record their observations in accompanying student journals. The ADW provided vouchers to 5 Downriver Green Schools to bring the Stream Table to the schools for a day. Barnes Elementary in Flat Rock scheduled the Stream Table for 5 days during the week of October 26-30, 2016. Four hundred fifty students, 3rd-5th grade were able to participate in a Stream Table session. The remaining 4 vouchers are scheduled for 2017 as follows: January 19 & 24, February 23 and May 4, 2017.

Riparian Corridor Management Technical Advisory Committee and Work Group (WCPEP #12)

Although there were no meetings of the Corridor Management Technical Advisory Committee (RCM TAC) in 2016, WQMD continued to support the intent of RCM TAC and Work Group by coordinating, co-sponsoring, promoting and/or participating in the above workshops and demonstration projects as described in WCPEP #11 as well as WCPEP #14. The Rouge Water Trail Partnership is also a vehicle for continuing the intent and purpose of the RCM TAC and Work Group.

Healthy Lawn and Garden Technical Advisory Committee (HL&G TAC) (WCPEP #13)

WQMD continued to support the HL&G TAC efforts as described above in WCPEP #10 as well as by coordinating, co-sponsoring, promoting and/or participating in the WCPEP #11 activities. WQMD staff participated in the HL&G TAC meeting held March 18, 2015 where agenda items included the Michigan Fertilizer Act, Healthy Lawn Care Program for Watershed Protection and the Earth Friendly Fertilizer Sticker Program. Informational materials for healthy lawn care are available online from the County website with a link for more information at http://www.socwa.org/lawns_gardens.shtml.

River Day/Rouge Rescue (WCPEP #14)

Wayne County actively promoted participation in and provided funding for the Friends of the Rouge (FOTR) Rouge Rescue held May 30, 2015 (see <http://www.therouge.org/our-work/rouge-rescue> for a description of activities and program results). In addition, WQMD and LRMD staff provided services and support for Rouge Rescue 2016. Kesh Raizada from LRMD served as the site coordinator at the Meadows of Canton site (the Canton Temple and Fellows Creek at Palmer Road); with WQMD staff Susan Thompson providing event support. Over 119 volunteers assisted in catch basin stenciling, benthic macro-invertebrate monitoring trash removal, and bird box building. WQMD's *Frog & Toad* and *7 Steps* displays were set-up and a variety of educational material was provided to all volunteers. Attendees learned about life in the river through a presentation and with live benthic macroinvertebrate samples.

Volunteer Monitoring: Frog & Toad Surveys, Rouge Watershed (WCPEP #15)

Wayne County continued to support the Rouge Frog & Toad Survey implemented by FOTR in 2016. One Frog and Toad survey workshop was held on February 27, 2016 in the City of Livonia, Eighty-five volunteers attended the workshop. WQMD helped secure the data analysis funding that FOTR obtained via the ARC's MDEQ Public Advisory Council grant and

participated in data review report and comment (see <http://www.therouge.org/our-work/rouge-frog--toad-survey/frog-toad-data> for a description of activities and program results).

Volunteer Monitoring: Bug Hunts, Rouge Watershed (WCPEP #16)

In support to the ARC and FOTR, WQMD staff participated in multiple volunteer monitoring events in 2016 as follows:

- *FOTR Winter Stonefly Search:* WQMD staff served as team leaders for the FOTR Winter Stonefly Search held February 13, 2016. Over 95 people from around the Rouge Watershed went out into the cold to sample for the stonefly, a macro-invertebrate species whose presence indicates high water quality. The results of the 2016 winter stonefly search are summarized in Section 1.
- *FOTR Spring Bug Hunt:* WQMD staff served as team leaders for this event held April 16, joining approximately 103 volunteers in benthic macro-invertebrate sampling at 32 sites throughout the Rouge River watershed. Volunteers including WQMD staff collected and identified benthic macro-invertebrates for the purposes of gauging Rouge River water quality. The results of the 2016 Spring Bug Hunt are summarized in Section 1.
- *FOTR Fall Bug Hunt:* WQMD participated as team leaders for the FOTR fall “bug hunt” sampling event held October 15, leading volunteers in the collection and identification of benthic macro-invertebrates for the purpose of using the data to gauge the water quality of the Rouge River. Over 89 people from around the Rouge Watershed participated and sampled 25 sites. See Section 1 of this report for a summary of the water quality scores from this monitoring event.
- *WQMD Spring Student Bug Hunt:* WQMD performed a bug hunt with 140 students from East Middle School students at Lions Park in the City of Plymouth over two days, June 6 and 7. The Middle Rouge in Northville Township was sampled and the students sorted the samples to obtain a water quality score. Both samples scored “Excellent “ and Perlid stoneflies were collected at the site for the first time. .
- *WQMD Fall Student Bug Hunt:* WQMD performed a bug hunt with East Middle School students at Lions Park in the City of Plymouth on September 29. A total of 45 students participated. The Middle Rouge in Northville Township was sampled and the students sorted the samples to obtain a water quality score. An “Excellent” water quality rating was obtained for the site.
- WQMD conducted bug hunts with students participating in Schoolcraft College “Kids on Campus” on July 13, 20, and 27, 2016. These students are participating in a biology/chemistry science camp and Waterford Bend in Northville Township was selected as a site to sample with the students. Approximately 45 students participated in the bug hunting over the three days. The sites scored “Good” on all three days.

Volunteer Monitoring: Bug Hunts, Downriver Watersheds (WCPEP #17)

During 2016, WQMD (with ADW financial support) continued its partnership with the Downriver Citizens for a Clean Environment “Stream Team” teachers and students and the Huron River Watershed Council (HRWC) and volunteers to implement macro-invertebrate monitoring at locations throughout the downriver watersheds of Ecorse Creek, Combined Downriver and the Lower Huron River watersheds. Over 190 student volunteers assisted with monitoring at 14 sites during the spring sampling, and almost 180 student volunteers assisted with sampling at 11 sites during the fall effort. The results of these monitoring efforts are presented in Section 1 of this report.

Rouge Education Project (WCPEP #18)

WQMD staff participates on the FOTR Public Involvement Advisory Task Force, which meets on nearly a monthly basis throughout the year.

Storm Sewer System Labeling (WCPEP #19)

WQMD supported storm sewer stenciling in Canton Township subdivision streets as part of their annual River Day activities (see also report for WCPEP#14). In 2017, Wayne County will continue to offer these stencils to schools and community groups and promote the use of decals for labeling storm sewers within residential areas and at facilities inspected as part of our Illicit Discharge Advanced Investigation and Correction (WCIDEP #2).

Storm Sewer System Labeling: County Facilities (WCPEP #20)

In 2016, WCDPS staff advised DPS-Road yard and Wayne County Sheriff Park Patrol staff through P2 inspections to maintain marking the location of storm sewers throughout the County's Road Division maintenance yards including storm sewers located in unpaved areas.

Alliance of Rouge Communities: Public Information and Education Committee (WCPEP #21)

WQMD staff participated in all 2016 Alliance of Rouge Communities Public Information and Education (PIE) Committee meetings and activities (see the 2016 Executive Director Annual Report available at www.allianceofrougecommunities.com for more detailed information). In addition, Wayne County participated in all 2016 activities of the Alliance of Downriver Watersheds, Public Education Committee (see the ADW Bi-Annual Report 2016-2017 when it becomes available at <http://www.allianceofdownriverwatersheds.com/initiatives/> for more detailed information).

Information Dissemination via Websites (WCPEP #22)

Wayne County disseminates storm water awareness public education materials from various pages within Wayne County's website (www.waynecounty.com). Examples of storm water public education information available from the Wayne County website includes but is not limited to:

- Riparian Corridor
Management: <https://www.waynecounty.com/departments/environmental/waterquality/riparian-corridor.aspx>
- River Friendly Lawn
Care: <https://www.waynecounty.com/departments/environmental/waterquality/river-friendly-lawn-care.aspx>
- Grow Zones
Initiative: <https://www.waynecounty.com/departments/environmental/waterquality/grow-zones-initiative.aspx>
- Green
Infrastructure: <https://www.waynecounty.com/departments/environmental/waterquality/green-infrastructure.aspx>
- Native Plants:
<https://www.waynecounty.com/departments/environmental/waterquality/native-plants.aspx>

- Recreational Vehicle Pump Out Stations in Metro Detroit:
<https://www.waynecounty.com/departments/environmental/waterquality/recreational-vehicle.aspx>
- Proper disposal of household hazardous waste, home medical sharps, etc: <https://www.waynecounty.com/departments/environmental/land-resource-management.aspx>
- Onsite Sewage Disposal Systems:
<https://www.waynecounty.com/departments/hvcw/wellness/septic-onsite-sewage.aspx>

The ARC (www.allianceofrouragecommunities.com) and ADW websites (www.allianceofdownriverwatersheds.com) are also used to inform and involve the public in storm water management and watershed awareness activities.

Information Dissemination from County Buildings (WCPEP #23)

Storm Water Public Education Handout information continues to be available at County-owned facilities for Wayne County employees, businesses and the general public. Information racks are maintained at 8 Wayne County offices including: Department of Public Services (three locations), Environmental Health Division, Mental Health Department, Parks Headquarters, Permit and Field Engineering Office, and Roads-Central Maintenance Yard. Table 20 summarizes the educational publications placed by WQMD at County offices in 2016. This information was supplemented by additional materials placed at County offices by other departments (e.g., Section WCPEP #31, Integrate Public Education into Parks Operations, describes additional educational materials placed by Parks).

Education: Waste Disposal Locations (WCPEP #24)

The LRMD continues to maintain and distribute listings of approved disposal points for various materials including motor oil, antifreeze, gasoline, transmission fluid, travel trailer waste disposal and mercury recycling/disposal facilities. These listings are in the *Resource Recovery Guide* (RRG). The RRG is available to download from the DPS - ESG website <http://www.waynecounty.com/doe/solid-waste-planning.htm> and is also distributed at all public events in which LRMD participates including the HHW and electronic waste collection events. Other materials to educate the public about pollution prevention include *Disposal Tips for Home Medical Waste & Pharmaceuticals* brochure, *Mercury Information* brochure, flyers for HHW and Electronic Waste collection events, and the *CLEAN Program* brochure. These materials are also available, along with home composting tips, from the website shown above. Table 21 summarizes the educational materials related to proper waste disposal that were distributed at public events during the reporting period.

Table 20
Storm Water Educational Materials Available at County Offices
January 1 – December 31, 2016

Location	Date Refreshed	Materials
DPS Roads Division main office, Central Maintenance Yard, Romulus	3/7/16 & 6/29/16	<i>Hotline brochure, Storm Drains, 7 Simple Steps</i> tip cards, Rouge Watershed recreation maps
DPS Parks Division headquarters, Nankin Mills, Westland	3/7/16 & 6/27/16	<i>Hotline brochure, Storm Drains, 7 Simple Steps</i> tip cards, Rouge Watershed recreation maps, <i>Riparian Corridor Management Principles and Practices</i> brochure
DPS Engineering Division WC Permit Office, Wayne	3/7/16& 6/29/16	<i>7 Simple Steps</i> tip cards, <i>Hotline brochure, Storm Drains Aren't Garbage Cans</i> brochure, Rouge Watershed recreation maps
640 Temple, Detroit	3/7/16 & 6/29/16	<i>7 Simple Steps</i> tip cards, <i>Hotline brochure, Storm Drains Aren't Garbage Cans</i> brochure, Rouge Watershed recreation maps
Environmental Health Division offices, Wayne	6/27/16	<i>Hotline brochure, Storm Drains Aren't Garbage Cans</i> brochure, <i>7 Simple Steps</i> tip cards, <i>Riparian Corridor Management Principles and Practices</i> brochure
DPS WQMD office, 3600 Commerce Court, Wayne	As Needed	<i>Hotline brochure, Storm Drains, 7 Simple Steps</i> tip cards, Rouge Watershed recreation maps, <i>Riparian Corridor Management Principles and Practices</i> brochure, <i>Resource Recovery Guide, Disposal Tips for Home Medical Waste & Pharmaceuticals</i> brochure, <i>Mercury Information</i> brochure, flyers for HHW and Electronic Waste collection events, <i>CLEAN Program</i> brochure, Compost "Black Gold" brochure; <i>Soil Erosion, Sediment Pollution and Your Home</i> brochure; ADW Pet Waste educational materials
DPS Environmental Services Group administration office, 400 Monroe, Suite 400, Detroit	As Needed	<i>Hotline brochure, Storm Drains, 7 Simple Steps</i> tip cards, Rouge Watershed recreation maps, <i>Riparian Corridor Management Principles and Practices</i> brochure

Table 21
Distribution of Educational Materials for Proper Waste Disposal
January 1 – December 31, 2016

Educational Item	Quantity Distributed	Distribution Methods
<i>Resource Recovery Guide</i>	10,106	• HHW Events • Community groups/events • County participating events • Municipalities for distribution • Presentations
<i>Disposal Tips For Home Medical Waste and Pharmaceuticals</i>	50	• Community groups/events • County participating events • Municipalities for distribution • Presentations
HHW/E-waste collection event flyers	626	• Direct mailings • Community groups/events • Presentations
Recycled pencils and bags	NT	• Students via recycling presentations including Rouge River Watershed Festival
CLEAN Program brochures	200	• Direct mailings
Green Living/Compost Educational Wheel	NT	• Presentations
“Soil Erosion, Sediment Pollution and Your Home” brochure	50	• Community • Walk in SESC permit applicants
Soil Erosion Control Permit Process	1	• Power Point presentation • Shown at Wayne County Permitting Summit for builders – June 6, 2016
Homeowner’s Guide to Septic Systems	NT	• Distributed at time of sale inspections and upon completion of new or repair of septic systems
Wayne County OSDS Evaluation and Maintenance Brochure	NT	• Distributed at time of sale inspections and upon completion of new or repair of septic systems
Wayne County Storm Water Standards Manual	NT	• Email distribution • Available online
Maintaining Your Detention Basin	NT	• Email distribution • Available online

NT – Not tracked.

Additionally, as described in the report for WCIDEP#7, two mailings were made to all Wayne County Commissioners, Mayors, Township Supervisors, Clerks and Public Works Directors

seeking their participation in the C.L.E.A.N program. The mailings consisted of C.L.E.A.N. information pamphlets and applications for assistance. This information was also sent to over 115 community groups in Wayne County. Approximately 200 CLEAN Program brochures were distributed in 2016 through direct mailings to every community in Wayne County, community organizations, neighborhood block clubs and churches. Distribution also took place and numerous block club meetings and public events.

Staff Education and Training (WCPEP #25)

Staff Training: The participation of Wayne County staff in “environmental” training programs during the reporting period is shown in Tables 22 and 23 for the Department of Public Services and Environmental Health Division, respectively.

Table 22
Wayne County Department of Public Services Staff Training
in Environmental Issues During 2016

Training Topic	Number of Staff Trained
Pesticide Applicator Training	8
De-icing Equipment Calibration	122
Soil Erosion and Sedimentation Control Certification	4
Industrial Storm Water Operator Training	11
Science of Oil Spills	1
CityWorks Applications for SESC Programs	4
MDEQ Fugitive Dust Workshop/Webinar	4
Engineering Society of Detroit Solid Waste Conference and Training	5
Michigan Recycling Coalition Conference	3

Table 23
Wayne County Environmental Health Division
Staff Training in Environmental Issues During 2016

Training Topic	Number of Staff Trained
Annual Michigan Wastewater Conference	1

Staff Education and Awareness: During this reporting period, the WCDPS arranged for the County’s electronic mail (e-mail) system to periodically post watershed/storm water management messages to all County employees during the reporting period. For example, all Wayne County employees with email accounts received messages encouraging their participation in the County’s Office HHW Collection. There is also a WCDPS newsletter that is distributed to staff and posted online at www.waynecounty.com. This newsletter was issued once in 2016 and included various articles regarding environmental restoration and protection projects.

Signage (WCPEP #26)

Watershed, stream crossing awareness, and grow zone signage are made available to communities and the general public at cost through the Wayne County Publication Clearinghouse. In 2016, WQMD processed 6 River Crossing signs for the Westland Homeowners Association for the Lower Rouge River. WQMD processed 30 small grow zone signs for the Nature Community Services, LLC located in Southfield and 4 large grow zone signs for the Dearborn Heights Watershed Commission. Since 2002, Wayne County has facilitated the placement of over of 500 signs to raise public awareness and encourage green infrastructure for water quality and habitat improvement.

Signage – Aquatic and Terrestrial Invasive Species Control Project Grant: Nearly 100 invasive species awareness signs were placed at various invasive species control project areas on public land including Wayne County Parks property in the Middle Rouge, Lower Rouge, Main Rouge, Detroit River, Combined Downriver, Lower Huron and Ecorse Creek through the Invasive Species Control Grant. These signs were placed in the areas treated to control Phragmites and various aquatic invasive plants in Newburgh Lake and Wilcox Lake, both impoundments in the Middle Rouge River. The signs were put in place by the Invasive Species Control project partners that included Friends of the Rouge, Friends of the Detroit River and the Student Council Association. Nearly all of the signs were photo documented and later retrieved by WQMD.

Signage – Alliance of Downriver Watersheds (ADW) Tree Planting Project (Temporary Tree Planting Signs): There were no plantings in 2016.

Local Presentations (WCPEP #27)

Land Resource Management Division staff participated in the Rouge River Water Festival on May 6, 2016 at the University of Michigan-Dearborn and the Cranbrook Rouge River Water Festival on September 14, 2016. Participating students were educated on recycling and resource recovery activities as part of an educational display and also given recycled pencils at these events.

Children's Education: The *Don't Bug Me* presentation was given to participants at Water Festivals as follows:

- 117 students from four Detroit schools at the Detroit River Water Festival held on Belle Isle in the City of Detroit April 28;
- 130 fifth grade students from five classes at the Rouge River Water Festival held May 6 at UM Dearborn. The five schools were from communities throughout the Rouge River watershed and;
- 125 middle school students from four schools at the Rouge River Water Festival at the Cranbrook Institute of Science held Friday September 16. The five schools were from Oakland County communities in the Rouge River watershed.

Other: See *Naturalist Programming – Nankin Mills Interpretive Center* and *Crosswinds Marsh* activity summaries under *Integrate Public Education into Parks Operations (WCPEP #31)* below.

Develop/Maintain Partnerships (WCPEP#28)

Wayne County participates in numerous partnership activities each year for the purpose of managing storm water and protecting the environment. Described below are a number of the highlights or new activities performed during the reporting period.

Rouge Gateway Partnership: The Rouge River Gateway Partnership was formed in the summer of 1999 to represent the interests in the lowest section of the Rouge River in Dearborn, Melvindale, Allen Park, Detroit, and River Rouge. Officials from these communities, together with leaders representing cultural institutions, private business, and Wayne County make up the partnership. A Master Plan for the Gateway Corridor of the Rouge Watershed was developed to serve as a guide to advance, extend, and coordinate current planning and redevelopment projects in order to achieve the goals of ecosystem restoration, heritage preservation, increased recreation, and economic development along the Rouge River. Under the Partnership's guidance, many projects from the Rouge Gateway Master Plan are underway or have been completed. Wayne County continues its support of the Rouge Gateway Partnership. For example, in 2016 Wayne County was awarded a non-competitive Great Lakes Restoration Initiative grant from the U.S. EPA to construct fish passage (Fishway) around the dam at the Henry Ford Estate, construct the Rouge Oxbow Phase 3 at The Henry Ford and design and implement Nankin Lake Restoration.

Friends of the Rouge: Wayne County actively supported and/or provided funding for several FOTR efforts during 2016 including Rouge River Day, Rouge Education Project (REP), Public Outreach Workshops, Rouge Frog & Toad Survey and Macro-invertebrate Volunteer Monitoring. Specific activities completed in support of FOTR included setting up public information displays at FOTR sponsored workshops; supporting the Winter Stonefly Search and the Spring and Fall 2016 Bug Hunts; coordinating a River Day site in Canton Township; posting promotional flyers for FOTR events to the Wayne County websites; and participating on the Public Involvement Projects Task Force.

Rouge River Advisory Council: Wayne County staff participates in and supported efforts of MDEQ's Rouge River Advisory Council (RRAC) during the reporting period. Activities included response to MDEQ information requests regarding potential Rouge River Area of Concern (AOC) delisting project ideas and opportunities; letters of support to various communities, agencies or non-profits or the ARC for grant projects within the Rouge AOC; development of public advisory council support grant applications and implementation of awarded grant projects.

Detroit River Area of Concern Public Advisory Committee: In 2016, Wayne County staff continued participation in the Committee to assist with watershed management and river restoration efforts in the Detroit River.

Southeast Michigan Illicit Discharge Elimination Program (IDEP) Work Group

The work group was initiated in 2011 to facilitate the networking of individuals in Southeast Michigan responsible for implementing Illicit Discharge Elimination Programs, including staff from the Counties of Wayne, Oakland, Washtenaw, Macomb and St Clair; SEMCOG; and other municipal and university staff. WQMD is currently serving as Chair of the group, which meets quarterly to discuss common issues/ problems and collaboration on efforts beneficial to all. In

2013, the group developed a five year regional IDEP training plan for municipal staff. The plan calls for a five year rotation of IDEP training sponsored by Oakland, Wayne, Washtenaw, St. Clair and Macomb Counties, Alliance of Rouge Communities, Alliance of Downriver Watersheds, and Southeast Michigan Council of Governments. Each of these agencies signed an agreement committing themselves to their role in the plan. IDEP Investigator Training will have three sessions as follows: 2013 (Wayne County), 2015 (Washtenaw County), and 2017 (Macomb County). The Good Housekeeping/Illicit Discharge Recognition Training will have two sessions: 2014 (St. Clair County) and 2016 (Oakland County). The sponsoring County is responsible for facility procurement, registration, refreshments, etc.

As planned, Oakland County Water Resources Commission hosted the *Good Housekeeping/Illicit Discharge Recognition Training* workshop on October 13, 2016. Almost 100 people attended the workshop.

Regional/National Outreach Activities: Wayne County participated in several regional or national outreach activities/events/meetings during the reporting period to exchange information about storm water and watershed management, including:

- The “Rouge River National Wet Weather Demonstration Project: A River Restoration Success Story” was given as the keynote speech at the American Association of Airport Executives, 25th Annual National Aviation Environmental Management Conference, Detroit, Michigan, June 5-7, 2016.
- The “Wayne County Permitting Summit: For Businesses and Developers” was held on June 6, 2016. Presentations were made by Wayne County’s Environmental Services Group and the Permit Office covering permitting, the Wayne County Storm Water Program, SESC Permitting and “Part 41” Permits.

Integrate Public Education into Public Services, Facilities Management Division Operations (WCPEP #29)

Information Dissemination: Facilities Management Division has various information posted and available on the County’s website and staff routinely provide links and/or attach materials to emails in response to citizen inquiries. Specific pages include:

County Drains:

<http://www.waynecounty.com/departments/environmental/facilities/county-drains.aspx>

Kids Page:

<http://www.waynecounty.com/departments/environmental/facilities/kids-page.aspx>

DPS/FMD Reference Library:

<http://www.waynecounty.com/departments/environmental/facilities/dps-fmd-reference-library.aspx>

Industrial Pretreatment Zero Discharge Club: The County’s Industrial Pretreatment Program (IPP) for the Downriver Wastewater Treatment Facility had 31 industrial waste water dischargers as members of the *Zero Violations Club* during 2016.

Facility Tours: None reported in 2016.

Other: Wayne County is an active member of the Michigan Association of County Drain Commissioners and the Michigan Water Environment Association. Staff attend and periodically make presentations at the annual conferences hosted by these professional organizations for in-depth education, training and networking opportunities related to management of the County's waterways and watersheds.

Integrate Public Education into Public Services, Roads Division Operations (WCPEP #30)

Information Dissemination: As described in WCPEP #23, an informational display rack is set up at the Wayne County Roads Division Central Maintenance Yard and numerous environmental education materials are available to employees and the general public.

Watershed Awareness Signage: The Roads Division fabricates river crossing signs for the WQMD Clearinghouse described in WCPEP#26.

Adopt-a-Road Program: One hundred fourteen (114) groups adopted approximately 155 miles of County Road in 2016.

Integrate Public Education into Public Services, Parks Division Operations (WCPEP #31)

Information Dissemination from Nankin Mills: The Parks Administration office at Nankin Mills continues to supply the public with educational and informational brochures developed by Parks staff, by WQMD staff, Friends of the Rouge and others. Table 24 presents a summary of the environmental educational information distributed by the naturalists at Nankin Mills during 2016.

Table 24
Environmental Educational Information
Distributed from Nankin Mills Parks Office During 2016

Educational Item	Approximate Number Distributed
Rouge Watershed Public Recreation Areas Map and Index	50
Holliday Nature Preserve Map & History	300
Holliday Nature Preserve Association newsletters	200
Southeastern Michigan Butterfly Association flyers	200
Bennett Arboretum History brochure	200
Bennett Arboretum Trail Map and Interpretive Guide	200
Bluebird Nesting Box Information flyer	100
How to Build a Bat Box instruction packet	50
How to Build an Owl Nesting Box instructions	50
Wildlife Rehabilitators contact information	50
What is a Floodplain? Park Information Bulletin	200
Herps of the Rouge Interpretive flyer	500
Owls of Michigan Interpretive flyer	400

Educational Item	Approximate Number Distributed
Match Animal to Habitat flyer	200
Fish of the Rouge River activity flyer	150
Trees of the River Floodplain activity flyer	150
Geology of Michigan flyers	600
Poisonous Plants and Animals flyers	150
Animal Tracks, activity flyer	400
Pond Benthics and Water Quality flyer	300
Michigan State Symbols flyer	300
Maple Sugaring History/Instructions/Resource flyer	400
Bird List – Holliday Nature Preserve	200
Trees of the Floodplain List – Holliday Nature Preserve	200
Wildflower List – Holliday Nature Preserve	100
Mammals List – Holliday Nature Preserve	100
Wayne County DPS Resource Recovery Guide	100
WCDPS 24-Hour Environmental Hotline	100
WCDPS Riparian Corridor Management Principles	100
Rouge River Water Trail Guide FOTR/Wayne County	100
WCDPS Storm Drains Aren't Garbage Cans	100
Canoe and Bike Rental in the Park	100
SEMCOG Practice Good Car Care	100
SEMCOG Lawn Fertilization Guide	100
SEMCOG Not Just Walking Your Dog	100

Nankin Mills Interpretive Center – Stormwater/Watershed Displays: The theme of the Nankin Mills Interpretive Center (opened in January 2001) is “The Rouge River Runs Through History”. The Center is free to the public and open Monday through Saturday, 9 am – 4 pm. Featured are a variety of exhibits designed to foster visitor appreciation for the role the Rouge River has played in the natural and cultural history of our area, as well as the role that people have today in protecting this valuable resource. Permanent exhibits include:

- A diorama of wildlife of the Rouge floodplain, past and present;
- An early Potawatomi village scene depicting the many uses of the river by their culture;
- Gristmill exhibits describing the crucial role the Rouge River waterpower played in powering early mills in the early settlement of southeastern Michigan; and
- Exhibits featuring Henry Ford’s Village Industry project, which relied on water power of the rivers in southeastern Michigan to run his small industries using hydroelectric generators.

Permanent displays supporting environmental restoration/protection at Nankin Mills Interpretive Center include:

- Animals of the Rouge River floodplain diorama – Past and Present (conveying the message: it's a habitat, and explaining why some animals no longer live here)
- Changing Currents: Public Efforts to Restore the Rouge River
- CSOs: What are they and how are they being eliminated?
- Newburgh Lake clean up project
- Industry takes a proactive role
- Volunteer groups on the Rouge River
- Computer kiosk filled with Rouge River information
- Four touch-screen interactive computer programs focusing on our daily activities, and seeing how the results of our choices impact the Rouge River.
- Kid's Map of the Rouge River Watershed: Know Your Watershed
- Live reptiles and amphibians of the Rouge floodplain, interpretive panel depicting all native reptiles and amphibians in Michigan and highlighting those that live in the Rouge River watershed.
- Live fish aquarium highlighting fish of the Rouge River, interpretive panel listing all species of fish living in the Rouge River and pictures of many species including those in the aquarium for identification.
- Owls of Michigan guessing game.
- How the Rouge River was used in the past – Native American diorama
- How the Rouge River was used in the past – Settlement era displays
- How the Rouge River was used in the past – Henry Ford exhibits
- The Rouge River 1920s – 1970s: Troubled Waters
- Turtles of the Rouge River with interpretive panel above the live turtle tanks for identification of the ten Michigan species.
- Songbirds of Michigan with over 50 bird mounts on display with labels identifying each species.
- A seasonal exhibit is displayed in the spring and summer highlighting the life cycles of native butterflies, with live butterflies.
- Nature Touch Table.
- Seasonal photographs of wildlife and plant life in Holliday Nature Preserve.

The Nankin Mills Interpretive Center also has a temporary “Storm Water/Watershed” display in the classroom which includes a map of the watersheds in southeastern Michigan and the posters “Use Your Head, You Live in a Watershed”, “We are all part of the solution”, “Storm Drains Aren't Garbage Cans”, etc. Posters of the live frogs, salamanders, turtles and snakes of Michigan, butterflies, birds, and endangered species are also displayed.

Nankin Mills Interpretive Center Grounds: Native plants in the Butterfly Garden established on the site are identified by labels contributed by the Southeastern Michigan Butterfly Association (SEMBA).

Naturalist Programming at Nankin Mills: Nankin Mills Interpretive Center offers natural and cultural history programming about the Rouge River watershed for school groups, scout groups and families. In addition, naturalists provide Outreach Programming at local schools, libraries, scout pack meetings and other recreation facilities. As shown in Table 25, over 10,000 people attended a natural and cultural history interpretive program provided by Wayne County Parks during 2016.

Table 25
2016 Attendance at Nankin Mills Interpretive Programs

Number of Interpretive Programs Provided	239
Number of Children Attending	5,265
Number of Adults Attending	4,854
Total Number Attending	10,119

Nankin Mills Interpretive Center Natural Resource Related Programs: Nankin Mills Interpretive Center offered various groups a variety of interpretive programs in 2016 as listed below.

NEW EVENTS:

Earth Day for Schools, Morning and Afternoon Programs

Included: Live Bat Show, Live Mammal Show, Recycled Crafts Tent, Huron Clinton Metroparks Mobile Learning Center, Interpretive Center Water-power exhibits

Earth Day for Families

Included: Presentation on Sustainable Landscaping, Rambling Naturalist Wetlands Program, Huron Clinton Metroparks Mobile Learning Center, Recycled Crafts Tent, Live Birds of Prey Show, Environmental Musician

Nankin Mills School Field Trip and Outreach Programs Highlighting Natural Resource Topics include:

<i>History of the Rouge River</i>	<i>Animals in Winter/Tracks</i>
<i>Reptiles and Amphibians of the Rouge Floodplain</i>	<i>Animal Mysteries/Skulls & Scat</i>
<i>Habitat Hike</i>	<i>The Rouge River Watershed</i>
<i>Insect Adventures</i>	<i>Land and Water Connections</i>
<i>Michigan Geology</i>	<i>Bird Adaptations</i>
<i>Owls of Michigan</i>	<i>Pond Life</i>
<i>Poisonous Plants and Animals of Michigan</i>	<i>Floodplain Tree Identification</i>
<i>Michigan State Symbols & Natural Resources</i>	<i>Beginning Astronomy</i>
<i>Henry Ford Waterpowered Sites on the Rouge</i>	<i>Maple Sugaring</i>
<i>Underground Railroad History on the Rouge</i>	<i>Native Americans: Living with Land</i>

Nankin Mills Scout Badge Workshop Programs Featuring Natural Resources include:

<i>Environmental Science</i>	<i>Adventures in Science</i>	<i>Geocache</i>
<i>Paws on the Path</i>	<i>Home Scientist</i>	<i>Animal Habitats</i>
<i>Digging in the Past</i>	<i>Hiker</i>	
<i>Fur, Feathers Ferns</i>	<i>Bugs</i>	

*Super Science
Into the Woods
Into the Wild
Rocks Rock - Geology*

*Michigan
Flowers
Astronomy
Trees*

Nankin Mills Home School Natural Resource Related Programming Offered in 2016:

<i>Animal Courtship</i>	<i>Leaf Collection</i>
<i>Animal Keying: Skins/Skulls/Tracks</i>	<i>Leaf Print T-shirts/Hike</i>
<i>Animal Signs</i>	<i>Native American Plant Uses</i>
<i>Animal Track T-shirt/Hike</i>	<i>Natural Plant Dyes</i>
<i>Dinosaur Explorations</i>	<i>Oaks of Bennett Arboretum</i>
<i>Fish Adaptations</i>	<i>Poisonous Plants & Animals</i>
<i>Live Reptiles and Amphibians</i>	<i>Seed Identification/Collection</i>
<i>White-tailed Deer</i>	<i>Tree Keying</i>
<i>Wild Canines</i>	<i>Wildflower Folklore Hike</i>
<i>Bird Adaptations</i>	<i>Astronomy I: Solar System</i>
<i>Bird Nests</i>	<i>Astronomy II: Beyond Solar System</i>
<i>Bird Watching</i>	<i>Ice Age</i>
<i>Owls of Michigan</i>	<i>Michigan Geology</i>
<i>Butterflies of Michigan</i>	<i>Water/Soil Conservation</i>
<i>Insect Investigations</i>	<i>Wet, Wild Weather</i>
<i>Soil Critters</i>	<i>Michigan Symbols/Natural Resources</i>
<i>Advanced Tree Keying: Oaks</i>	<i>French Voyageurs</i>
<i>Alien Invaders</i>	<i>Ford Village Industries on Rouge River</i>
<i>Fern Identification/Hike</i>	<i>Historic Mills/Villages on Rouge River</i>
<i>History of Rouge Museum Tour</i>	<i>Michigan Logging History</i>
<i>Mining in Michigan</i>	<i>Native Americans: Living with the Land</i>
<i>Water Quality Testing</i>	<i>Underground Railroad Sites Along the Rouge River</i>
<i>Habitat Hike</i>	<i>Map and Compass</i>
<i>Maple Sugaring at Cass Benton</i>	<i>Outdoor Survival</i>
<i>Signs of Spring</i>	<i>Swamp Stomp</i>
<i>Winter Hike</i>	<i>Ecology Games</i>
<i>Nature Crafts</i>	<i>Nature Jeopardy/Concentration/Scavenger Hunt</i>

Adult Botany Hike Series:

*Winter Tree and Shrub Hike, Ellsworth Holliday Nature Preserve
Spring Wildflowers & Folklore, Cowan Holliday Nature Preserve
Deciduous Tree Collections of Bennett Arboretum
Fern and Flora Hike, Koppnick Section Holliday Nature Preserve
Conifer Tree Collections of Bennett Arboretum*

Nature Programs for the Whole Family:

<i>Winter Hike</i>	<i>Let's Go Birding</i>
<i>Slithering Snakes</i>	<i>Bug Hunt for Families</i>
<i>Making Birdhouses</i>	<i>Making Bat Houses</i>
<i>Maple Sugaring at Cass Benton</i>	<i>Autumn Leaves & Cider</i>
<i>Frog Call Rodeo</i>	<i>Halloween Forest Critter Fun Hike</i>

Adult Indoor Programs Heritage Series:

Wildflower Folklore of Holliday Nature Preserve
Butterflies of Holliday Nature Preserve
Ferns of Holliday Nature Preserve
White-tailed Deer Through the Seasons
Deciduous Trees and Shrubs of Holliday Nature Preserve
Underground Railroad along the Rouge River
Great Lakes Native History
Settlement Families along the Rouge River
Copper Rush in Michigan
Henry Ford's Village Industries: Water-powered Facilities
Hines Park History
1800s Mills and Villages on the Middle Rouge River

Hosted Southeast Michigan Butterfly Association Monthly Adult Programs:

<i>Pollinator Preservation Strategies</i>	<i>Landscaping with Natives/Plant Sale</i>
<i>Monarchs, Milkweeds and Disease</i>	<i>Raising Butterflies</i>
<i>Monarch Migration</i>	<i>Butterfly Identification/Host Plants</i>
<i>Rain Gardens</i>	<i>Flight of the Butterfly Movie</i>
<i>Container Gardening</i>	

Provided Outreach Library, Summer Camp, Senior Center and Community Center Programs for the Public:

<i>Underground Railroad Along Rouge River</i>	<i>French Fur Trade in Great Lakes</i>
<i>Live Reptiles and Amphibians of the Rouge</i>	<i>Native Wildflowers Presentation</i>
<i>Native American History – Living with Nature</i>	<i>Owls of Michigan</i>

Wayne County naturalists participate as instructors at the Rouge River Water Festival each year on University of Michigan Dearborn campus. This annual event provides river and watershed education for hundreds of school children throughout southeastern Michigan. For 2016, two staff presented *Live Reptiles and Amphibians of the Rouge*.

Workshops and other events related to watershed management held at the Nankin Mills Interpretive Center during the reporting period include:

- Nankin Mills Department Manager worked with the Southeastern Michigan Butterfly Association to maintain a Butterfly Garden with native plants next to the building. In addition, the Nankin Mills Interpretive Center Naturalist hosts monthly meetings of the SEMBA that include educational presentations about butterflies and butterfly gardening.
- Nankin Mills naturalist continue maintenance of bluebird nesting boxes in Grow Zone areas around the Interpretive Center.
- Nankin Mills naturalist continue removal of invasive garlic mustard in difference sections of the Holliday Nature Preserve with scout volunteer groups.
- Nankin Mills (Parks Design Office) hosted the Rouge Water Trail Partners meetings throughout 2016.

Activities to promote and advertise Nankin Mills Interpretive Center Programs during the reporting period included:

- *School programs:* A flier listing our school interpretive programs is available in the lobby and programs are listed in Park Brochure and on the Park and Friends of Nankin Mills websites. Schools also spread the information by word of mouth. Flier sent to school email list.
- *Outreach programs:* A flier is available in our lobby and programs are listed in the Park Brochure and on the Park and Friends of Nankin Mills websites. The outreach program flier is also electronically mailed to local libraries and Recreation Departments.
- *Scout programs:* A scout flier and brochure with program information is electronically mailed to scouts on our mailing list twice a year for walk-in registration dates. Information is also available in the lobby and in our Park Brochure and on our Park and Friends of Nankin Mills Websites. Scout organizations also advertise our programs for us.
- *Family programs:* A seasonal family program flier is electronically mailed to those on our electronic mailing list and available in the lobby. Programs are also listed in the Park Brochure and on the Park and Friends of Nankin Mills websites, and an illustrated advertisement is made and displayed on an announcement board in our Park Office lobby. Our County PR person sends out press releases to local papers about some of our family events, and Friends of Nankin Mills sends press releases sometimes. Sometimes reporters attend and photograph events or run articles about them.
- *Home school programs:* An annual flier is electronically mailed to those on our electronic mailing list, available in our lobby, and program offerings are listed in the Park Brochure and on the Park and Friends of Nankin Mills Websites. Home school networking groups also advertise our programs.
- *Large Family Events:* Fliers are electronically mailed to those on our mailing lists, local libraries and Recreation Departments. These events are also advertised in our Park Brochure and on the Park and Friends of Nankin Mills Websites, and an illustrated advertisement is displayed on an announcement board in our Park Office lobby. Our County PR person sends out press releases to local papers and the County Web. Reporters often attend these events and run newspaper articles about them. Co-sponsored events are often advertised by the other sponsor, such as Native American Day, which gets radio coverage and is listed in Native American publications.

In addition to the 10,119 visitors who came to Nankin Mills Interpretive Center to visit and attend an interpretive program in 2016, an additional 6,158 people visited the Interpretive Center exhibits without attending an interpretive program, for a total of 16,277 visitors in 2016.

Since opening in January 2001, over a quarter million (260,944) people have visited the Nankin Mills Interpretive Center as follows:

2001: 15,664	2008: 16,589	2015: 16,820
2002: 15,112	2009: 18,932	2016: 16,277
2003: 17,804	2010: 16,355	
2004: 22,055	2011: 11,276	
2005: 19,509	2012: 12,387	
2006: 17,524	2013: 13,816	
2007: 17,233	2014: 13,591	

Information Dissemination from Crosswinds Marsh: The DPS-Parks office at Crosswinds Marsh continued to supply the public with educational and informational brochures during the reporting period. Table 26 presents a summary of the environmental educational information distributed from the Crosswinds Marks Parks Office during 2016.

Table 26
Environmental Educational Information Distributed From Crosswinds Marsh, 2016

Educational Item	Approximate Number Distributed
The Fish of Crosswinds Marsh	228
2016 Fishing Guide	268
Eat Safe Fish (pamphlet)	200
Buy Safe Fish (pamphlet)	200
Hooked on Fish (booklet)	200
Natural History of the Beaver (info sheet)	65
Natural History of the Muskrat (info sheet)	65
Conservation of the Kirtland's Warbler (booklet)	80
Poisonous Plants and Animals of MI (booklet)	80
Poisonous Plants and Animals of Michigan (booklet)	40
The Benefits of Trees (booklet)	85
Tree Identification Guides (booklet)	85
Forest Plants (info sheet)	85
Seed Dispersal (booklet)	50
Natural History of Michigan Owls (booklet)	105
Michigan Frogs (booklet)	135
Michigan Frogs (coloring sheet)	135
Frog Facts (bookmark)	135
Frog Calls (info sheet)	80
Birds of Crosswinds (bookmark)	45
Wetland Bingo (info sheet)	65
Animal Tracks (info sheet)	40
Animal Signs (info sheet)	100
What to Pack for a Hike (info sheet)	50
Leave No Trace (info sheet)	80
Outdoor code (info sheet)	80
Ways to Reduce Waste (info sheet)	45

Educational Item	Approximate Number Distributed
Recipes for Composting (info sheet)	45
Determining the Age of a Tree (info sheet)	85

Bulletin Board Display at Crosswinds Park Entrance: *What is a Wetland, Benefits of Wetlands, Wetland Conservation, Wetland Animals, All About Beaver, Bald Eagles of Michigan, Wildflowers of Crosswinds, etc.*

Naturalist Programming – Crosswinds Marsh: The Parks Division continued to provide and expand educational programming focused on the natural environment for scout troops, school groups and families at Crosswinds Marsh. During the reporting period, approximately 3,903 children and 1,361 adults participated in one of the educational programs offered by the naturalists stationed at Crosswinds Marsh and listed below. Approximately 26,000 - 28,000 people visited Crosswinds Marsh in 2016.

Crosswinds Marsh School Programs:

Michigan Frogs and Toads

Spring Fling

All About Birds

Canoe Hike

Fall Frolic

Marsh Mammals

Michigan Owls

Michigan Reptiles and Amphibians

Nature Detective

Insect Incognito

Canoe Trip – Self Guided

Wetland Field Investigation

Wetland Homes and Habitats

Wetland Plant and Animal Adaptations

Wonders of Water and Wetlands

Tune into Your Senses

Michigan Trees

Scientist

What's the Solution to Pollution

Crosswinds Marsh Outreach Programs:

All About Birds

Fall Frolic

Insect Incognito

Michigan Frogs and Toads

Michigan Owls

Nature Detective

Michigan Reptiles and Amphibians

Wetland Plant and Animal Adaptations

Scientist

Crosswinds HomeSchool Programs:

Student Scientist

Animals Architects

Sensational Seed Dispersal

Edible Plants

Nature Danger

Crosswinds Marsh Family Programs (* indicates large family event):

**Family Fishing Fun Day*

**Nature Fest*

**Hobby Day*

**Harvest Festival*

Spring Bird and Frog Hike

Time Out for Seniors

Bog Bugs

Summer Bird and Flower Hike

Nature Tots

Family Challenge

Trail Trekkers
Bats Friend or Fiend

Fall Bird and Color Hike

Crosswinds Marsh Boy Scout Badge Programs:

<i>Backyard Jungle ((Tiger)</i>	<i>Make it Move (Bear)</i>
<i>Sky is the Limit (Tiger)</i>	<i>Bear Claws (Bear)</i>
<i>Tigers in the Wild (Tiger)</i>	<i>Beat of the Drum (Bear)</i>
<i>Council Fire (Wolf)</i>	<i>Castaway (Webelos)</i>
<i>Grow Something (Wolf)</i>	<i>Walkabout (Webelos)</i>
<i>Finding Your Way (Wolf)</i>	<i>Into the Wild (Webelos)</i>
<i>Paws on the Path (Wolf)</i>	<i>Into the Woods (Webelos)</i>
<i>Digging in the Past (Wolf)</i>	<i>Adventures in Science (Webelos)</i>
<i>Motor Away (Wolf)</i>	<i>Aware and Care (Webelos)</i>
<i>Cubs Who Care (Wolf)</i>	<i>Earth Rocks (Webelos)</i>
<i>Fur, Feathers, & Ferns (Bear)</i>	<i>Bird Study (Merit Badge)</i>
<i>A Bear Goes Fishing (Bear)</i>	<i>Mammal Study (Merit Badge)</i>
<i>Super Science (Bear)</i>	<i>Nature (Merit Badge)</i>

Crosswinds Marsh Girl Scout Badge Programs:

<i>Bugs (Brownie)</i>	<i>Senses (Brownie)</i>
<i>Home Scientist (Brownie)</i>	<i>Animal Habitats (Junior)</i>
<i>Hiker (Brownie)</i>	<i>Geocacher (Junior)</i>

Nature Tots - Nature Series (ages 3-4):

Be a Bug
Dirt Detectives
Scales and Slime
Getting Down and Dirty at the Marsh

Crosswinds Marsh Naturalists also participates in the *Rouge River Water Festival*, the *Clinton River Water Festival* and the *Detroit River Water Festival* in 2016. These events provide river and watershed education for school children throughout southeastern Michigan. For 2016, two staff presented *Aquatic Invertebrates of the Rouge Watershed* and *Wetland Plants and Animals* for approximately 410 students and 68 adults.

Crosswinds Marsh Wetland Interpretive Preserve – Workshops and Other Events

- Naturalists are currently working with an Eagle Scout on one project to install a new bulletin display board near the vehicle parking lot and enlarge the bulletin board near the horse trailer parking lot.
- Naturalists established a partnership with Walton Woods Senior Living to conduct a Nature Program Series.
- Naturalists continue their partnership with Van Buren Parks and Recreation to conduct spring, summer and fall programs.
- Naturalists established a partnership with Canton Parks and Recreation to conduct a series of Nature Programs.

Crosswinds Marsh Wetland Interpretive Preserve – Promotion and Advertisement of Nature Programming and other Environmental Programs:

- *Crosswinds Marsh School and Outreach Programs:* An annual *Parks Events and Interpretive Programs* brochure listing all interpretive School and Outreach Programs is available at the entrance to the Park. This brochure is also distributed to local schools and other individuals on our mailing list. All programs are listed on the bulletin board at the entrance to the park and on the Parks Division section of the Wayne County website. E-mail mailing lists are also used to distribute school and outreach program information.
- *Crosswinds Marsh Scout Programs:* Flyers and the *Parks Events and Interpretive Programs* brochure listing all Scout Badge Programs is available at the entrance to the Park.. Brochures (200) are distributed to the Detroit Area Boy Scouts of America Council. All programs are listed on the bulletin board at the entrance to the park and on the Parks Division section of the Wayne County website. E-mail mailing lists are also being used to distribute scout program information.
- *Crosswinds Marsh Family Programs and Large Family Events:* The *Parks Events and Interpretive Programs* brochure listing all Family Programs is available at the entrance to the Park. This brochure is also distributed to individuals on our mailing list. All programs are listed on the bulletin board at the entrance to the park and on the Parks Division section of the Parks website. A press release for each program is sent to the local newspapers.
- *Parks Website:* <http://www.waynecounty.com/departments/publicservices/parks/interpretive-centers.aspx> promotes and advertises the Interpretive and Naturalist programming offered by the County.

Educational and Volunteer Events at Detroit River International Wildlife Refuge Gateway site:

- In late August 2016 approximately 30 student workers and 8 full-time trainers from the Greening of Detroit's Green Corp program spent 5 days conducting restoration activities. Workers planted 90 native shrubs, 70 mature native trees, and flats of native perennials in the landscape, and also worked to clear overgrown fencing on over 1000' of cyclone fencing.
- On September 28, 2016 a class of approximately 30 under-graduate students from Madonna University performed woody plant maintenance activities at the Refuge Gateway. They removed old outdated fencing from shrubs, cleared garbage, and installed deer guards on newly planted trees.

Signage – Don't Feed the Geese: Ten signs are in place near the Middle Rouge impoundments, five signs are at Elizabeth Park and eight signs are installed at Crosswinds Marsh.

Signage - Holliday Nature Preserve: Preserve map and rule signage are provided at Nature Preserve trailheads.

Signage - Bennett Arboretum: Welcome kiosk and the *Oak Collection*, *Wetlands* and *Bennett Arboretum Wildflower Area* interpretive signs remain at the Bennett Arboretum.

Signage – Crosswinds Marsh:

- 28 “No Fishing” signs were painted/stenciled on existing boardwalk railings.
- Six “No Fishing” signs have been installed in restricted areas.
- Six “No Bicycles Beyond This Point” have been installed in restricted areas.
- Six “Endangered Species” signs are installed near the bald eagle nest.

Signage - Grow Zone Areas: Interpretive Grow Zone signs remain at the Nankin Mills Grow Zone, the Bennett Arboretum Grow Zone and the Newburgh Pointe Rain Garden. Permanent Grow Zone signs are installed at all Middle Rouge Grow Zones and temporary Grow Zone boundary marker signs.

Signage – Stream Bank Stabilization: The interpretive signs highlighting biotechnical stream bank stabilization methods remain at the Northville Recreation Area, the Levan Knoll Bike Path and the Valley View stream banks stabilization sites.

Staff Training: Parks staff did not report any environmental training in 2016.

Integrate Public Education with County-Issued Permits (WCPEP #32)

Facilities Management Division, Industrial Pretreatment Program (IPP) Permits: Wayne County's Industrial Pretreatment Program routinely works with industrial/commercial facilities to prevent adverse impacts on the Downriver Wastewater Treatment Facility and to the environment. Examples of implemented programs are: slug/spill control plan evaluation, mercury reduction plans and investigation of spills into sewers/drains. The County's Industrial Pretreatment Program for the Downriver Wastewater Treatment Facility issued 31 Zero Violations certificates to industrial dischargers during 2016.

Environmental Health Division – Onsite Sewage Disposal System (OSDS) Permits: Wayne County's Environmental Health Division (EHD) continues to provide educational materials to owners of onsite sewage disposal systems in conjunction with the Wayne County OSDS Evaluation and Maintenance Ordinance (Enrolled Ordinance 99-527). Materials distributed include:

- Homeowner reference guide for on-site sewage disposal,
- A copy of the homes sewage disposal system permit,
- A copy of the final inspection report,
- A copy of the disposal system evaluation report,

Materials are provided to new owners of new on-site systems. Current owners are provided information when they have their on-site system evaluated. Materials are also provided to patrons at public educational events such as the annual Rouge River Water Festivals in Dearborn Michigan at the University of Michigan campus.

Land Resources Management Division – Soil Erosion Permits: Approximately 50 *Soil Erosion and Your New Home* brochures were distributed in 2016 to owners of newly constructed homes. The brochure was also distributed via County office information racks and upon request.

Engineering Division – Storm Water Permits: Wayne County developed our *Storm Water Management Standards Manual* and publishes it in conjunction with the County's Storm Water Management Ordinance and Administrative Rules. This manual provides a "plain English" explanation of the ordinance and administrative rules, user-friendly guidance for design of different storm water management facilities, and other useful information. The *Wayne County Storm Water Management Standards Manual* also addresses topics such as pollution prevention

through storm water management, pollution prevention through soil erosion control, and management of riparian lands.

Wayne County routinely updates the guidance in the manual based on emerging technologies and other factors. Substantial updates to the Wayne County Storm Water Standards Manual were published in July 2015. The “Wayne County Permitting Summit: For Businesses and Developers” was held on June 6, 2016 at which the Wayne County Storm Water Program was presented.

The ordinance, administrative rules, and standards manual are available online from Wayne County’s website <http://www.waynecounty.com>. These documents and periodic updates, along with supplemental materials not included in the Standards Manual but which may be helpful in implementing the Wayne County Storm Water Management Program, are available at in the “storm water program” section of the county website at <http://www.waynecounty.com/departments/environmental/waterquality/storm-water-management.aspx>. Links to other useful information are also provided on this page. For example, Wayne County has established a registry of Storm Water and Water Quality Practices Constructed/Implemented in Southeast Michigan that include project summaries, photos, location and contact information, weblinks, and other information for a variety of storm water and watershed management practices constructed/implemented in southeast Michigan in the following categories: Bioretention / Low Impact Development / Native Landscaping; Manufactured Treatment Systems and Underground Detention; Detention Ponds/Constructed Wetlands; Streambank Stabilization; Woody Debris Management; and Green Buildings.

Hard copy versions of the manual are available from the Permit Office (33809 Michigan Avenue, Wayne, MI). DPS-WQMD and DPS-Engineering staff routinely respond to requests for information about the County’s storm water management program. These requests are from developers, communities, engineers, and citizens. Storm water magazines and other engineering magazines related to environmental issues are in the Permit Office reception area for clients to read.

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SECTION 4

WAYNE COUNTY

ADDITIONAL STORM WATER MANAGEMENT ACTIVITIES

The following storm water management activities relate to Wayne County's Storm Water Pollution Prevention Initiative (SWPPI). These activities were completed by Wayne County during the reporting period **January 1, 2016 – December 31, 2016** for compliance with the County's Certificate of Coverage MIG610040 under the MDEQ General Storm Water Discharge Permit MIG619000.

Outlet Stabilization: County Projects (WCSWM #1)

Routine maintenance of existing outlets from County storm water systems to surface waters includes stabilization if necessary. Proper outlet stabilization techniques are included in design documents for any projects where new outlets from County storm water systems to surface waters were created. In 2016, proper outlet stabilization techniques were utilized for outlets replaced as part of road construction projects identified in Table 27 below or as part of County Drain improvement projects.

BMP Implementation: Treatment Controls for County Projects (WCSWM #2)

Low Impact Development - Green Infrastructure Projects

Rouge River Riparian Corridor Management Project

Wayne County Parks and WQMD continued their partnership to implement the *Rouge River Riparian Corridor Management Project* within Hines Park. Twenty-nine green infrastructure sites within Hines Park and along the Middle Rouge River have been constructed and are being managed in a way that reduces storm water runoff and pollution, promotes biodiversity, increases wildlife habitat, while also providing or improving passive recreational opportunities. The sites include 13 biotechnical stream bank stabilization projects, two bioretention cells, two detention pond native plant retrofits, and 12 native plant grow zones.

Tree Enhancements on Publicly-Owned Priority Urban Areas Project

In 2010, WQMD and Roads Division staff partnered with SEMCOG to secure a US Forest Service GLRI grant entitled: *Tree Enhancements on Publicly-Owned Priority Urban Areas Project*. A total of 435 trees were planted at 16 different locations. In 2016, staff continued to maintain these planting areas as part of the routine road right of way maintenance efforts.

Restoring Community Trees in an Urban Watershed Project

In 2011, WQMD and Roads Division staff partnered with the Alliance of Rouge Communities (ARC) to secure a US Forest Service GLRI grant entitled: *Restoring Community Trees in an Urban Watershed*. This grant funded the installation of 1,102 trees within County rights-of-way and properties within the ARC watershed area as follows: 250 trees were planted by WC Roads Forestry in 2012, 651 trees were planted by WC Roads Forestry and 135 were planted by WC Parks in 2013, and 65 trees were planted by WC Parks in 2014. In 2016, staff continued to maintain these planting areas as part of the routine road right of way and Parks maintenance efforts.

Restoring Tree Canopy in the Rouge River AOC Project

In 2014, WQMD partnered with the ARC to secure another US Forest Service GLRI grant funded to purchase and plant trees on County Parks property within the Rouge River watershed. In May of 2016, 25 trees were planted at three different locations within Hines Park along the Middle Rouge River.

Emerald Ash Restoration and Urban Reforestation in the ADW Grant Project

In 2014, WQMD partnered with the Alliance of Downriver Watersheds (ADW) to secure a US Forest Service GLRI grant funded to purchase approximately 430 trees for planting across the downriver watersheds area within county road right of ways and within Elizabeth Park. In November of 2015, 175 trees were planted by WC DPS Roads Division along County Road right of ways in the downriver area. A grant extension was negotiated in 2016 to allow for the planting of the remaining trees in 2017.

Detroit River International Wildlife Refuge Gateway Headquarters:

In 2016 construction on the Visitor Center is 70% complete. In 2016 contractors have enclosed the building, completed substantial interior work, and have installed utilities. Storm water collection ponds within the parcel owned by the Fish and Wildlife Service have been installed and connected together, The rooftop solar array, now generating power, was also installed. Once open, the Visitor Center will operate as a destination point for and provide environmental education opportunities to hundreds of thousands of projected visitors from the approximately 7 million people in the Detroit-Toledo-Windsor region within a 45 minute drive of the site. The Visitor Center will have LEED Silver accreditation, including among other things, photovoltaic solar roof panels and greywater detention ponds. The Visitor Center is scheduled to open in the fall of 2017.

Road Construction – DPS Field Engineering Office: Table 27 summarizes the Wayne County road construction projects administered by the Field Engineering Office in 2016. Except as noted below, these projects consisted primarily of an asphalt overlay of an existing concrete or asphalt roadway and concrete patching. Most projects also required removal of soil build-up (overburden) above the roadway curb and approximately five feet behind the curb. After removal of these excess soils, the areas were stabilized with sod, thus preventing the existing soils from washing into the roadway drainage system in the future. Erosion control protection filters were provided at storm drain structures, as needed, to prevent sedimentation from entering the roadway drainage system during construction.

Each of the road projects administered by WCDPS – Field Engineering has a plan for Soil Erosion and Sediment Control during construction. Each project has a certified storm water operator that maintains a “Soil Erosion & Sedimentation Controls Inspection Log”. Observations are recorded after each storm event and at least once a week. The contractor is then directed to make corrections if control measures are found to be inadequate.

Table 27
Wayne County 2016 Road Construction Projects

Project Name	Project Limits	Type of BMP Installed
Base Line Road And Seven Mile Concrete Patching	Newburg to Farmington	Mulch blanket, fabric drops, and sodding
Huron River Drive Resurfacing	Elwell to Sumpter	Silt fence, stone check dams, riprap, fabric drops, stone filter, mulch blanket, seeding
Cherry Hill Resurfacing	Wayne to Merriman	Fabric drops
Eureka Resurfacing	Racho to Allen	Mulch blanket and fabric drops.
Eureka Concrete Patching	Middlebelt to Inkster	Fabric drops and seeding
Eureka Concrete Patching	Wayne east of Dingell	Fabric drops and seeding
Goddard Road	I-75 to Toledo	Silt fence, stone check dams, riprap, fabric drops, stone filter, sodding
Joy Road	Evergreen to Southfield	Fabric drops and seeding
Six Mile Road	Northville to Haggerty	Silt fence, stone check dams, riprap, fabric drops, stone filter, mulch blanket, seeding
Lotz Road	Cherry Hill to Ford	Storm water pollution unit, silt fence, stone check dams, riprap, fabric drops, stone filter, mulch blanket, seeding and sod
Geddes/Denton Intersection	Geddes/Denton Intersection	fabric drops, stone filters, mulch blanket, seeding

CSO Control Implementation (WCSWM #3)

During the reporting period, Wayne County continued operation and maintenance of combined sewer overflow control facilities in Dearborn Heights, Harper Woods (Milk River Retention Treatment Basin), Inkster, Redford, River Rouge and Wyandotte (Southgate-Wyandotte system). Operation of these facilities and planning for any additional facilities required for CSO control in Wayne County is completed pursuant to the NPDES permits for these systems.

SSO Control Implementation (WCSWM #4)

During the reporting period, Wayne County continued operation and maintenance of the sanitary sewer interceptor system tributary to the County's Downriver Wastewater Treatment Facility and those tributary to the Detroit Wastewater Treatment Plant (Rouge Valley and Northeast Sewage Disposal Systems). Any sanitary sewer overflow (SSO) control activities necessary for these systems are defined in the NPDES permits for these systems.

Pollution Prevention (P2): General Public Facilities Management (WCSWM # 5)

WQMD has previously dye-tested all County facilities within the separated storm sewer system area of the County and continues to improve site mapping of storm sewer system and on-site pollution prevention awareness at maintenance yards and facilities. In 2016, pollution prevention site inspection and a newly P2 Action Plan was completed along with follow-up inspection memo issued for the following maintenance yard operated by the DPS-Parks and Wayne County Sheriff:

- Parks Division: Wayne County Sheriff Park Patrol and Horse Stables

A P2 training presentation and additional P2 workshops will be made available to all WCDPS-Roads and WCDPS-Parks staff in 2017. Table 28 presents the DPS-Parks and Sheriff facility by watershed that was completed during 2016.

Table 28
2016 Pollution Prevention Action Plan Inspection(s) at
Wayne County Department of Public Services Maintenance Yards

Wayne County DPS Maintenance Yards	Watershed			
	Rouge River Watershed	Combined Downriver Watershed	Detroit River Watershed	Lower Huron Watershed
Wayne County Sheriff Hines Park Patrol/Stables (Livonia, MI)	X			

A summary of pollution prevention activities undertaken on properties operated by WCDPS Roads (including all Roads maintenance yards) is as follows:

- Cleaning Up Spills and Leaks: Each Roads maintenance yard has a Pollution Prevention Incident Plan (PIPP) and a Hazardous Waste Contingency Plan.
- Cleaning of Paved Surfaces is accomplished with road sweepers as described in WCSWM#10. Spills of materials on County roads are handled by an environmental cleanup company under contract to Wayne County. The Michigan Department of Transportation is notified of spills on State trunk lines and contracts with a clean up contractor for removal of the material.
- Storing and Disposing of Wastes: Spills of hazardous materials on County roads are handled by an environmental cleanup company under contract to Wayne County. Scrap tires from various Roads yards are picked up by a contractor for proper disposal. Street sweeping material and catch basin cleanings are taken to an industrial waste processor for proper disposal.
- Storing and Handling of Inventory: Materials for Roads operations are stored in a climate controlled building with storage of containerized liquids on bases with overflow spill protection. Bulk storage is typically undercover and on impervious surfaces.
- Certified Storm Water Operators: 18 Roads Division employees are certified storm water operators through the MDEQ's Operator Training and Certification Unit.
- Dumpster and Loading Dock Maintenance: Thirty cubic yard and six cubic yard dumpsters are placed at Roads maintenance yards by a contractor. These dumpsters are used for

disposal of trash and waste from the yards and roads. The contractor responds on demand to empty the dumpsters.

- Maintaining Landscaped Areas: The Forestry unit has 8 certified pesticide applicators and is actively seeking opportunities and funding to replace lost trees and to safely implement grow zones along County roads.
- Miscellaneous Activities:
 - o At the MDOT Pump Stations operated by DPS – Roads, all floating objects such as foam and plastic containers are to be removed prior to any maintenance at the station that requires de-watering to clean and remove sand and dirt from the sump bottom.
 - o All three of the draw bridges maintained by the County have installed electric toilets. These electric toilets have eliminated the direct discharge of sewage from these facilities into the Rouge River and Trenton Channel.
 - o Quarterly P2 Action Plan inspections by the Department Managers at all County Maintenance Yards within separated storm sewer area and an annual inspection by the Forestry Department Manager are to be conducted.

WCDPS – Parks maintenance yards are routinely inspected by Parks Foreman and Department Managers to ensure compliance with waste management, pollution prevention and safety requirements as outlined by Wayne County Risk Management and the P2 Action Plans developed by WQMD.

Staff Training (WCSWM #6)

WQMD performed (1) Pollution Prevention and Best Management Practices educational inspection for the Wayne County Sheriff Hines Park Patrol and Horse Stables during the 2016 reporting period. It is also anticipated that the training sessions will be made available to the WCDPS-Parks and WCDPS –Road Yards during the 2017 reporting period.

P2: Training and Inspection Program for Contractors (WCSWM #7)

Wayne County contracts require contractor compliance with all applicable local, state and federal regulations. WQMD has previously dye-tested all County facilities within the municipal separated storm sewer system area and has stenciled the storm sewer manholes within maintenance yards and parking lots. As part of the P2 Action Plan development/update process, contracts for maintenance of County facilities are reviewed for opportunities to include specifications for pollution prevention activities and/or identify training opportunities.

P2: Fertilizer, Pesticide and/or Herbicide Applications (WCSWM #8)

Fertilizers are not used on the majority of Wayne County properties. All pesticide and herbicides are applied by state certified pesticide/herbicide applicators according to product labels and certified applicator training. As part of the P2 Action Plans development/update process, landscaping practices at individual County facilities (done in house or under contract) are reviewed for opportunities to minimize or improve fertilizer, pesticide and herbicide application practices.

P2: Storm Sewer Operation and Maintenance (WCSWM #9)

As part of the Wayne County road improvement projects identified in Table 27, all existing catch basins and storm water manholes associated with the roads in the project were cleaned, including the sumps, to improve the efficiency of conveying the storm water from the roadway to the

designated outlet. Cleaning of the sumps allows particles to settle and not be carried into ditches, streams and rivers. Additional cleaning of catch basins associated with storm sewers owned by Wayne County Roads Division is performed on an as-needed basis. During 2016, the Wayne County DPS-Roads Division removed and properly disposed of 9,835.91 tons of material from catch basins, storm sewers, roadside ditches and other features. The Roads Division has policies, procedures and a contractor in place to ensure that hazardous materials spilled on the roadways are appropriately disposed of and reported.

P2: Road Maintenance and Sweeping (WCSWM #10)

The WCDPS-Roads Division sweeps the curbed roadways under its maintenance responsibility. Table 29 presents a summary of roadway sweeping for this reporting period.

Table 29
2016 Roadway Sweeping Summary: Wayne County Roads Division

Type of Roadway	Cycles	Total Road Miles Swept
Urban Freeway	2	1,936.9
Non-urban Freeways	1	117.2
County Primary Roads	1-3	1,275.4
County Local Roads	0	0
Total		3,329.5

See WCSWM #9 for volume of material collected and disposed of properly

P2: Snow Removal and Storage (WCSWM #11)

Consistent with the PIPP developed for each County maintenance facility, Wayne County will continue to store and handle all snow removal equipment, supplies, and chemicals such as salt and calcium chloride in shelters and that prevent spill and leaks that could enter the storm drainage system. Chemicals will continue to be stored in containers that are properly labeled to reduce the chance of using the wrong material and accidental mixtures. Where possible, chemicals will be eliminated by substituting non-hazardous or less hazardous materials. Snow that is removed from roads and stored on site will be properly disposed of if contaminated with chemicals or other hazardous materials, otherwise, snow will be allowed to melt and drain into sanitary and or storm drains.

P2: Deicing Practices and Storage (WCSWM #12)

The WCDPS-Roads Division will continue to practice environmental friendly methods of deicing, and stores all deicing equipment, supplies, and chemicals in shelters that prevent spill and leaks that could enter the storm drain system. Roads staff are trained on winter safety and salt operations. Salt truck equipment is calibrated routinely to minimize over application. Salt brine-making machines have now been installed at all six Roads maintenance yards. Roads Division continued to use salt brine as anti-icing agent for pre-treating roads for snow and ice clearing. This practice can result in up to 25% saving in salt usage which reduces damage to roadside vegetation and reduces chloride discharged to the storm water system and surface waters.

Oil and Grease Traps: County Implemented (WCSWM #13)

The oil-water separators installed at County maintenance yards are routinely cleaned and the material properly disposed.

Goose Control Program (WCSWM #14)

The program to control Canada Geese populations (egg replacement) in Wayne County Parks continued in 2016. A total of 265 eggs were replaced at 7 locations.

Soil Erosion and Sedimentation Control Implementation: County Projects (WCSWM #15)

As an Authorized Public Agency (APA) the WCDPS-Field Engineering Office follows the Soil Erosion and Sedimentation Control (SESC) Procedures and supplemental manual, as approved by MDEQ in June of 2011. The Field Engineering Office is responsible for the Construction Administration of approximately 15 to 20 Wayne Road improvement projects annually. Each project has a plan for Soil Erosion and Sedimentation Control during construction. Each project has a certified storm water operator that maintains a "Soil Erosion and Sedimentation Controls Inspection Log". Observations are recorded after each storm event and at least once a week. The contractor is then directed to make corrections if control measures are found to be inadequate.

The WCDPS-FMD Field Operations is an Authorized Public Agency under Part 91, Act 451. FMD Field Operations oversees SESC activities relating to their work within County Drains in conjunction with DPS- Permits in accordance with its' APA requirements.

Construction of capital improvements to County wastewater and storm water facilities and systems is conducted in accordance with all applicable local, state and federal regulations, including SESC regulations.

Streambank Stabilization: Projects Subject to County Storm Water Ordinance (WCSWM #16)

The Wayne County Storm Water Management Program is performance-based, with requirements for both flood control and water quality protection. The developer may choose from a variety of best management practices (BMPs) or combinations of BMPs to meet the performance standards defined in the Ordinance and Administrative Rules. Design guidance for stream bank stabilization is provided in the *Storm Water Management Standards (v3.0)* Chapter 8.4 within the *Wayne County Storm Water Standards Manual*.

Wayne County Parks also manages native meadow buffer zones along sections of the river susceptible to erosion. The deep penetrating fibrous root systems of the buffer (Grow Zone) plants protect the riverbanks from erosion while the many surface shoots of these plants slow water velocity and filter sediment traveling toward the river in storm water runoff.

BMP Implementation, Treatment Controls: Projects Subject to County Storm Water Ordinance (WCSWM #17)

In 2016, the Permit Office reviewed development projects to ensure compliance with applicable County regulations. Seven hundred forty-five (745) projects were reviewed for compliance. Six hundred twenty-one (621) construction permits were issued. Four hundred fifty-nine (459)

construction projects were completed in 2016, and 162 projects were still in construction at the end of the calendar year. The Field Engineering Office provides inspection of all approved projects to ensure compliance with approved construction plans and the Wayne County Storm Water Management Ordinance, Administrative Rules, and Standards.

Outlet Stabilization: Projects Subject to County Storm Water Ordinance (WCSWM #18)

The Wayne County Storm Water Management Program is performance-based, with requirements for both flood control and water quality protection. The developer may choose from a variety of best management practices (BMPs) or combinations of BMPs to meet the performance standards defined in the Ordinance and Administrative Rules. Design guidance for conveyance elements including outlet design is provided in the *Storm Water Management Standards (v3.0)* Chapter 8.3 within the *Wayne County Storm Water Standards Manual*.

Ordinance Enforcement: Illegal Dumping Ordinance (WCSWM #19)

Illegal dumping is prohibited under the Wayne County Solid Waste Ordinance No. 2004-787 and the Wayne County Litter Control Ordinance No. 97-297. See the report under *WCIDEP #7*.

Ordinance Enforcement: Municipal Civil Infractions Ordinance (WCSWM # 20)

Wayne County's Municipal Civil Infraction Ordinance (Enrolled Ordinance No. 2001 - 404) (MCI) provides opportunities for addressing violations of Wayne County environmental ordinances. This ordinance addresses enforcement of elements of the County's IDEP such as the Illegal Dumping Ordinance (Enrolled Ordinance 96 - 100), the Sewer Use Ordinance (Chapter 101 of Wayne County Code of Ordinance) and the Wayne County's Storm Water Management Ordinance (Enrolled Ordinance No. 2000 - 652). The goal of the MCI is to correct violations of the ordinance where "guilt" or "criminal incarceration" would not be applicable. The Municipal Civil Infraction Bureau (MCIB) is authorized to accept admissions of responsibility for a Municipal Ordinance Violation Notice (ticket) issued and served by authorized County officials and to collect fines and penalties for violation of an environmental ordinance.

In 2016, 14 Municipal Civil Infraction citations were issued. In addition 13 Stop Work Orders were issued under the Wayne County's Soil Erosion and Sedimentation Control Ordinance.

Ordinance Enforcement: OSDS Evaluation and Maintenance Ordinance (WCSWM #21)

See the report under *WCIDEP #5*.

Ordinance Enforcement: Sewer Use Ordinance (WCSWM #22)

The WCDPS-FMD Industrial Pretreatment Program (IPP) continued implementation of the Sewer Use Ordinance (Chapter 101 of Wayne County Code of Ordinances) during the reporting period. At the end of 2016, the Downriver Wastewater Treatment Facility (DWTF) had 44 Significant Industrial Users (SIU's). The DWTF also had 11 special condition industrial users. Thirty-one (31) Letters of Violation were sent to facilities not meeting their discharge limits according to their permit. Seven facilities were issued Notice of Non-Compliance letters which required a conciliation meeting with the DWTF IPP staff. Users implemented corrective actions that resulted in return to compliance.

Ordinance Enforcement: Soil Erosion and Sedimentation Control Ordinance (WCSWM #23)

The WCDPS Land Resources Management Division (LRMD) administers Part 91 (Soil Erosion and Sedimentation Control) (SESC) of the Michigan Natural Resource and Environmental Protection Act as the CEA within 35 of the 43 local communities within Wayne County. In 2016, LRMD issued 327 soil erosion control and sedimentation permits, and inspections were performed at all sites. An MDEQ program audit was performed in 2016 and the programs current status is Approved Program.

Ordinance Enforcement: Storm Water Management Ordinance (WCSWM #24)

Enforcement of Wayne County's Storm Water Management Ordinance (Enrolled Ordinance No. 2000-652), Administrative Rules (Resolution No. 2000-653), and Standards Manual is implemented through the existing review and permit processes of the Permit Office of the Wayne County Department of Public Services, Engineering Division. As described in WCSWM #17, the Permit Office reviewed 745 development projects in 2016 to ensure compliance with the Wayne County Storm Water Ordinance. The Field Engineering Office provides inspection for all approved projects.

Flow Obstruction Prevention/Removal and Woody Debris Management (WCSWM #25)

There are numerous log jams in the Rouge River as it winds through Wayne County Parks. These are the result of severe fluctuations in river flow due to storm water runoff as well as the numerous dead trees caused by the emerald ash borer.

WC Parks and WQMD continue to support Friends of the Rouge and the other Rouge Water Trail Partners and volunteers to establish a canoe route along the Lower Rouge River using woody debris management "Clean and Open" techniques described in the riparian corridor management brochures available online at the County's website. WC Parks also maintains the woody debris that occasionally obstructs the spillway dam at the Crosswinds Marsh as well as log jams that negatively impact bridges. In 2016 specific work areas included:

- Middle Rouge River at Merriman in Hines Park,
- Middle Rouge River at Wallaceville Drive in Hines Park,
- Middle Rouge River at Ellsworth Trailhead in Hines/Holliday Nature Preserve

Stream Bank Stabilization Efforts: County Implemented (WCSWM #26)

In 2016, WCDPS – FMD continues to require the use of native seed mix for drain restoration projects. See also activities summarized above in WCPEP #11, WCSWM #2, WCSWM #24 and WCSWM #25.

Habitat Restoration and Protection (WCSWM #27)

Grow Zone Initiative: As described in WCPEP #11 and WCSWM#2, DPS-Parks, Roads, Drains, and Water Quality Management Divisions continue efforts to expand grow zones in County park areas, along County Roadways, and along County Drains in support of storm water management and improvement of riparian corridors along river tributaries.

Wayne Road Dam Removal and Habitat Restoration Project: In 2011, Wayne County partnered with the ARC, the City of Wayne and the Rouge RAP Advisory Council to secure a GLRI grant

through the National Oceanic and Atmospheric Administration to remove the dam and restore habitat on the Lower Rouge River at Wayne Road within the City of Wayne. The project consisted of removing the low-head dam at Wayne Road, stabilizing the stream bank using a combination of green infrastructure and structural controls, and improved fish passage using a system of pool-riffle in-stream rock structures. A dedication ceremony for the completion of the project was held in the spring of 2013. In 2016, project evaluation efforts continued and included spring, fall and winter macro-invertebrate monitoring conducted as part of the *Rouge River Macroinvertebrate Monitoring* (see Section 1) activities. The site also hosted the 3rd Annual Rouge-a-Palooza.

Wayne County Native Plant and Backyard Composting Demonstration Site: WQMD continues to maintain a native plant and backyard composting demonstration site at its Commerce Court office location in the City of Wayne. This site was created in 2003 as a staff training effort, a public education effort and as a habitat restoration effort. In 2016, the site continues to serve as a monitoring location for the WQMD and FOTR and as a the launch point for the Friends of the Rouge/Wayne County Parks Lower Rouge River Water Trail.

Detroit River International Wildlife Refuge:

- 70 new native trees between 1" and 1.5" caliper size were planted at the Refuge Gateway. Species included Bur, Red, and Swamp White Oak, Sugar Maple, and Black Gum. Ninety shrubs were planted as a native vegetative buffer in the northeast corner of the Refuge Gateway, and along the southeast corner of the property. Species included Winged Sumac, Spicebush, Nannyberry, Grey Dogwood, Michigan Rose, and Pasture Rose.
- In 2016 our partners at the Fish and Wildlife Service completed infrastructure improvements to the Monguagon wetland at the Refuge Gateway, a daylight portion of the Monguagon drain that empties water into a 3-acre detention pond and wetland that then discharges into the adjacent Humbug Marsh Unit of the Detroit River International Wildlife Refuge. USFWS staff upgraded overflow pipes that run to the Detroit River and installed flap-gates to prevent the backflow of river water the wetland during seches or other high water events. USFWS also raised the elevation of a berm that separates the wetland from the Detroit River to further prevent possible backflow.

Nankin Mills Interpretive Center:

- Bluebird and wood duck nesting boxes that were established by Eagle Scouts and Girl Scouts are being maintained in the Grow Zone areas, Holliday Nature Preserve and Bennett Arboretum.
- Nankin Mills Department Manager and volunteers continued to maintain the native plant butterfly garden at the Nankin Mills site. See other projects identified under WCPEP#31 above and, working with the Design Office staff, bat house roosting sites were installed by an Eagle Scout in 2015.
- Nankin Mills naturalists continued removal of invasive garlic mustard in different sections of Holliday Nature Preserve with scouts and volunteers.

Crosswinds Marsh Wetland Interpretive Preserve:

- Crosswinds Naturalists continue to monitor, clean and repair existing 50 blue bird nesting boxes installed by an Eagle Scout.
- Crosswinds Naturalists continue to monitor, clean and repair existing 28 bat houses.

- Crosswinds Naturalists continue to implement an invasive species control program for autumn olive, phragmites, purple loosestrife and Eurasian water milfoil.
- Crosswinds Naturalists continue to implement the control program for cottonwood trees and other woody vegetation in the wet meadow and wildflower areas.
- Crosswinds conducts prescribed burns bi-annually on two threatened and endangered plant species sites.
- Crosswinds maintains no mow barriers between the wetlands and picnic/public use areas.
- In 2016, Crosswinds in cooperation with The Nature Conservancy continued efforts to restore Lake Plain Prairie remnants located at Crosswinds.
- In 2016, Crosswinds in cooperation with The Nature Conservancy began efforts to restore Oak Savannah habitat at Crosswinds Marsh.
- In 2017 boy scouts will be constructing and replacing several of the Wood Duck nest boxes.

Elizabeth Park Greenway and Shoreline Restoration Project: This project includes the implementation of a non motorized greenway and shoreline restoration at Elizabeth Park in Trenton, MI. The first key component is the proposed construction of the greenway which will be a 10 ft. wide pathway along the park canal's entire 4000 ft. western shoreline. The pathway would serve as a connector from the Grosse Ile Parkway to downtown Trenton. The other focus of this project is the proposed shoreline stabilization. The canal is the final section of shoreline at Elizabeth Park in need of restoration and stabilization. This includes the removal of invasive plant species, naturalization, and use of soft engineering design applications that will protect sensitive ecosystems, improve natural habitat and as well as minimize flooding and erosion. This restoration effort will replace natural habitat for a variety of fish and wildlife species that has been lost over time. Habitat restoration will be achieved by systematically removing approximately 1.9 acres of invasive plant species and by adding 4.9 acres of shoreline and upland habitat. This project will also provide access for canoeing and kayaking along the canal and there will be five designated fishing locations. By introducing access to the canal, we are also promoting the Detroit Heritage River Water Trail. A Michigan Natural Resources Trust Fund grant for this project was received in 2015 and construction initiated 2016.

Ellsworth Boardwalk and Trailhead Parking: WC Parks has a grant award for a boardwalk and parking area that will provide universal access to the Holliday Nature Preserve. A 460 foot boardwalk will allow visitors to explore the nature preserve. The Ellsworth entrance area often floods making the Preserve inaccessible and unusable for many of the Naturalist Programming activities scheduled out of Nankin Mills. The project will included constructing a car parking lot and will include bioswales to manage the stormwater generated by the parking lot. Construction is planned for the summer of 2017.

River Day Participation (WCSWM #28)

See activities reported under WCPEP #14.

Assessment of County Implemented Flood Control Projects (WCSWM #29)

The Wayne County Drain Commissioner annually receives petitions for drain improvement projects. These projects can include drain improvements for flood control projects. Drain improvement petition projects include natural channel design and other storm water management measures where practical and where allowable under the Michigan Drain Code.

Other Activities and Projects

Other activities and projects of importance to watershed management, pollution prevention and habitat restoration include active water-based recreation use within Wayne County Parks, summarized below for 2016:

- 190 people participated in two fishing derbies/contests conducted at Crosswinds Marsh.
- 300 people participated in the fishing derby at Waterford Bend
- 700 canoe rentals occurred on Newburgh Lake in Hines Park.
- 404 canoe rentals at Elizabeth Park
- 184 canoe rentals at Crosswinds
- Planning the locations of kayak/canoe launches in the Lower Rouge Parkway along the Lower Rouge River is underway; these projects are proposed for implementation in 2017-2018.

SECTION 5

WAYNE COUNTY WATERSHED PLANNING

SUMMARY OF ACTIVITIES

The following Watershed Planning activities were completed by Wayne County during the reporting period **January 1, 2016 – December 31, 2016** in compliance with the County's Certificate of Coverage MIG610040 under the MDEQ General Storm Water Discharge Permit MIG619000.

Activities in the Rouge River Watershed

As described below, Wayne County is a very active participant in watershed planning and management activities in the Rouge River watershed.

Alliance of Rouge Communities: In December 2005, the Rouge watershed communities and counties formed the *Alliance of Rouge Communities* (ARC) to guide the Rouge River restoration into the future as the federal grant funding diminishes. The ARC is a legal public entity under the Watershed Alliance Act, Public Act 517 of 2004, and succeeded the voluntary Rouge River Watershed Local Management Assembly which operated 2002-2005. The ARC operates under approved bylaws and has an annual budget on the order of \$600,000 per year, used to fund: 1) watershed-wide monitoring; 2) sampling data analyses and reports; 3) the coordination of public education and involvement activities, all of which are required by local units of government under the Michigan watershed-based storm water permit. In addition, the funds are used to provide technical guidance and facilitation for the ARC its committees and the seven Subwatershed Advisory Groups. Wayne County served as fiduciary for the ARC during 2006, 2007 and 2008 under inter-agency agreements. Fiduciary duties for 2009 were transferred to the ARC via an interagency agreement executed in December 2008. For the period 2008-2016, Wayne County executed inter-agency agreements with the ARC on an annual basis to provide watershed restoration and storm water permit compliance services or funding to the ARC.

Much of the work of the ARC is happening through the standing committees: Finance, Technical, Public Involvement/Education (PIE) and Organization. Wayne County was a founding member of the ARC, is an active participant on every committee, serves as chair of the Organization Committee, and provides many of the services being provided to ARC members. Wayne County participated in virtually every activity described in the *ARC Executive Director's 2016 Annual Report* which is available at www.allianceofrougecommunities.com.

In addition, Wayne County continues to take a leadership role in implementing the *Watershed Management Plan for the Rouge River* (available at <http://www.allianceofrougecommunities.com>).

Rouge River Advisory Council (RRAC): Wayne County staff continued their active participation on the RRAC and any subcommittee that may be active. During 2016, Wayne County staff continued to actively participate in on-going efforts of the group. This activity included coordinating and providing letters of support to numerous Great Lakes Restoration Initiative grants submitted by Rouge Watershed stakeholders as well as active participation and support to the RRAC's Habitat Priority Projects Work Group.

Wayne County Rouge River National Wet Weather Demonstration Project. In 2014, federal support of Wayne County's Rouge River National Wet Weather Demonstration Project (Rouge Project) was completed. Since its inception in 1992, there has been continued and substantial progress toward restoring the Rouge River and preserving it for future generations. *Rouge River Progress Reports* were published annually and an overall project summary was prepared in 2014. All reports are available from [www. http://waynecounty.com/doe/rouge/index.htm](http://www.waynecounty.com/doe/rouge/index.htm).

Activities in Wayne County Downriver Watersheds

The Inter-Municipality Committees (IMCs) for the Ecorse Creek Watershed, Combined Downriver Watershed, and Lower Huron River Watershed successfully operated for over two years under the Memoranda of Agreement establishing the Committees. The Inter-Municipality Committees Act, PA 1957, No. 200 (MCL 123.631, et seq.) under which the existing IMCs were formed does not provide for implementing some of the required activities under the watershed management plans. There was broad interest in forming a permanent watershed organization under the new Watershed Alliance legislation, and Wayne County facilitated a subcommittee to draft bylaws. In October 2006, the 14th eligible entity approved the bylaws, officially forming the Alliance of Downriver Watersheds (ADW). The first meeting of the new ADW was held on January 18, 2008.

Wayne County was a founding member of the ADW, is an active participant on every committee, has served as ADW fiduciary since its inception, and provides many of the services being provided to the ADW. Wayne County and ADW activities are summarized in the *Alliance of Downriver Watersheds, Bi-Annual Summary of Activities/Accomplishments* which are available at www.allianceofdownriverwatersheds.com.

Activities in the Detroit River Area of Concern

Wayne County participates in the Detroit River Area of Concern Public Advisory Committee, whose efforts are targeted to the goal of removing the Loss of Fish and Wildlife Habitat Beneficial Use Impairment in the Detroit River. Information about this effort, including Detroit River Area of Concern Public Advisory Committee remedial action plans, updates and progress reports are available on the U.S. EPA's Great Lakes Area of Concern website: <http://www.epa.gov/glnpo/aoc/detroit/index.html>. Progress reports for restoration projects managed by the Friends of the Detroit River (FDR) are available online at the FDR website, <http://www.detroitriver.org>.

SECTION 6

LIST OF ATTACHMENTS/SUPPLEMENTAL MATERIALS

Wayne County Annual Report: January 1, 2016 – December 31, 2016

SECTION 1: DETERMINATION OF EFFECTIVENESS

- 2016 Rouge River Macro-invertebrate Data Trend Graphics
- 2016 Alliance of Downriver Watersheds (ADW) Macro-invertebrate Data Trend Graphics
- Alliance of Downriver Watersheds 2016 Monitoring Report will be available online at: <http://www.allianceofdownriverwatersheds.com/initiatives/> .

SECTION 2: ILLICIT DISCHARGE ELIMINATION PLAN

- Table 2.1: Facilities with Confirmed Corrections (2016)
- Table 2.2: Facilities with Outstanding Illicit Discharges (2016)

SECTION 3: PUBLIC EDUCATION PLAN

- The *Resource Recovery Guide* as well as additional information regarding Wayne County's Household Hazardous Waste Collection events can be found at: <http://www.waynecounty.com/departments/environmental/landresources/solid-waste-planning.aspx>
- WQMD pollution prevention public education materials can be found at: <http://www.waynecounty.com/departments/environmental/waterquality/pollution-prevention.aspx>
- Information on Wayne County's Green Schools Program is available online at: <http://www.waynecounty.com/departments/environmental/waterquality/wayne-county-green.aspx>
- Information on the numerous public education and involvement activities of Friends of the Rouge activities completed with Wayne County's active support is available at: <http://www.therouge.org/>

SECTION 4: ADDITIONAL STORM WATER MANAGEMENT ACTIVITIES

- Wayne County Storm Water Management Program materials are available online at: <http://www.waynecounty.com/departments/environmental/waterquality/storm-water-management.aspx>

SECTION 5: WAYNE COUNTY WATERSHED PLANNING

- Alliance of Rouge Communities *Executive Director 2016 Annual Report* is available online at: <http://www.allianceofrougecommunities.com/documents.html> . The updated *Rouge River Watershed Management Plan* is also available at this website.
- *Alliance of Downriver Watersheds Biennial Reports* are available online at: <http://www.allianceofdownriverwatersheds.com/initiatives/> . The *Watershed Management*

Plans for Ecorse Creek, Combined Downriver and Lower Huron River are also available at this website.

- *Lake St. Clair Direct Drainage Subwatershed Plan* is available online from <http://www.crowc.org/watershed/subwatersheds/lakestclair>

Additional materials and documentation can be made available to substantiate statements made in this report. Contact Mr. Noel Mullett at (734) 326-4486 or email him at nmullett@waynecounty.com with any questions or inquires regarding the content of this report.

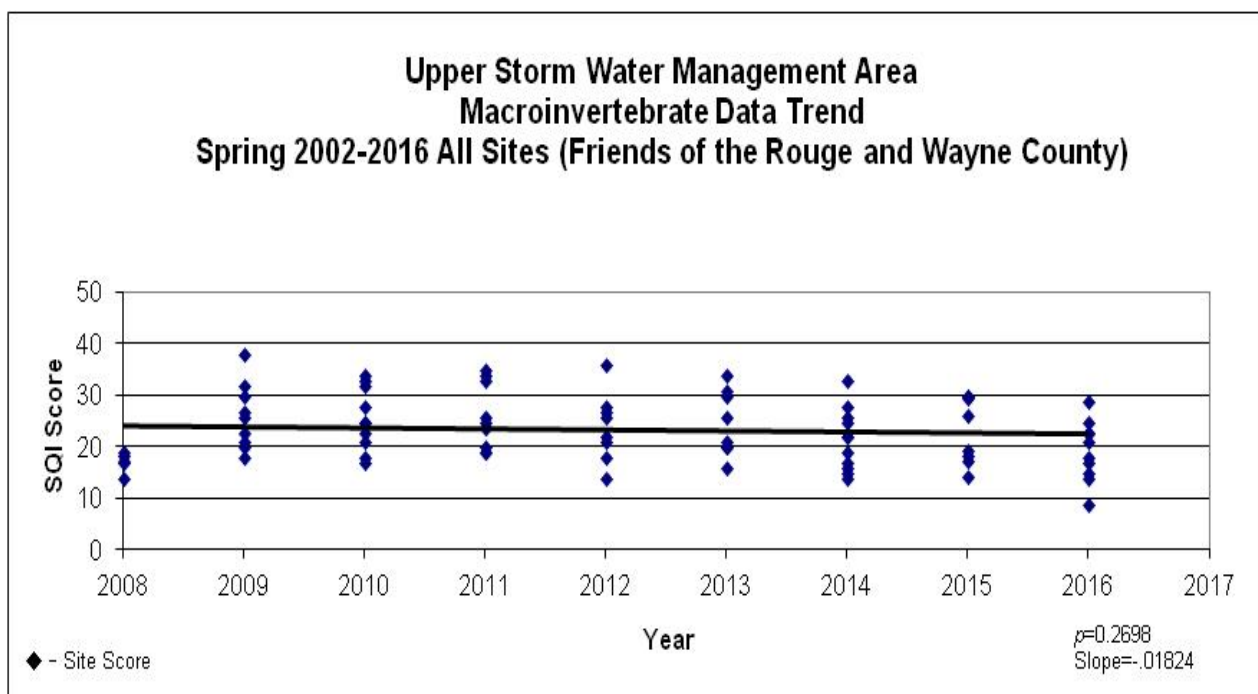
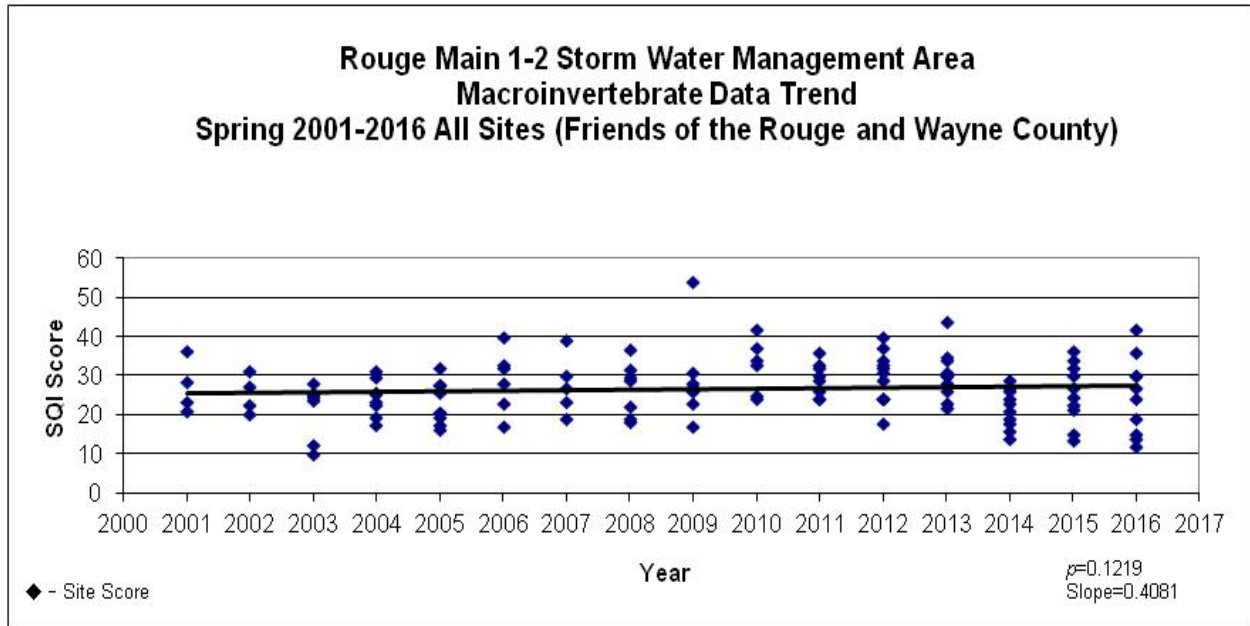
SECTION 6: ATTACHMENTS
SECTION 1: DETERMINATION OF EFFECTIVENESS

- 2016 Rouge River Macro-invertebrate Data Trend Graphics
- 2016 Alliance of Downriver Watersheds (ADW) Macro-invertebrate Data Trend Graphics

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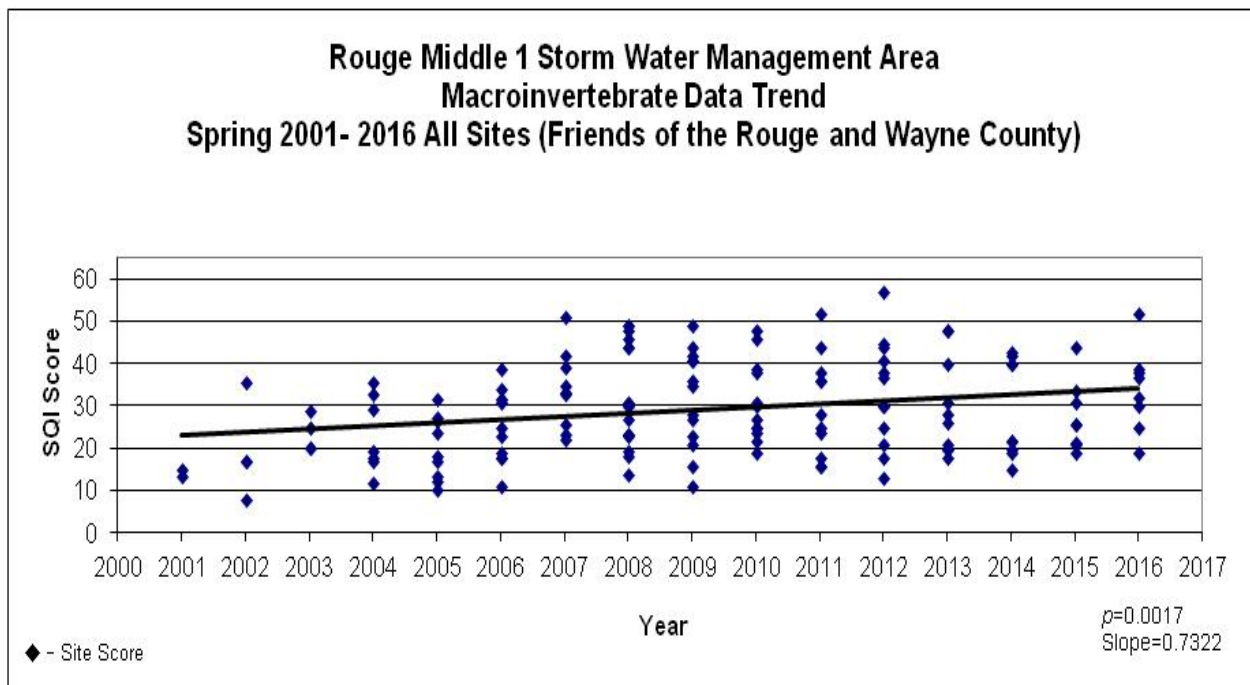
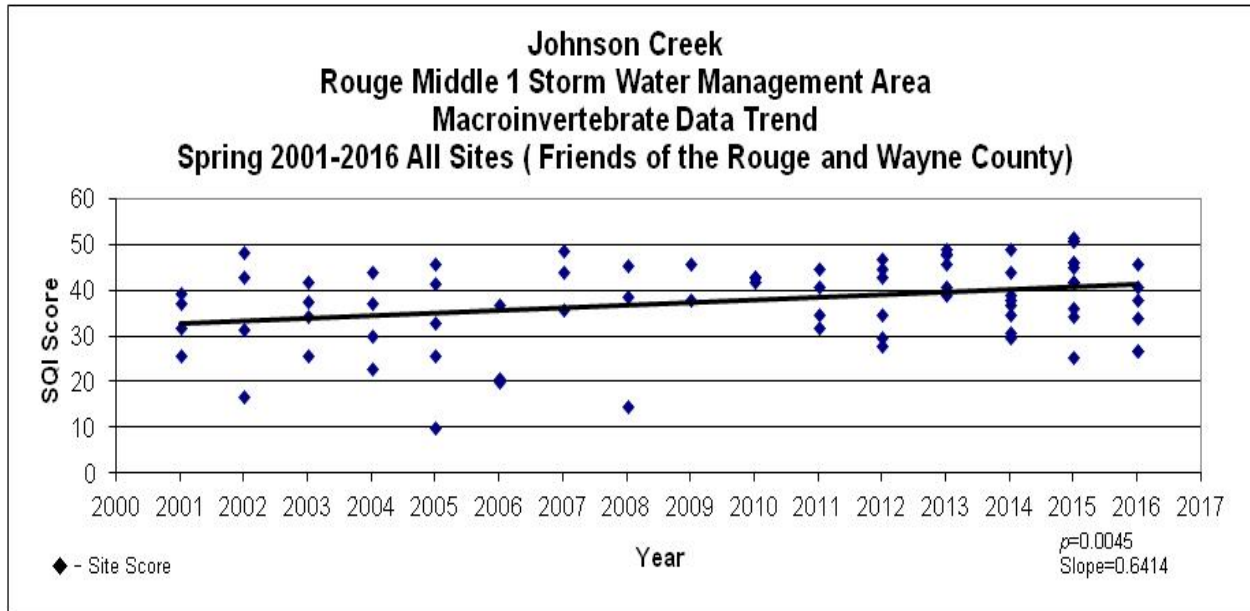
Section 6.1

Rouge River Benthic Macroinvertebrate Trend Graphics Spring 2016



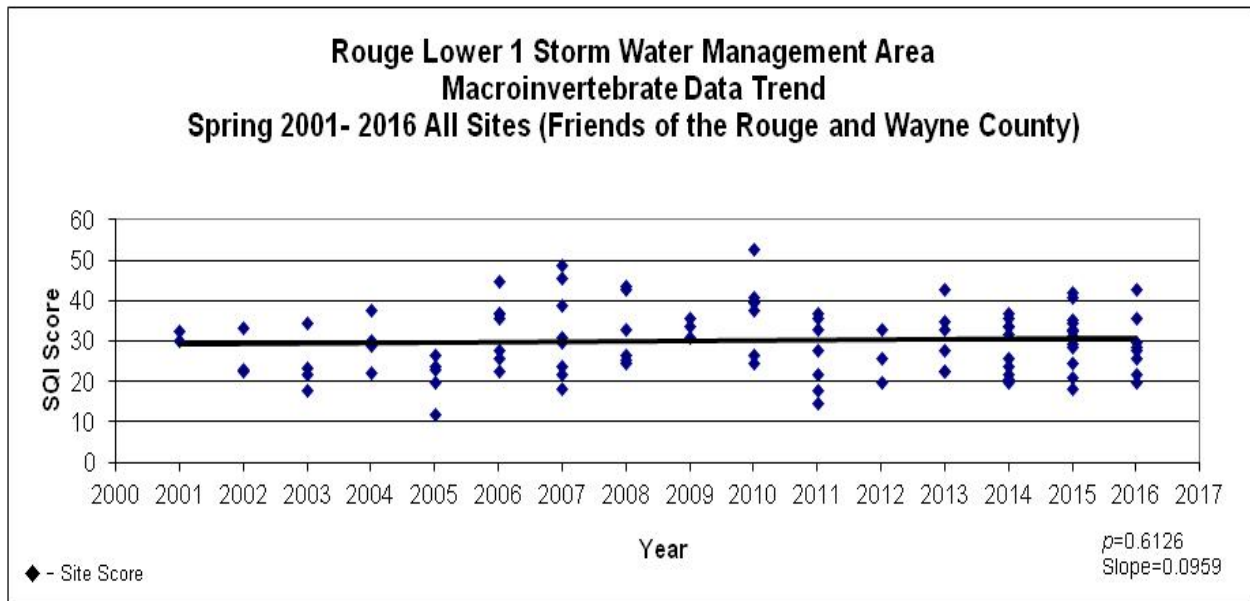
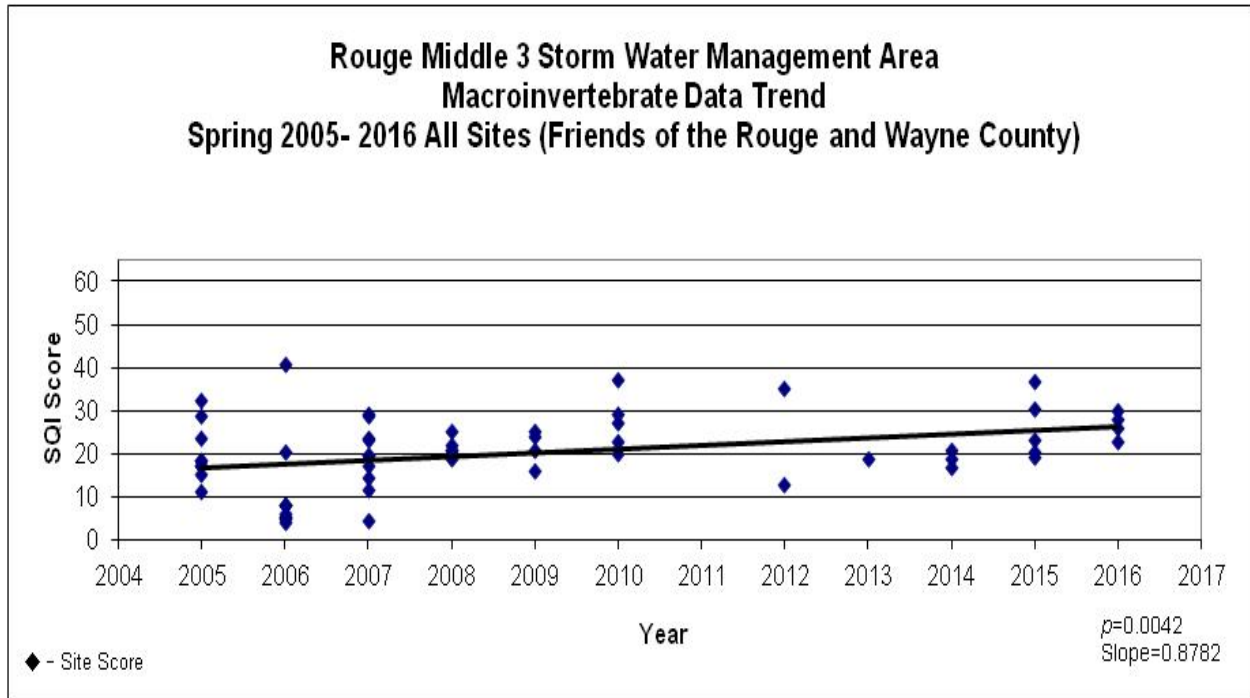
Section 6.1

Rouge River Benthic Macroinvertebrate Trend Graphics Spring 2016



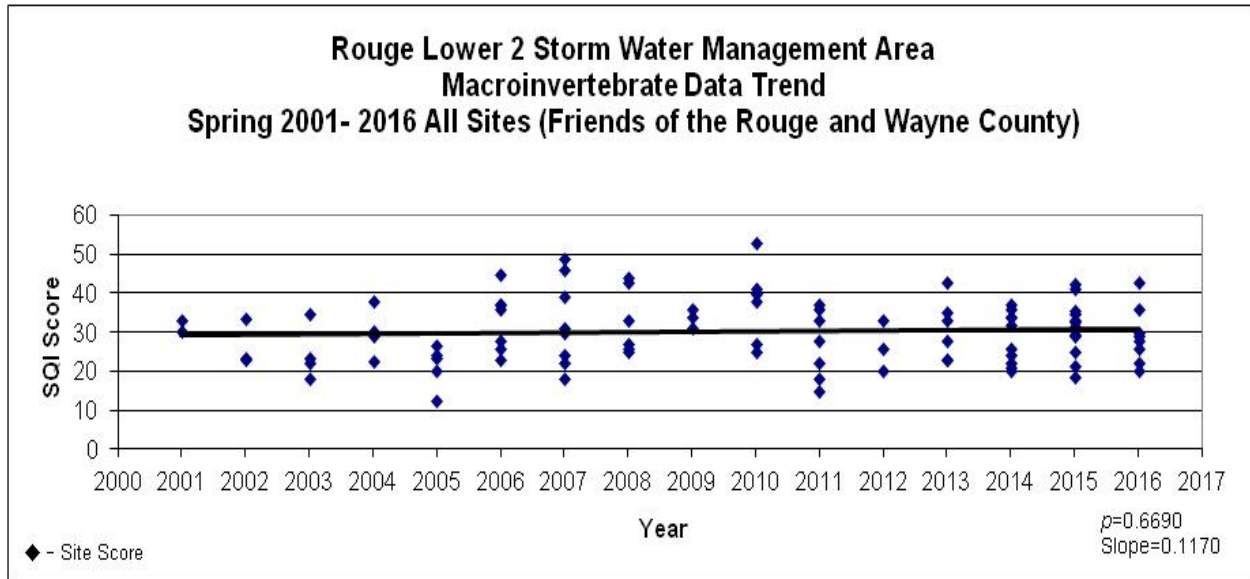
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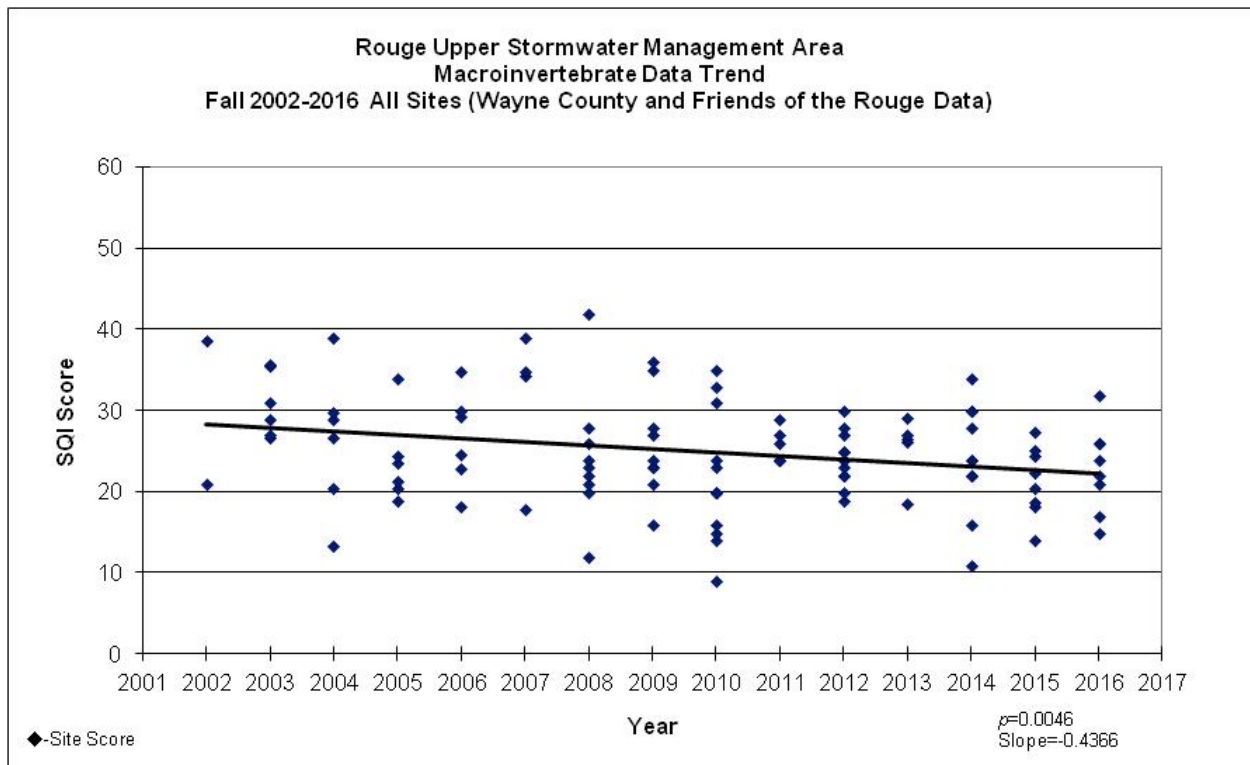
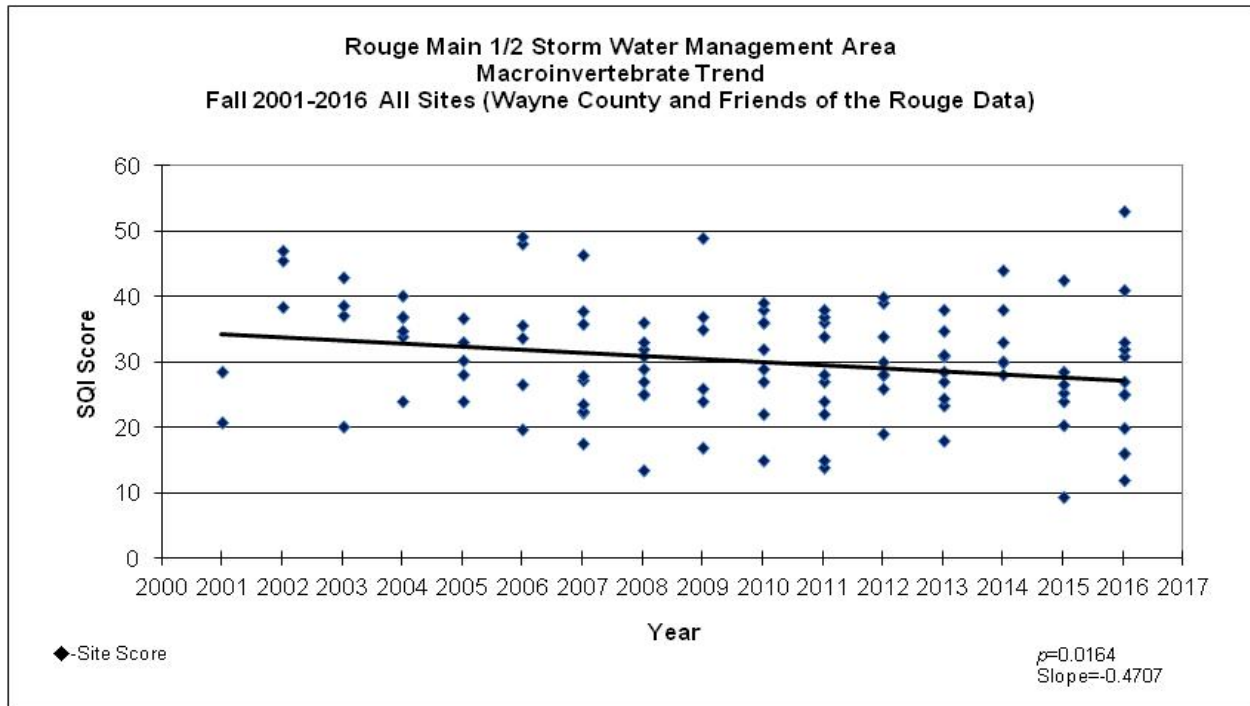


Section 6.1

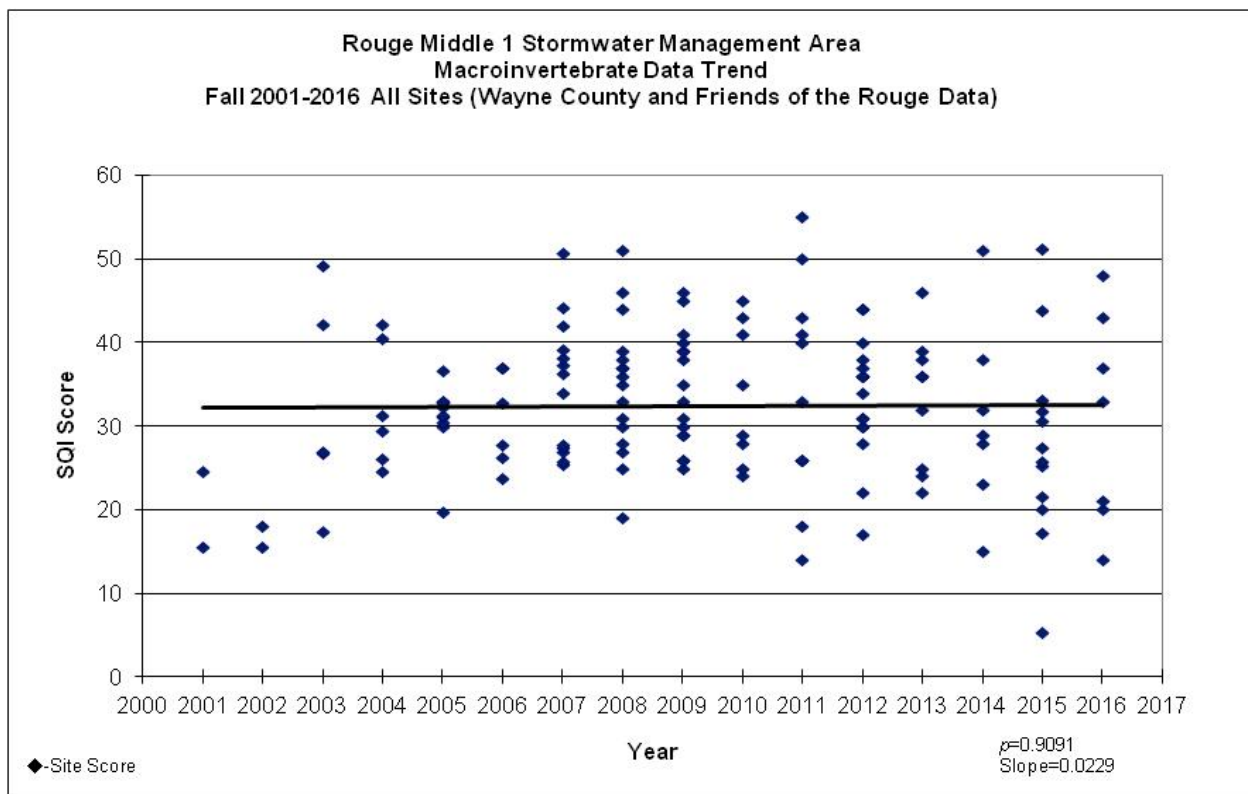
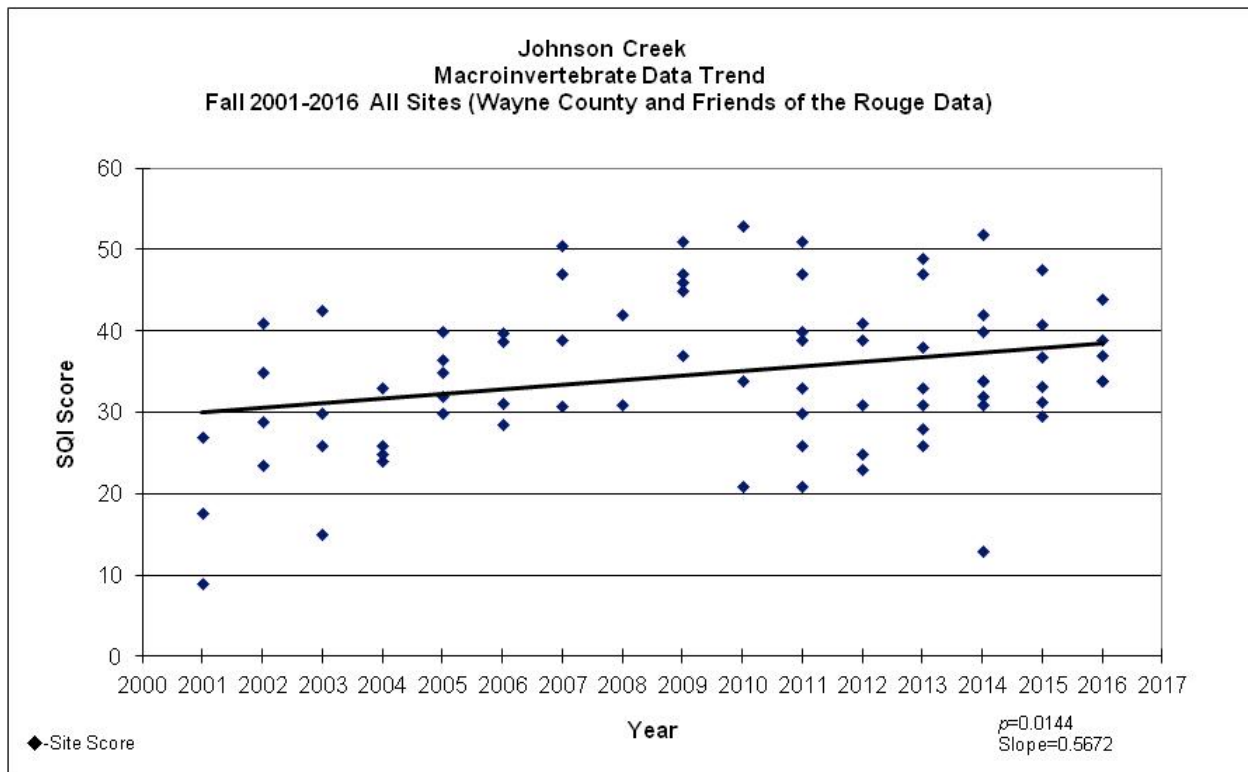
Rouge River Benthic Macroinvertebrate Trend Graphics Spring 2016



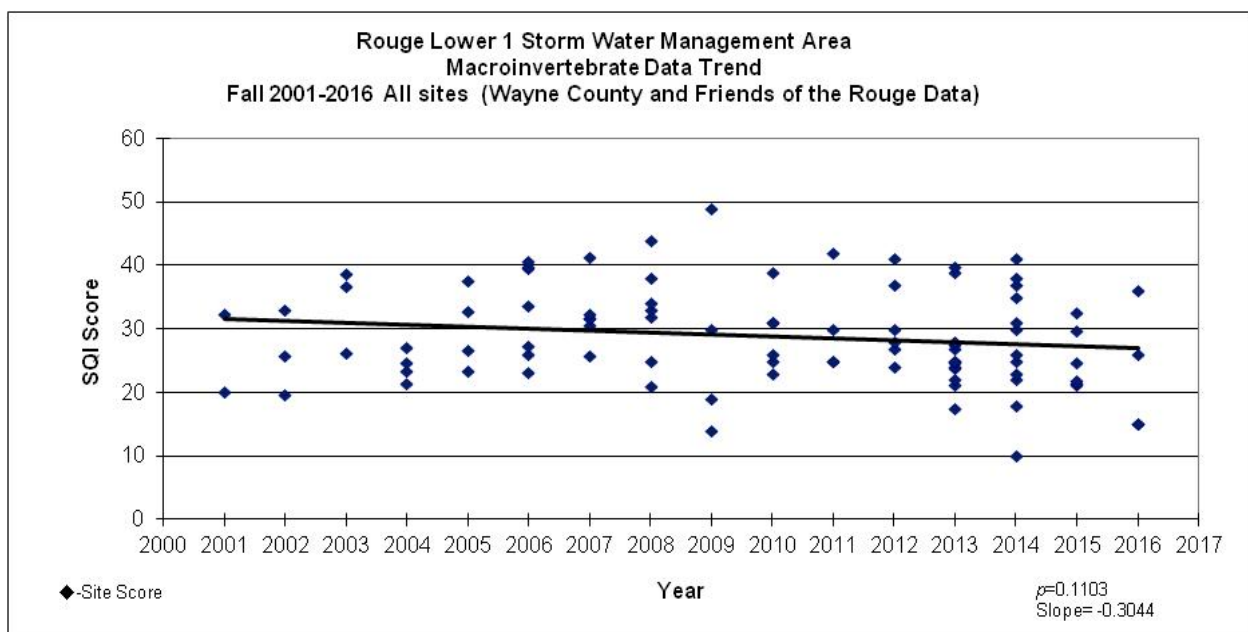
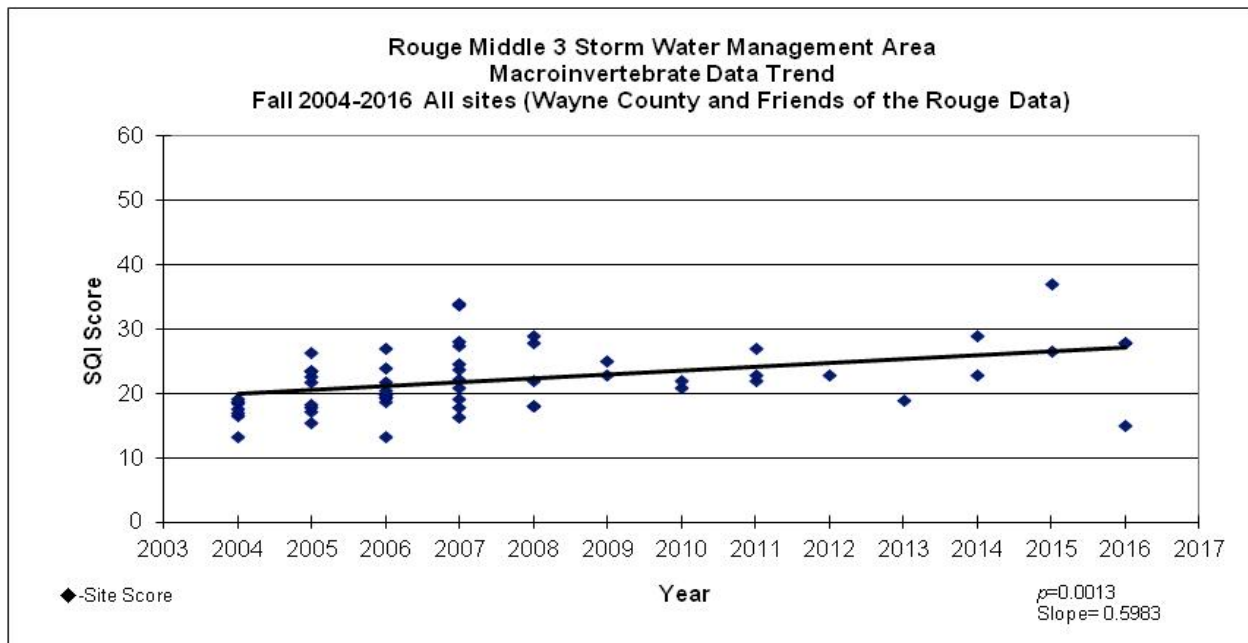
Section 6.1
Rouge River Benthic Macroinvertebrate Trend Graphics Fall 2016



Section 6.1
Rouge River Benthic Macroinvertebrate Trend Graphics Fall 2016

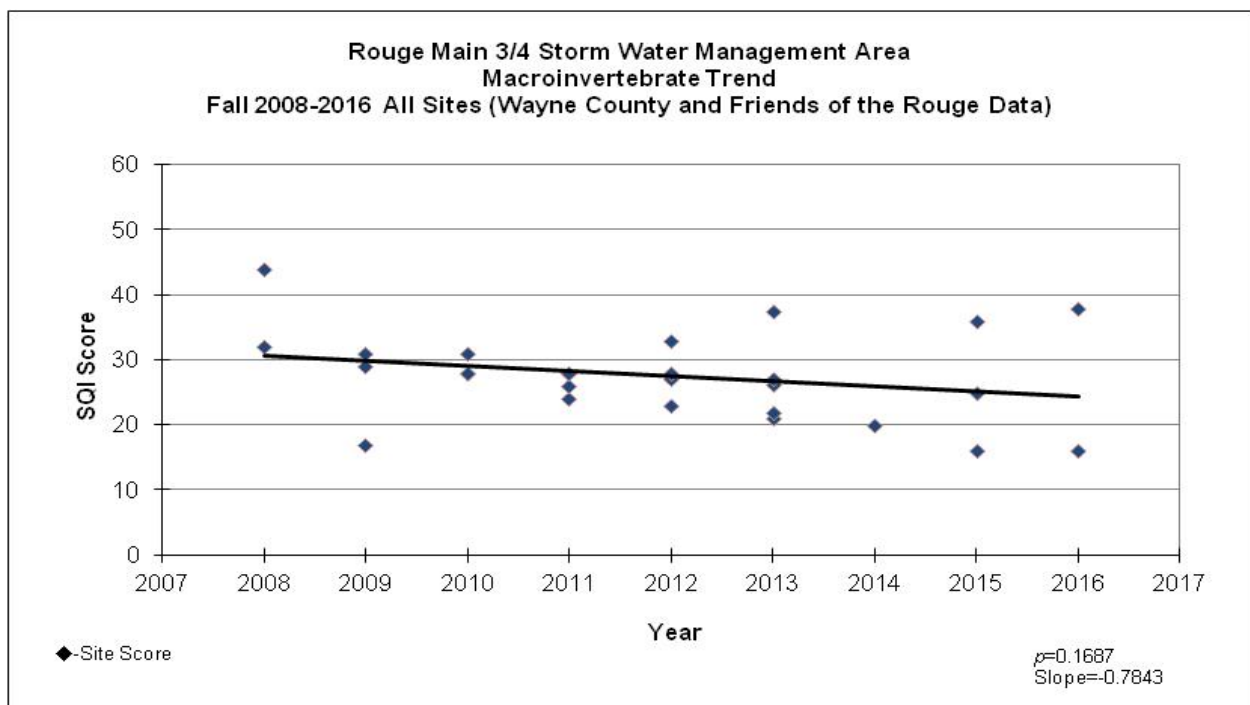
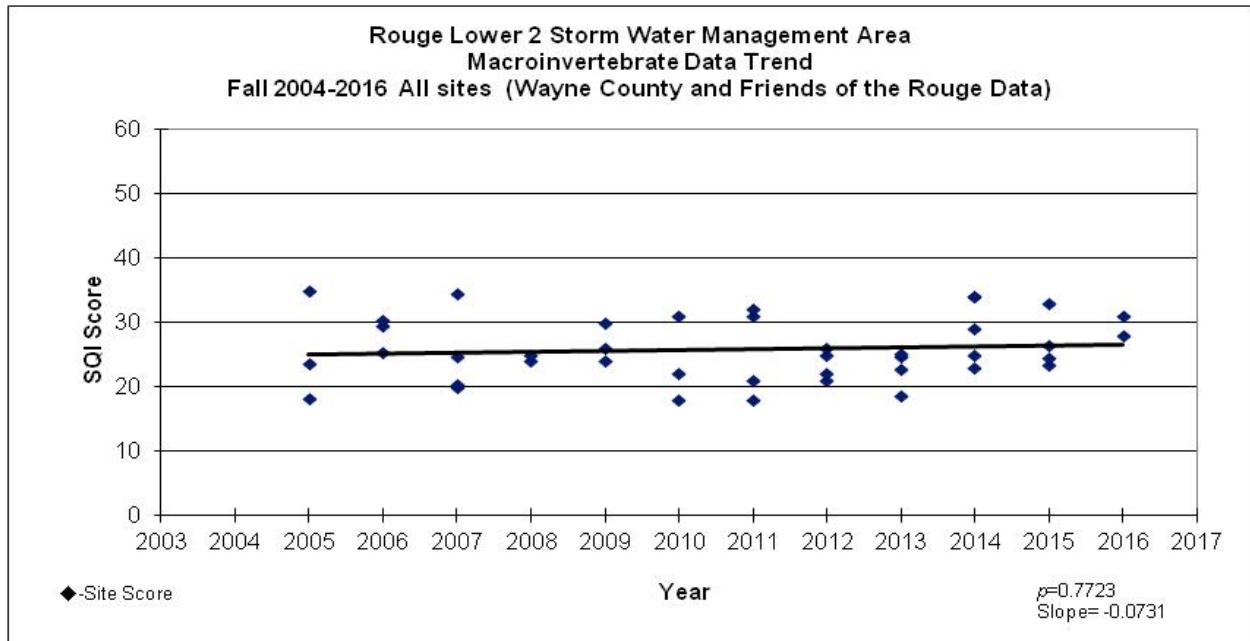


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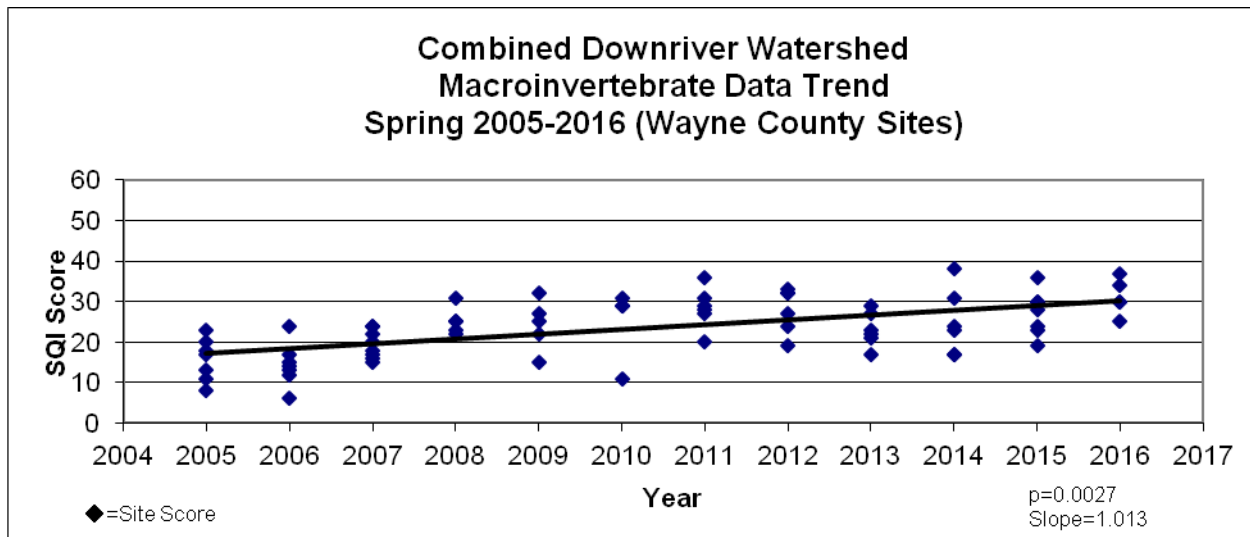
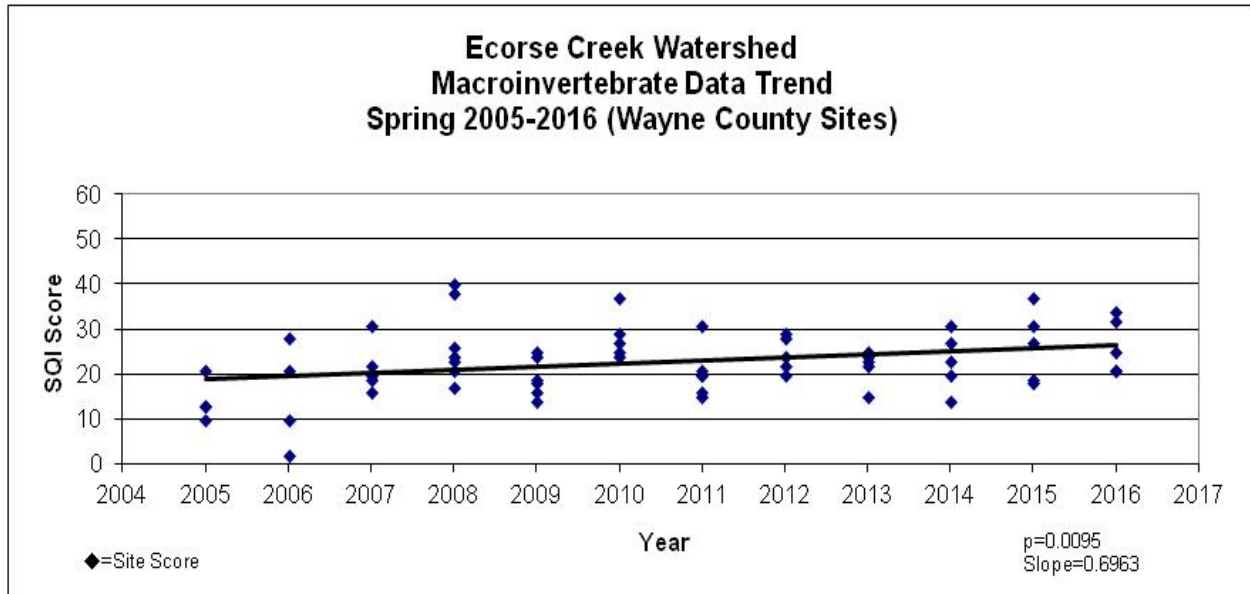
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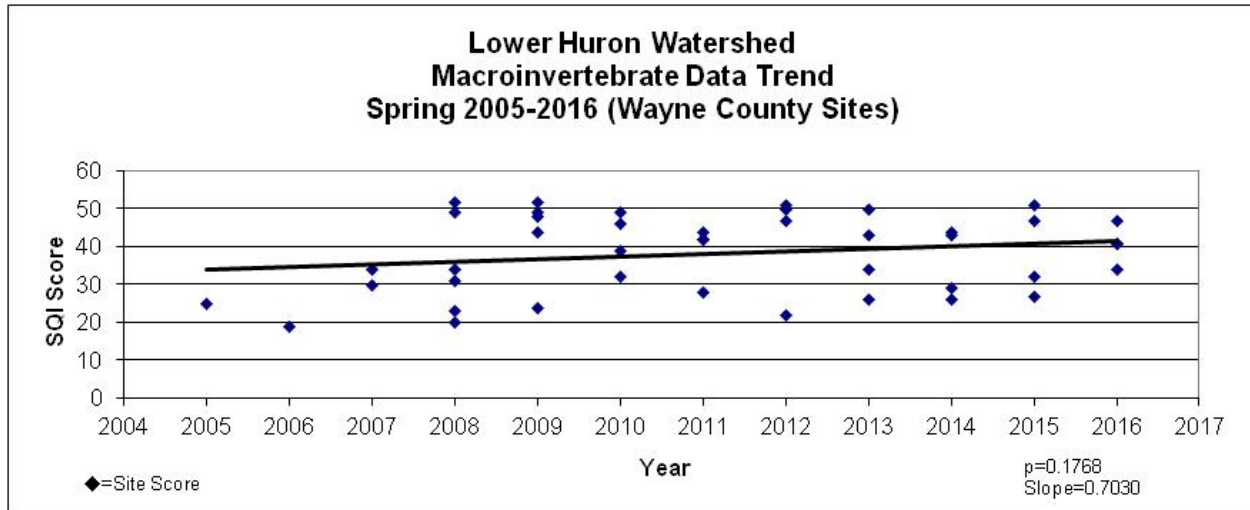
Section 6.1

Alliance of Downriver Watersheds Benthic Macroinvertebrate Data Trend Graphs Spring 2016



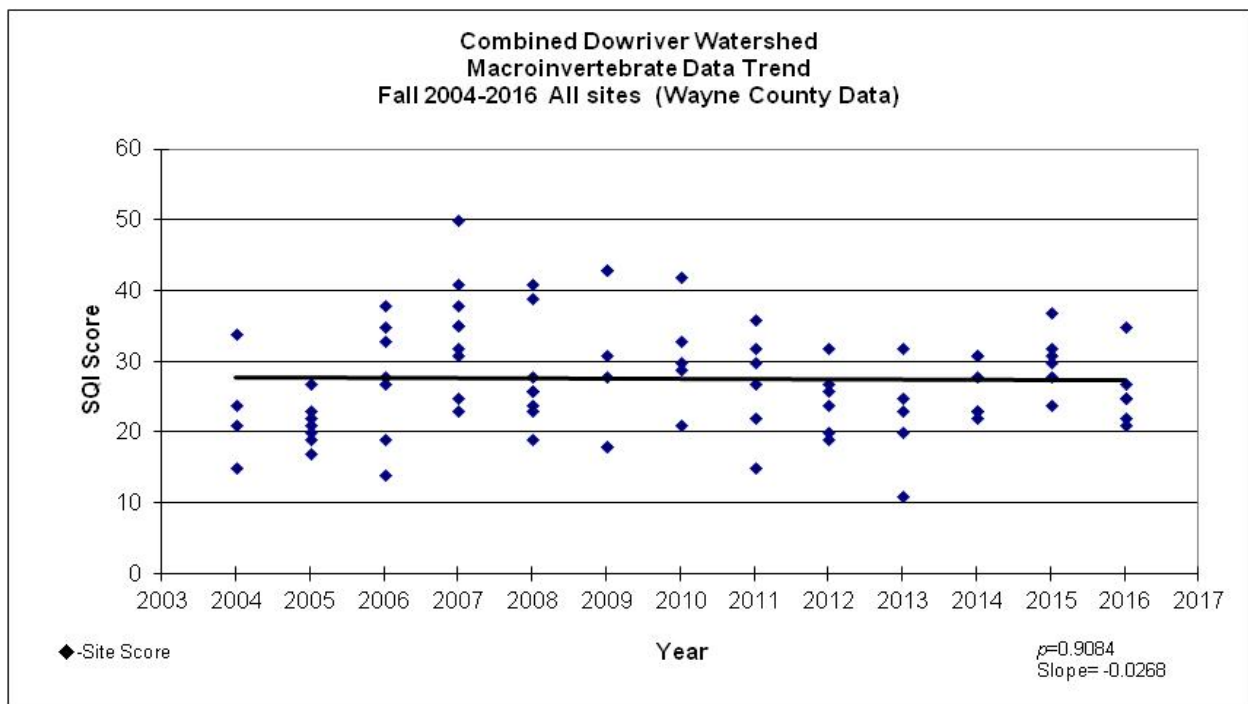
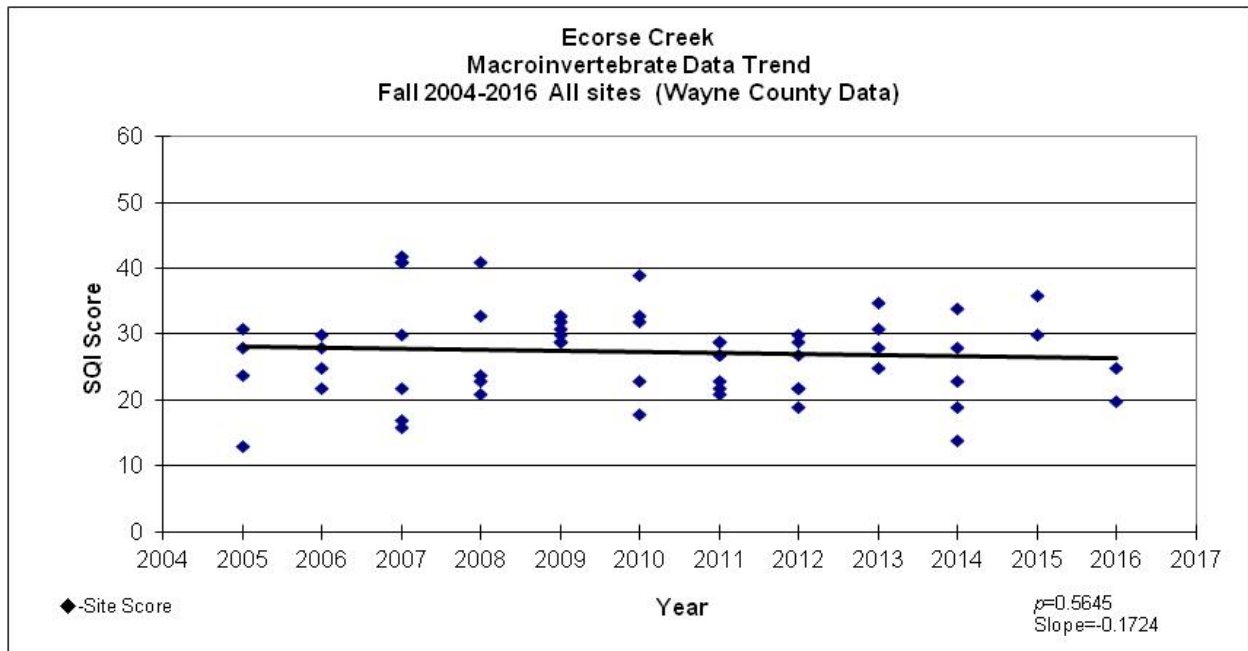
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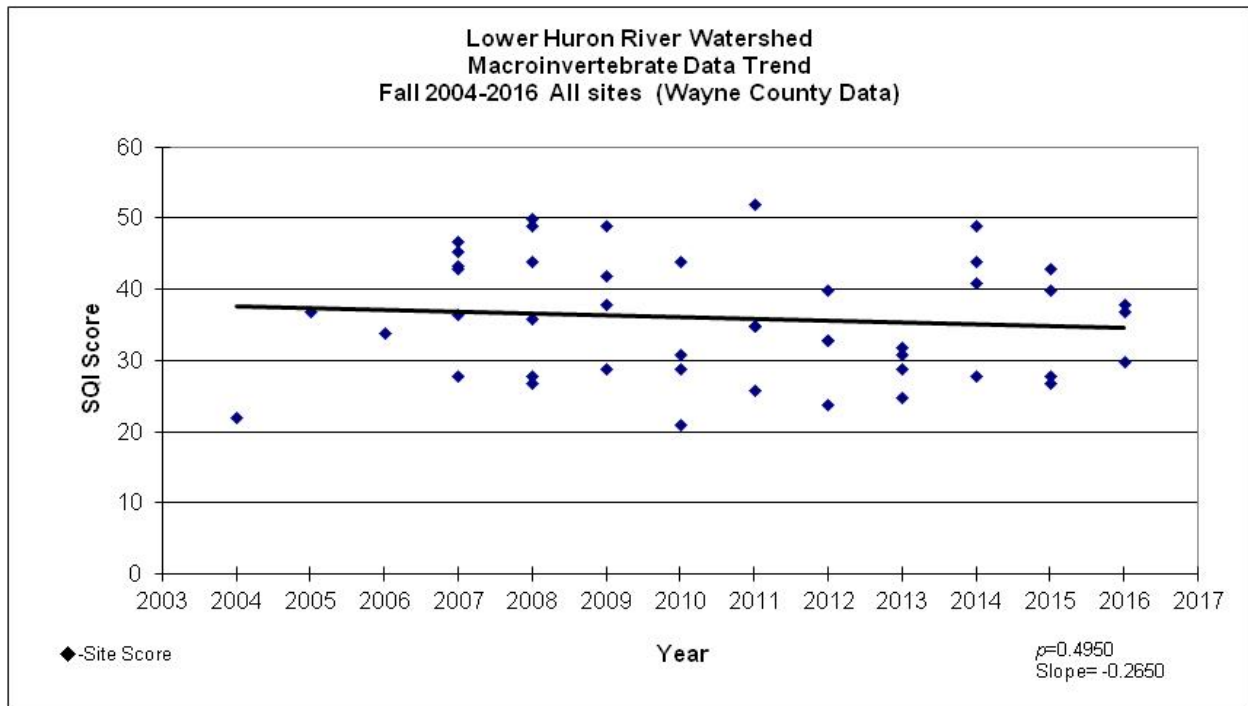
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Alliance of Downriver Watersheds Benthic Macroinvertebrate Data Trend Graphs Fall 2016



Section 6.1

Alliance of Downriver Watersheds Benthic Macroinvertebrate Data Trend Graphs Fall 2016



SECTION 6: ATTACHMENTS
SECTION 2: ILLICIT DISCHARGE ELIMINATION PLAN

- Table 2.1: Facilities with Confirmed Corrections (2016)
- Table 2.2: Facilities with Outstanding Illicit Discharges (2016)

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Table 2.1
Facilities with Confirmed Corrections 2016

List generated 3/28/17

INSPECTION DATE	FACILITY NAME	FACILITY ADDRESS	CITY	IC #	IC TYPE	ID #	ID TYPE	EC #	EC TYPE	WATERSHED	STATUS	MS4/RECEIVING WATERS	
6/14/16	DETROIT AUTOMATIC TOOLING INC	12275 HURON RIVER DR	ROMULUS	1	FD					COMBINED DOWNRIVER	CONFIRMED CORRECTED 6/14/16	OPEN DITCH/ROMULUS MS4	
10/28/14	ROMULUS FIRE STATION #4	28777 EUREKA RD	ROMULUS	3	FD					COMBINED DOWNRIVER	CONFIRMED CORRECTED 6/14/16	ROMULUS MS4	
6/18/13	H&J MANUFACTURING	15771 HURON RIVER DR	ROMULUS			1	MOP BUCKET DUMPING			COMBINED DOWNRIVER	CONFIRMED CORRECTED 6/14/16	CARR DRAIN	
11/15/2013	CITY OF SOUTHGATE DPW	14719 SCHAFER RD	SOUTHGATE					1	OUTDOOR EQUIPMENT WASHING	COMBINED DOWNRIVER	CONFIRMED CORRECTED 6/17/16	SOUTHGATE MS4	
5/17/2010	QUANTA	15801 HURON ST	TAYLOR					3	MATERIAL STORAGE/HANDLING	COMBINED DOWNRIVER	CONFIRMED CORRECTED 6/17/16	RAILROAD DRAINAGE TO FRANK AND POET DRAIN	
8/13/10	JAMES FOOTE ELEMENTARY SCHOOL	3250 ABBOTT ST	LINCOLN PARK	2	FD					ECORSE CREEK	CONFIRMED CORRECTED 7/19/16	LINCOLN PARK MS4	
10/28/14	ROMULUS FIRE STATION #3	6900 WAYNE RD	ROMULUS	2	FD					ECORSE CREEK	CONFIRMED CORRECTED 6/14/16	TROUTON DRAIN	
8/25/10	CARR ELEMENTARY	3901 FERRIS ST	LINCOLN PARK	3	FD					ECORSE CREEK	CONFIRMED CORRECTED 7/19/16	LINCOLN PARK MS4	
6/19/15	J&M TOWING	8964 INKSTER RD	ROMULUS	4	ILLCIT CONNECTIONS /OSDS					ECORSE CREEK	CONFIRMED CORRECTED 4/21/16	ECORSE CREEK	
4/1/03	TAYLOR FIRE STATION #1	11101 PINE ST	TAYLOR	4	DF,CB,TD, FD					ECORSE CREEK	CONFIRMED CORRECTED 9/15/16	TAYLOR MS4	
10/16/14	LINCOLN PARK FIRE DEPARTMENT	1355 CLEOPHUS PKWY	LINCOLN PARK	7	FD					ECORSE CREEK	CONFIRMED CORRECTED 6/9/16	LINCOLN PARK MS4	
7/20/10	LINCOLN PARK HIGH SCHOOL	1701 CHAMPAIGN ST	LINCOLN PARK	23	21FD/2 SINKS					ECORSE CREEK	CONFIRMED CORRECTED 7/19/16	LINCOLN PARK MS4	
04/20/11	ROCKY TOWN PARTY SHOPPE	4235 DIX ROAD	LINCOLN PARK			1	MOP BUCKET DUMPING			ECORSE CREEK	CONFIRMED CORRECTED 7/15/16	LINCOLN PARK MS4	
8/18/10	KEPPEN ELEMENTARY	661 MILL ST	LINCOLN PARK			1	MOP BUCKET DUMPING			ECORSE CREEK	CONFIRMED CORRECTED 7/19/16	LINCOLN PARK MS4	

Table 2.1
Facilities with Confirmed Corrections 2016

List generated 3/28/17

INSPECTION DATE	FACILITY NAME	FACILITY ADDRESS	CITY	IC #	IC TYPE	ID #	ID TYPE	EC #	EC TYPE	WATERSHED	STATUS	MS4/RECEIVING WATERS	
12/15/14	COOKE ELEMENTARY	21200 TAFT ROAD	NORTHVILLE	4	FD	1	SUMP DRAIN			ROUGE	CONFIRMED CORRECTED 7/21/16	NORTHVILLE MS4	
4/28/14	ROMANO'S MACARONI GRILL	7 MILE ROAD	LIVONIA			1	DUMPSTER RUNOFF/ HOUSEKEEPING			ROUGE	CONFIRMED CORRECTED 7/18/16	LIVONIA MS4	
09/19/12	MARYGROVE AWNING BUILDING 3	12700 MERRIMAN RD	LIVONIA			1	OUTDOOR WASHING			ROUGE	CONFIRMED CORRECTED 6/24/16	LIVONIA MS4	
11/18/09	MEIJER	13000 MIDDLEBELT RD	LIVONIA			1	TRASH COMPACTOR /GREASE STORAGE	1	STORM DRAIN NEAR COMPACTOR AREA	ROUGE	CONFIRMED CORRECTED 4/22/16	LIVONIA MS4	
10/5/2005	PRO RADIUS (NOW LIBERTY TAX)	32013 PLYMOUTH RD	LIVONIA			1	MOP BUCKET DUMPING			ROUGE	CONFIRMED CORRECTED 6/20/16	LIVONIA MS4	
11/20/2009	TECHNICOLOR (NOW NETWORK FUNDING)	36121 SCHOOLCRAFT RD	LIVONIA			1	FLOOR WASHING MACHINE			ROUGE	CONFIRMED CORRECTED 6/22/16	LIVONIA MS4	
11/11/14	NORTHVILLE SCHOOL TRANSPORTATION	504 W. EIGHT MILE RD	NORTHVILLE			1	OUTDOOR WASHING	1	SALT STORAGE AREA	ROUGE	CONFIRMED CORRECTED 7/18/16. EC CORRECTED	NORTHVILLE MS4	
9/29/2009	CHEEBURGER CHEEBURGER (NOW LEO'S CONEY ISLAND)	17398 HAGGERTY RD	LIVONIA					1	GREASE STORAGE/HAND LING	ROUGE	CONFIRMED CORRECTED 6/22/16	LIVONIA MS4	

Table 2.2
Facilities with Outstanding Illicit Discharges
2016

List generated 3/28/17

INSPECTION DATE	FACILITY NAME	FACILITY ADDRESS	CITY	IC #	IC TYPE	ID #	ID TYPE	EC #	EC TYPE	WATERSHED	STATUS	NOTES	TARGET CORRECTION SCHEDULE/TIMEFRAME	MS4/RECEIVING WATERS
12/10/12	SUNCO PETROLEUM LLC	35445 GENRON CT	ROMULUS					1	TRUCK WELL SUMP	COMBINED DOWNRIVER	PENDING	MET WITH OWNER ON 6/14/16 TO DISCUSS CORRECTIVE ACTION	SCHEDULED 7/14/2016 COMPLIANCE DATE	ROMULUS MS4
4/5/10	K&S*	20401 GLADWIN RD	TAYLOR					2	MATERIAL STORAGE/HANDLING/ DISCHARGE PIPE*	COMBINED DOWNRIVER	PENDING MDEQ ENFORCEMENT	MDEQ ENFORCEMENT	IN PROCESS OF DETERMINING STATUS/SCHEDULE	FRANK AND POET DRAIN
7/19/2013	DONG AU	12440 DELTA	TAYLOR	1	CB					COMBINED DOWNRIVER	VACANT	VACANT 6/17/16. WILL CONTACT LANDLORD	IN PROCESS OF DETERMINING STATUS/SCHEDULE	TAYLOR MS4
7/24/2013	VACANT	12395 DELTA RD	TAYLOR	1	FD					COMBINED DOWNRIVER	VACANT	VACANT 6/17/16. WILL CONTACT LANDLORD	IN PROCESS OF DETERMINING STATUS/SCHEDULE	TAYLOR MS4
11/25/2013	VAN BUREN TOWNSHIP DPW	46425 TYLER RD	VAN BUREN TOWNSHIP	1	TD					COMBINED DOWNRIVER (B)	PENDING		IN PROCESS OF DETERMINING STATUS/SCHEDULE	APPLE RUN DRAIN
12/5/2014	VAN BUREN TOWNSHIP FIRE STATION	39600 TYLER RD	VAN BUREN TOWNSHIP	1	FD DISCHARGES TO SUMP DRAIN					COMBINED DOWNRIVER	PENDING		IN PROCESS OF DETERMINING STATUS/SCHEDULE	MOORE DRAIN
12/9/16	GONZALEZ SALES	21330 VAN BORN RD	DEARBORN HEIGHTS					1	OUTDOOR STORAGE AREA	ECORSE CREEK	PENDING			DEARBORN HEIGHTS MS4
8/21/15	WOODHAVEN HS	24787 VAN HORN RD	BROWNSTOWN TOWNSHIP	1	SWIMMING POOL BACKWASH					LOWER HURON RIVER	PENDING	2 WELDING AREA FLOOR DRAINS NEED TESTING	POOL AND WELDING AREA WILL BE RENOVATED IN 2016. PROPER CONNECTION OF POOL WILL OCCUR DURING CONSTRUCTION	WOODHAVEN MS4 TO PETERS DRAIN?
9/17/14	GRID IRON APARTMENTS SWIMMING POOL	380 LIBERTY STREET	BELLEVILLE			1	FOOT WASH DRAIN			MIDDLE HURON RIVER	PENDING	POOL CLOSED	ENVIRONMENTAL HEALTH LABELED FILE CLOSED. NO PLANS TO RENOVATE POOL OR OPEN SUBMITTED AS OF 6/16	DIRECT DISCHARGE BELLEVILLE LAKE

Table 2.2
Facilities with Outstanding Illicit Discharges
2016

List generated 3/28/17

INSPECTION DATE	FACILITY NAME	FACILITY ADDRESS	CITY	IC #	IC TYPE	ID #	ID TYPE	EC #	EC TYPE	WATERSHED	STATUS	NOTES	TARGET CORRECTION SCHEDULE/TIMEFRAME	MS4/RECEIVING WATERS
10/7/02	OFFICE INSTALLATION/ADVANCED COMMUNICATIONS	6034 EXECUTIVE DR	WESTLAND	1	CB					ROUGE	PENDING	FOLLOW UP 5/20/15.	IN PROCESS OF DETERMINING STATUS/SCHEDULE	WESTLAND MS4
9/16/11	BEECHWOOD GOLF COURSE MAINTENANCE SHOP	22200 BEECHWOOD RD	SOUTHFIELD	1	FD					ROUGE	PENDING	FOLLOW UP 6/8/16	CONTACTED COMMUNITY FOR STATUS NO CORRECTION TIMEFRAME PROVIDED	SOUTHFIELD MS4
11/25/13	VAN BUREN TOWNSHIP DPW	46425 TYLER RD	VAN BUREN TOWNSHIP	1	TD					ROUGE	PENDING	FOLLOW UP 6/8/16	CONTACTED COMMUNITY FOR STATUS NO CORRECTION TIMEFRAME PROVIDED	APPLE RUN DRAIN
6/12/14	FARMINGTON CITY HALL (FIRE DEPARTMENT GARAGE)	23600 LIBERTY RD	FARMINGTON (CITY)	1	FD					ROUGE	PENDING	FOLLOW UP 4/4/16 FACILITY BEING USED FOR STORAGE	CITY IS DETERMINING FUTURE STATUS OF BUILDING MAY BE DEMOLISHED	CITY OF FARMINGTON MS4
7/18/02	DEFIANCE TESTING BUILDING 7	5770 HIX RD	WESTLAND	2	CB					ROUGE	PENDING	FOLLOW UP 6/16/15	IN PROCESS OF DETERMINING STATUS/SCHEDULE	WESTLAND MS4
6/6/12	LIVONIA POLICE GARAGE AND SALLY PORT	15050 FARMINGTON RD	LIVONIA	2	FD					ROUGE	PENDING	FOLLOW UP 5/31/16	CONTACTED COMMUNITY FOR STATUS NO CORRECTION TIMEFRAME PROVIDED	LIVONIA MS4
8/26/09	EXPEDIX	28401 SCHOOLCRAFT RD	LIVONIA	3	CB	1	FLOOR WASH MACHINE DUMPING			ROUGE	PENDING	FOLLOW UP 11/19/15	IN PROCESS OF DETERMINING STATUS/SCHEDULE	LIVONIA MS4
6/8/12	LIVONIA CITY HALL PARKING GARAGE	33000 CIVIC CENTER DR	LIVONIA	3	CB					ROUGE	PENDING	FOLLOW UP 5/31/16	CONTACTED COMMUNITY FOR STATUS NO CORRECTION TIMEFRAME PROVIDED	LIVONIA MS4
2/11/16	STEELPRO	36253 MICHIGAN AVE	WAYNE	3	2 FD/1SUMP					ROUGE	PENDING	NEW ADDITION TO A FACILITY:DRAINS WERE GOING TO BE CONNECTED TO A STORM SEWER. THE	IN PROCESS OF DETERMINING STATUS/SCHEDULE	CITY OF WAYNE MS4

Table 2.2
Facilities with Outstanding Illicit Discharges
2016

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INSPECTION DATE	FACILITY NAME	FACILITY ADDRESS	CITY	IC #	IC TYPE	ID #	ID TYPE	EC #	EC TYPE	WATERSHED	STATUS	NOTES	TARGET CORRECTION SCHEDULE/TIMEFRAME	MS4/RECEIVING WATERS
5/7/04	XLR8 CROSSFIT (FORMERLY MACDONALD FORD)	560 S. MAIN ST	NORTHVILLE	5	3 FD, 1 SINK, 1 WASHING MACHINE					ROUGE	PENDING	FOLLOW UP 6/23/16	IN PROCESS OF DETERMINING STATUS/SCHEDULE	NORTHVILLE MS4
5/21/14	MELVINDALE FIRE DEPARTMENT	3100 OAKWOOD BLVD	MELVINDALE	5	TD					ROUGE	PENDING	FOLLOW UP 6/7/16	IN PROCESS OF DETERMINING STATUS/SCHEDULE	WAYNE COUNTY MS4
3/26/91	PRO COLLISION	12300 INKSTER RD	REDFORD	13	3 TOILETS, 3 SINKS, 1 SHOWER, 6 CB					ROUGE	PENDING	SITE VISIT 12/9/11. CONSULTATION	IN PROCESS OF DETERMINING STATUS/SCHEDULE	WAYNE COUNTY MS4
2/1/04	NORTHVILLE DOWNS	301 S. CENTER ST	NORTHVILLE					1	RACE TRACK SILT RUNOFF	ROUGE	PENDING MDEQ ENFORCEMENT	(66 ILLICIT CONNECTIONS AND 11 MANURE STORAGE AREAS CONFIRMED CORRECTED)	JOINT COMPLIANCE EFFORT WITH MDEQ ONGOING	NORTHVILLE MS4
6/14/04	DE-STA-CO	50625 CHERRY HILL RD	CANTON			1	DIRECT DISCHARGE OSDS			ROUGE	VACANT	CONFIRMED VACANT 12/9/15	PLANS FOR REDEVELOPMENT OF PROPERTY FOR ARTS/HUMANITIES USE MAY BE SUBMITTED. SANITARY SEWER CONNECTION WILL BE REQUIRED	LOWER ROUGE
7/26/05	AMERICAN JETWAY	3850 HOWE RD	WAYNE			2	COOLING WATER; OIL IN CB			ROUGE	VACANT	12/16 MATERIAL STORAGE HANDLING EC CONFIRMED CORRECTED	IN PROCESS OF DETERMINING STATUS/SCHEDULE	CITY OF WAYNE MS4
11/28/11	SOUTHFIELD PARKS MAINTENANCE YARD	26000 EVERGREEN RD	SOUTHFIELD			1	EQUIPMENT WASHING			ROUGE	PENDING	FOLLOW UP 6/8/16	CONTACTED COMMUNITY FOR STATUS NO CORRECTION TIMEFRAME PROVIDED	SOUTHFIELD MS4
6/8/12	LIVONIA PARKS MAINT. BUILDING #52	FARMINGTON RD	LIVONIA			1	POWER WASHING OUTDOORS			ROUGE	PENDING	FOLLOW UP 5/31/16	CONTACTED COMMUNITY FOR STATUS NO CORRECTION TIMEFRAME PROVIDED	LIVONIA MS4

Table 2.2
Facilities with Outstanding Illicit Discharges
2016

List generated 3/28/17

INSPECTION DATE	FACILITY NAME	FACILITY ADDRESS	CITY	IC #	IC TYPE	ID #	ID TYPE	EC #	EC TYPE	WATERSHED	STATUS	NOTES	TARGET CORRECTION SCHEDULE/TIMEFRAME	MS4/RECEIVING WATERS
6/12/12	FOX CREEK GOLF COURSE	36000 SEVEN MILE RD	LIVONIA			1	CART/ EQUIPMENT WASHING			ROUGE	PENDING BUILDING MAINTENANCE ISSUED DIRECTIVE AMENDING BMPS 2/6/15	FOLLOW UP 5/31/16	CONTACTED COMMUNITY FOR STATUS NO CORRECTION TIMEFRAME PROVIDED	LIVONIA MS4
6/12/12	WHISPERING WILLOW GOLF COURSE	20500 NEWBURGH RD	LIVONIA			1	EQUIPMENT WASHING			ROUGE	PENDING BUILDING MAINTENANCE ISSUED DIRECTIVE AMENDING BMPS 2/6/15	FOLLOW UP 5/31/16	CONTACTED COMMUNITY FOR STATUS NO CORRECTION TIMEFRAME PROVIDED	LIVONIA MS4
6/12/12	IDYL WYLD GOLF COURSE	35780 FIVE MILE RD	LIVONIA			2	CART/EQUIP MENT WASHING/MOP BUCKET DUMPING			ROUGE	PENDING BUILDING MAINTENANCE ISSUED DIRECTIVE AMENDING BMPS 2/6/15	FOLLOW UP 5/31/16	CONTACTED COMMUNITY FOR STATUS NO CORRECTION TIMEFRAME PROVIDED	LIVONIA MS4
09/28/12	GORDAN METALS (MARYGROVE AWNING BUILDING 3)	31373 INDUSTRIAL DR	LIVONIA			1	BUILDING SUMP			ROUGE	PENDING	FOLLOW UP 6/24/16	IN PROCESS OF DETERMINING STATUS/SCHEDULE	LIVONIA MS4