

Total Maximum Daily Load (TMDL) Implementation Plan for the Alliance of Downriver Watersheds MS4s in Wayne County



*TMDL Plan Approved by Water Resources Division on May 31, 2019
Detroit River TMDL added on August 19, 2019*

The Michigan Department of Environmental Quality (MDEQ), under the National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit application, requires a plan or other documentation outlining how each Municipal Separate Stormwater Sewer System (MS4) will "make progress toward achieving the pollutant load reduction requirement" in each TMDL listed in each applicant's application notice. The purpose of this document is to provide the collective watershed plan for **addressing relevant TMDLs in the Alliance of Downriver Watersheds in Wayne County by MS4s** for the purpose of stormwater permit compliance through the permit cycle starting after 2016. This document addresses the permit application sections VII.86 through VII.88. It should be noted that this plan addresses only stormwater sources of impairments related to TMDLs and is not a *comprehensive* TMDL implementation plan.

I. TMDL AND MS4 COVERAGE

This TMDL Plan is submitted on behalf of the following Phase I and II MS4s within the Alliance of Downriver Watersheds, for each of the below-listed TMDLs, with their target loads included:

A. *Excessive bacteria (E. coli), and sediment in the Ecorse River*

Targets: For bacteria, May-October – 300 *E. coli* per 100 ml daily maximum and 130 *E. coli* per 100 ml as a 30-day geometric mean. November-April – 1,000 *E. coli* per 100 ml daily maximum.
For sediment, Primary – macroinvertebrate Procedure 51 score of at least -4, or a rating of "acceptable." Secondary – Annual mean wet-weather TSS concentration of 80 mg/l or less.

Allen Park	Romulus
Dearborn Heights	Southgate
Ecorse	Taylor
Inkster	Wayne County
Lincoln Park	Westland
Melvindale	Wyandotte

B. *Sediment in Brownstown Creek and Blakely Drain – Marsh Creek*

Target: Primary – macroinvertebrate Procedure 51 score of at least -4, or a rating of "acceptable."
Secondary – Annual mean wet-weather TSS concentration of 80 mg/l or less.

Gibraltar	Trenton
Riverview	Wayne County
Romulus	Woodhaven
Taylor	

C. *Sediment in Frank and Poet Drain*

Target: Primary – macroinvertebrate Procedure 51 score of at least -4, or a rating of “acceptable.”

Secondary – Annual mean wet-weather TSS concentration of 80 mg/l or less.

Gibraltar	Taylor
Riverview	Trenton
Romulus	Wayne County
Southgate	Woodhaven

D. *Habitat and Flow Alterations in Smith and Silver Creeks*

Note: These creeks are listed on the impaired waters list, but do not have a TMDL developed. While no additional stormwater management effort is required for these, the ADW partners will endeavor to meet the below targets that are used in drainages with existing TMDLs.

Target: Primary – macroinvertebrate Procedure 51 score of at least -4, or a rating of “acceptable.”

Secondary – Annual mean wet-weather TSS concentration of 80 mg/l or less.

Flat Rock	Wayne County
Gibraltar	Woodhaven
Rockwood	

E. *Excessive bacteria (E. coli) in the Detroit River*

Targets: May-October – 300 *E. coli* per 100 ml daily maximum and 130 *E. coli* per 100 ml as a 30-day geometric mean. November-April – 1,000 *E. coli* per 100 ml daily maximum.

Allen Park	Southgate
Dearborn Heights	Taylor
Ecorse	Van Buren Township
Gibraltar	Wayne County
Grosse Ile Township	Westland
Inkster	Woodhaven
Lincoln Park	Woodhaven-Brownstown School
Melvindale	District
Riverview	Wyandotte
Romulus	

II. PRIORITIZING AND IMPLEMENTATION BMPS

The MS4s in the Alliance of Downriver Watersheds have put forth substantial effort and resources to reduce the sources of impairments related to the TMDLs listed in the previous section. These partner organizations, along with non-MS4 entities have developed a number of general and specific plans to address watershed impairments. These plans direct the current and future project and program priorities. The suite of projects and programs already put in place contributed to significant impairment reduction, as evidenced by data collected through on-going monitoring (see [monitoring report](#) for

details, or in Appendix B for example).

To comply with NPDES stormwater permit requirements, the above-listed MS4s submit that the suite of Best Management Practices (BMPs) contained in the attached Priority Actions table represents each MS4's project priorities that will be implemented during the permit cycle to collectively make progress toward achieving each of the TMDL pollutant load reduction targets. Each MS4 has attached a table of BMPs that identifies the targeted TMDL pollutants (i.e. sediments, flow alterations or bacteria where relevant) and the priority of the BMP. In many cases, no additional prioritization is needed, as the activity is a general (G) stormwater treatment BMP and will be applied across the MS4 and watershed, and not specific to a particular drainage or impairment. For those BMPs that are area or pollutant specific, data from the monitoring program will be used to help establish priorities for implementation. In these cases, BMPs are classified as high (H), medium (M) or low (L) priority for each TMDL. The high priority BMPs will first be implemented in creeksheds or drainage areas that are determined (through monitoring) to be greater sources of the TMDL pollutant or impairment. Conversely, medium and low priority BMPs will be implemented in these TMDL-pollutant source areas after high priority BMPs are implemented.

III. MONITORING PLAN

A summary of past monitoring results and conclusions related to TMDLs in the watershed is included in monitoring reports found on the [ADW Initiatives page](#). The most recent published report is included in Appendix B, but updated monitoring results will be found on the webpage above. The summaries provided are based primarily on data collected through HRWC's Water Quality Monitoring Program, which has been funded in part by MS4s. Currently the MS4s and other watershed partners plan to continue to support this program to seasonally monitor ADW tributaries for TMDL pollutants. However, for the purposes of NPDES stormwater permit compliance, the MS4s commit to the following Monitoring Plan.

1. MS4s will support the collection of water quality samples from sites that are located at or near major tributary mouths. Figure 1 shows a map of the original long-term monitoring sites. An additional site was added as an investigative site in 2016 and then converted to a long-term site thereafter, bringing the total number of long-term sites to nine. The added site is located on the Huron River at the Fort Street bridge crossing. A current map of all water quality monitoring sites is located at the [Chemistry and Flow Monitoring website](#).
2. Samples will be collected at least twice during the permit cycle, not including the data included from previous monitoring. Sampling years will be in year one and year four. At least one sampling event will take place at each of the nine sites. An effort will be made to sample water quality parameters during a representative (i.e. >0.25" and <1.5") wet-weather event. For these wet-weather events, samples will be collected during the rising period of the flow hydrograph or within 6 hours of the peak storm flow. Currently, sampling under the ADW monitoring program occurs much more frequently than this – twice per month, April through September each year, with additional sampling at 3-4 upstream investigative sites each year. Several wet-weather events are sampled during this schedule, plus an autosampler is used to sample multiple times during wet weather events from the beginning of the storm to after peak flow. The ADW plans to continue this monitoring regime, though it commits to twice during the permit cycle.

3. Samples will be collected following procedures identified in ADW's Monitoring Program QAPP (see Appendix A). Samples will be analyzed by the Ypsilanti Community Utility Authority Laboratory or other certified lab for the following concentrations: Total Phosphorus (TP), Total Suspended Solids (TSS), and *E. coli*.
4. Stream flow estimates will be obtained from existing stations during the dates and times water quality samples are collected.
5. The pollutant concentrations and stream flow estimates will be used to update pollutant loading models and estimate pollutant load reductions. These results will be summarized in a brief report to be shared with the public via HRWC and/or MS4 websites at least twice during the permit cycle.
6. Depending on the results from long-term monitoring sites, additional short-term investigative sites will be selected upstream in attempt to identify potential source areas. These sites will be sampled within an hour of sampling at the downstream site so that results can be compared and better define pollutant source locations. Results from this investigation will be shared with the appropriate contacts under the Illicit Discharge Elimination Program (see separate IDEP plan).
7. Any sites with sample results above the previously listed TMDL targets will be resampled to confirm and average results.
8. A plan for implementing BMPs in TMDL areas was developed and described in section II and a list of BMPs to be implemented by MS4s was included with each MS4's permit application. BMP implementation will begin within a year in these areas. If after implementation of high-priority BMPs TMDL targets continue to be exceeded or target parameter values increase in severity, MS4s will re-evaluate the plan and begin implementing additional high or medium-priority BMPs within a year after making this determination. BMPs will be selected for implementation according to the strategy described in section II.
9. Based on a review of year one and year four data and summary reports, BMP implementation will be reviewed and BMP implementation plans may be updated or revised to ensure progress toward achieving TMDL pollutant load reductions. BMPs that are employed will be evaluated using a before and after analysis of the parameter that is deemed impaired in a given TMDL. For bacteria TMDL areas, a sampling event with levels exceeding the single-sample *E. coli* standard will be compared to dry-weather sampling results (during warm-weather, productive months, or other conditions similar to original samples) after the BMP (or suite of BMPs) is deployed.

For sediment-based TMDLs, wet-weather TSS sample results from before and after BMP implementation will be compared. Ideally, multiple samples will be collected before and several years after BMPs are implemented. A before-after decrease in target parameters will be considered "progress" toward TMDL targets. If the after-implementation results are below target water quality standards, the BMPs will be considered successful at meeting the TMDL targets for the waterbody sampled and the MS4s in the contributing area (watershed). If multiple samples are collected, trend lines will be established to determine the degree of progress towards TMDL targets. Geometric means of qualified (i.e. meeting sampling condition

requirements) post-implementation results will be used for *E. coli*, and simple means will be used for TSS results. Ultimately, to delist an impairment, additional sampling will be needed, which is beyond the scope of MS4 permit requirements to comply with water quality standards.

In addition to this stormwater sampling plan, ADW partners currently collect macroinvertebrates three times a year at sites throughout the Watershed (see Figure 2), which helps track progress towards the primary target of biota (sediment) TMDLs. Improvements in macroinvertebrate diversity (i.e. Procedure 51) will ultimately be necessary for delisting biota impairments. Sampling protocols for macroinvertebrates are also included in Appendix A, and results are reported along with water quality results in summary reports on the [ADW Initiatives page](#). The most recent published complete report (2013) is included in Appendix B. Figure 2 illustrates the Fall 2014 status and trends of macroinvertebrate sampling sites.

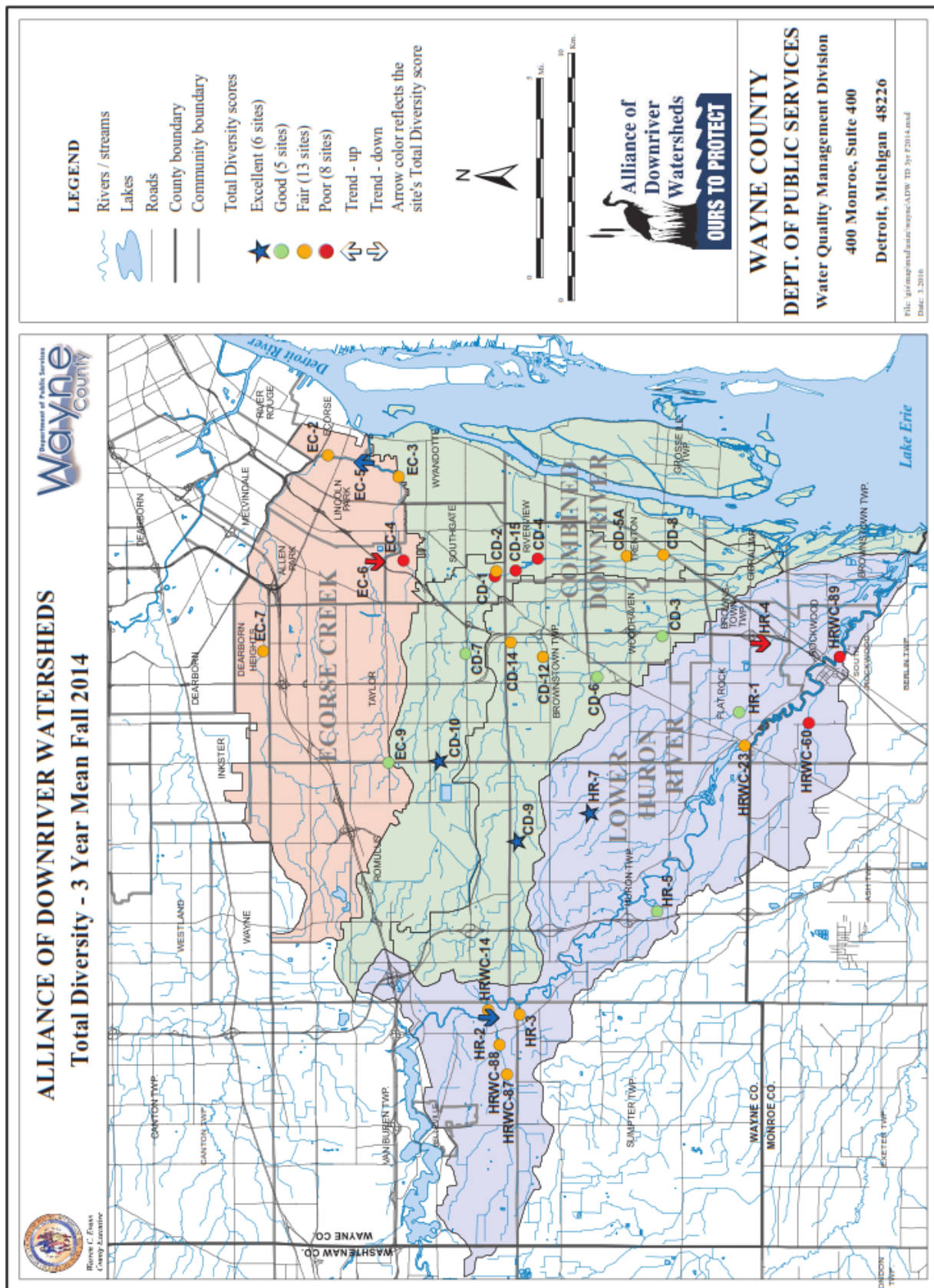


Figure 2. 2014 macroinvertebrate sampling locations and results in ADW.