

**Benchmark Monitoring Plan Checklist**  
**State of Michigan Industrial Storm Water Program**

Michigan Department of Environmental Quality (MDEQ)  
Water Resources Division (WRD)  
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The intent of this compliance assistance document is to provide a checklist that permittees can use when developing a Benchmark Monitoring Study Plan that meets the conditions of the storm water permit associated with special use areas. Prior to the development of the Benchmark Monitoring Study Plan, it is advisable that permittees also review the visual assessment compliance assistance documents. The visual assessment and benchmark monitoring compliance assistance documents are available on the MDEQ-WRD Industrial Storm Water Web page [www.mi.gov/degstormwater](http://www.mi.gov/degstormwater) (then click on INDUSTRIAL STORM WATER PROGRAM).

The Benchmark Monitoring Study Plan must include all the items below in order to meet the conditions of the permit.

**1)  General Description of the site to include the following:**

- a) Type of industrial activity
- b) Hours of Operation
- c) How storm water is discharged from the site (e.g. sheet flow, through an enclosed storm sewer, open ditch, etc.)
- d) Name of the receiving waters

**2)  Procedures for storm water sample collection and handling to include the following:**

- a) List pollutants to be monitored which include the following:
  - Auto Salvage: Total Suspended Solids(TSS), Total Copper, Total Lead, Total Zinc
  - Scrap and Waste Recycling Facilities: Total Suspended Solids (TSS), Total Copper, Total Lead, Total Zinc, Chemical Oxygen Demand (COD)
- b) Location of sample collection (this should be the same as your monitoring location for the visual assessments)
- c) Sampling Procedures should include the following:
  - Sampling Tools (e.g. sample bottle, sampling pole, automated sampler, etc.)
  - Sample collection protocol (e.g. skim the surface, water from pipe flows into bottle, etc.)
- d) Sample type
  - All samples should be grabs (not composites)
- e) Details regarding person(s) collecting the sample (e.g. name and qualifications)
  - Industrial Storm Water Certified Operator, or
  - Qualified Personnel - a person who has received appropriate training for collecting the samples. This training must be described in the permittee's written procedures for conducting the visual assessment. At a minimum it would consist viewing the compliance assistance information on the MDEQ-WRD Industrial Storm Water webpage.

3)  **Description of the sampling frequency to include the following:**

- a) When the visual assessment is conducted (Quarterly: January-March, April-June, July-September, October-December)
- b) Within one month of the comprehensive inspection
- c) In three consecutive quarters that a visual assessment was performed

4)  **Description of the sample analysis to include the following:**

- a) U.S. EPA approved test methods and acceptable quantification levels for each analysis

Benchmark Monitoring Parameter	EPA Method	Quantification Level	Holding Time From Collection
Total Suspended Solids	160.2	10.0 mg/l	7 Days
Chemical Oxygen Demand	410.4	5.0 mg/l	28 Days
Total Copper	200.8	1.0 ug/l	180 Days
Total Lead	200.8	1.0 ug/l	180 Days
Total Zinc	200.8	1.0 ug/l	180 Days
<i>***As a general rule samples should be kept at approximately four degrees Celsius until delivered to the lab.</i>			

- b) Laboratory performing analysis
- c) Approximate date the study is expected to be completed (month and year)
- d) Approximate date (month and year) the final report will be submitted. Must be submitted within 90 days of the last sampling event.

5)  **Description of the data evaluation to include the following:**

*The first comparison shall be made between each individual benchmark monitoring result and the benchmark monitoring concentration listed in the table below. If any single sample has a metal concentration **three times higher** than the benchmark metal concentration, the permittee must do the following within 30 days of receiving the analytical result:*

- a) Review all controls and develop a schedule for implementing corrective actions
- b) Submit a revised study report for review and approval to the department
- c) Sample again

*The second comparison shall be made between the average of the three benchmark monitoring concentration results and the benchmark monitoring concentration.*

- a) If the average of three benchmark monitoring results **does not exceed** the benchmark concentration for that parameter-submit the report within 90 days of last sampling date.
- b) If the average of three benchmark monitoring results for any parameter **exceeds** the benchmark concentration for that parameter-submit the report within 90 days of last sampling date, then:
  - Review control measures to see if modifications are required
  - Sample three more quarters for only the parameters that exceeded the benchmark concentration

- 6)  **A description of the applicable benchmark concentrations to include the following:**
- a) Total Suspended Solids (TSS) 100 mg/l
  - b) Chemical Oxygen Demand (COD) 120 mg/l (This parameter does not need to be monitored at auto salvage facilities)
  - c) Total Copper, Total Lead, and Total Zinc benchmark concentrations are dependent on the receiving waters hardness. The receiving waters hardness level can be found on the facility's Certificate of Coverage or by contacting the MDEQ-WRD district industrial storm water contact.

Receiving Water Hardness (mg/l)	Benchmark Concentration (µg/l)		
	Total Copper	Total Lead	Total Zinc
1-24.99	0.52	35	10
25-49.99	11	580	150
50-74.99	21	1,000	270
75-99.99	31	1,400	390
100-124.99	40	1,800	490
125-149.99	50	2,100	600
150-174.99	59	2,500	700
175-199.99	68	2,800	790
200-224.99	77	3,100	890
225-249.99	87	3,400	980
250-274.99	96	3,700	1,100
275-299.99	100	4,000	1,200
300-324.99	110	4,200	1,200
325+	120	4,500	1,300

- 7)  **The benchmark monitoring report submitted to the department shall include the following:**
- a) All analytical results obtained including the laboratory sheets
  - b) Information related to the qualifying storm events
    - Date of events
    - Rainfall measurements related to storm events
    - The time period between events
  - c) Outcome summary of the data evaluation
  - d) Notifications of any benchmark concentration exceedances
  - e) Responses to the data evaluation and any corrective actions required