



City of Daphne, Alabama  
Water Quality Monitoring Plan  
For Phase II MS4

**2021-2026**

**Permit # ALR 040039, Expiration Date: September 30, 2026**





## I. Introduction

This document presents the City of Daphne's Stormwater Monitoring Plan as required by the Alabama Department of Environmental Management's (ADEM) National Pollutant Discharge Elimination System (NPDES) Phase II Municipal Separate Storm Sewer System (MS4) Permit. The plan was created to monitor efforts in reducing targeted pollutants to the City's impaired streams. The plan will be reviewed annually as part of the SWMP and any needed changes will be documented in the SWMP Plan Annual Report.

### A. Background Information

Daphne has five (5) streams that fail to meet the minimum water quality standards for their designated Fish and Wildlife use. In 2010, ADEM listed the four streams on its 303(d) List as impaired by siltation (sedimentation) and habitat alteration. The streams are Tiawasee Creek; an unnamed Tributary to Tiawasee Creek; D'Olive Creek; and, an unnamed Tributary to D'Olive Creek. All of these streams are located within the D'Olive Creek watershed. According to the D'Olive Creek Watershed Management Plan, twenty two-thousand (22,000) linear feet of stream channel is degraded within the watershed resulting in substantial impairments. As a result of the streams' 303(d) listing, EPA requires the establishment of a Total Maximum Daily Load (TMDL) under the Clean Water Act. The TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and safely meet water quality standards. Currently there are no EPA approved TMDLs for these streams. It is anticipated that the TMDLs for Daphne's impaired streams will be written and released in the near future.

### B. Permit Requirements

MS4 Phase II permittees that discharge to an impaired water or to a water for which a TMDL has been approved, may have monitoring requirements under Part IV.D (Discharges to Impaired Waters) and they must comply with the following:

1. Submit a monitoring plan within 6 months of the date of coverage of the permit.
2. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
3. Test procedures must be conducted in accordance to test procedures approved by EPA under 40 CFR Part 136.
4. Records of the monitoring information shall include:
  - a. The date, exact place, and time of sampling measurements
  - b. The name of the individual who performed the sampling or measurements;
  - c. The date(s) analyses were performed;



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- d. The names of the individual who performed the analyses;
- e. The analytical techniques or methods used; and
- f. The results of such analyses.

### **C. Impairment & Targeted Pollutant**

The D'Olive Creek watershed drains seven thousand and seven hundred (7700) acres and is part of the eastern shore of Mobile Bay, including parts of Daphne, Spanish Fort and Baldwin County. The watershed is in a land use transition from forested, agricultural, and residential land uses to residential and commercial development. This land-use transition and its related urban contaminants and impervious surfaces have profoundly impacted water quality and habitat in the watershed and Mobile Bay. This is particularly true in Daphne where topographic relief and highly erodible soils are subjected to disturbances related to residential and commercial development. Within the watershed, increasing stormwater runoff has accelerated erosion and stream channel degradation, which has led to the excessive sedimentation. Sedimentation is a process by which eroded particles of rock are transported primarily by moving water from areas of relatively high elevation to areas of relatively low elevation, where the particles are deposited. Erosion rates are accelerated by human activity related to each land use and other activities where soils are exposed or disturbed. Erosion rates are also influenced by amounts of rainfall and resulting stormwater runoff. Excessive sedimentation is detrimental to water quality, destroys biological habitat, reduces storage volume of water impoundments, impedes the usability of aquatic recreational areas, and causes damage to structures. Sediment loads in streams are composed of relatively small particles suspended in the water column (suspended solids) and larger particles that move on or periodically near the stream bed (bed load).

## **II. Monitoring**

The amount of silt or sediment in water can be measured as turbidity or total suspended solids (TSS). Turbidity is the volume of solid particles that are suspended (suspended solids) in water and that cause light rays shining through the water to scatter. Thus, turbidity makes the water cloudy or even opaque in extreme cases. TSS is that portion of solids of a water sample that could be separated from the water by filtering. Turbidity is measured using an instrument called a Nephelometer. The units of turbidity from a calibrated nephelometer are called Nephelometric Turbidity Units (NTU). To some extent, how much light reflects for a given amount of particulates is dependent upon properties of the particles like their shape, color, and reflectivity. For this reason (and the reason that heavier particles settle quickly and do not contribute to a turbidity reading), a correlation between turbidity and total suspended solids reveals a more realistic depiction of the amount of sediment load. Therefore, the City of Daphne will monitor D'Olive Creek and Tiawasee Creek twice a year for turbidity in relation to their listed impairment-siltation. The samples will be taken during wet weather and dry weather conditions.



## **A. Sampling Procedures**

Sampling and analysis procedures will be conducted in accordance with test procedures approved by EPA under 40 CFR Part 136. The City may also use sampling data from other approved state agencies', such as Geological Survey of Alabama, to achieve this requirement of permit compliance. Records of monitoring information shall include:

1. The date, exact place, and time of sampling measurements;
2. The name of the individual who performed the sampling or measurements;
3. The date(s) analyses were performed;
4. The names of the individual who performed the analyses;
5. The analytical techniques or methods used; and
6. The results of such analyses.

## **B. Sampling Locations**

Sampling access and safety, land use, watershed boundaries, soil types, and many other factors were evaluated to determine the sampling locations. The sampling locations for each stream is detailed in Table 1 and shown on Figure 1.

**Table 1. Sampling Locations**

| <b>Location</b>                     | <b>Latitude</b>               | <b>Longitude</b>              |
|-------------------------------------|-------------------------------|-------------------------------|
| D'Olive Creek @<br>East Bayview Dr. | 30 <sup>0</sup> 39' 7.739" N  | 87 <sup>0</sup> 53' 35.745" W |
| Tiawasee Creek @<br>Bayview Dr.     | 30 <sup>0</sup> 38' 33.855" N | 87 <sup>0</sup> 53' 30.846" W |

Sampling results will be submitted as part of the City's SWMPP Annual Report.

## **C. Future Requirements**

Once a TMDL is approved by EPA for the listed streams, Daphne will determine whether the TMDL includes a pollutant allocation or other performance requirements specifically for storm water discharges from its MS4, and if the TMDL addresses a flow regime likely to occur during periods of storm water discharge. If the determination reflects so, the City may be required to implement specific allocations provisions of the TMDL, and assess whether the allocations are being met through implementation of existing storm water control measures.





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