



# **Assessment Decision Report**

## **Scarham Creek**

**Assessment Unit ID: AL06030001-0805-200**

**Pesticides**

**(Endosulfan and Parathion)**

Alabama Department of Environmental Management  
Water Quality Branch  
Water Division  
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## 1.0 Executive Summary

Scarham Creek, a part of the Tennessee River basin, flows from Short Creek to its source and is in both Marshall County and DeKalb County. It was placed on the State of Alabama's §303(d) use impairment list in 1992 for Pesticides (Atrazine, Methyl Parathion, Endosulfan, and Chlorpyrifos). Its use classification is Fish and Wildlife.

Scarham Creek was placed in Category 4A after TMDLs for Pesticides (Atrazine, Methyl Parathion, Endosulfan, and Chlorpyrifos) were developed and approved by EPA in 2002. In those TMDLs, it was noted that there were no reported fish kills in Scarham Creek due to pesticides. Scarham Creek was listed as being impaired for pesticides based on observations but there is no water quality data to support its listing.

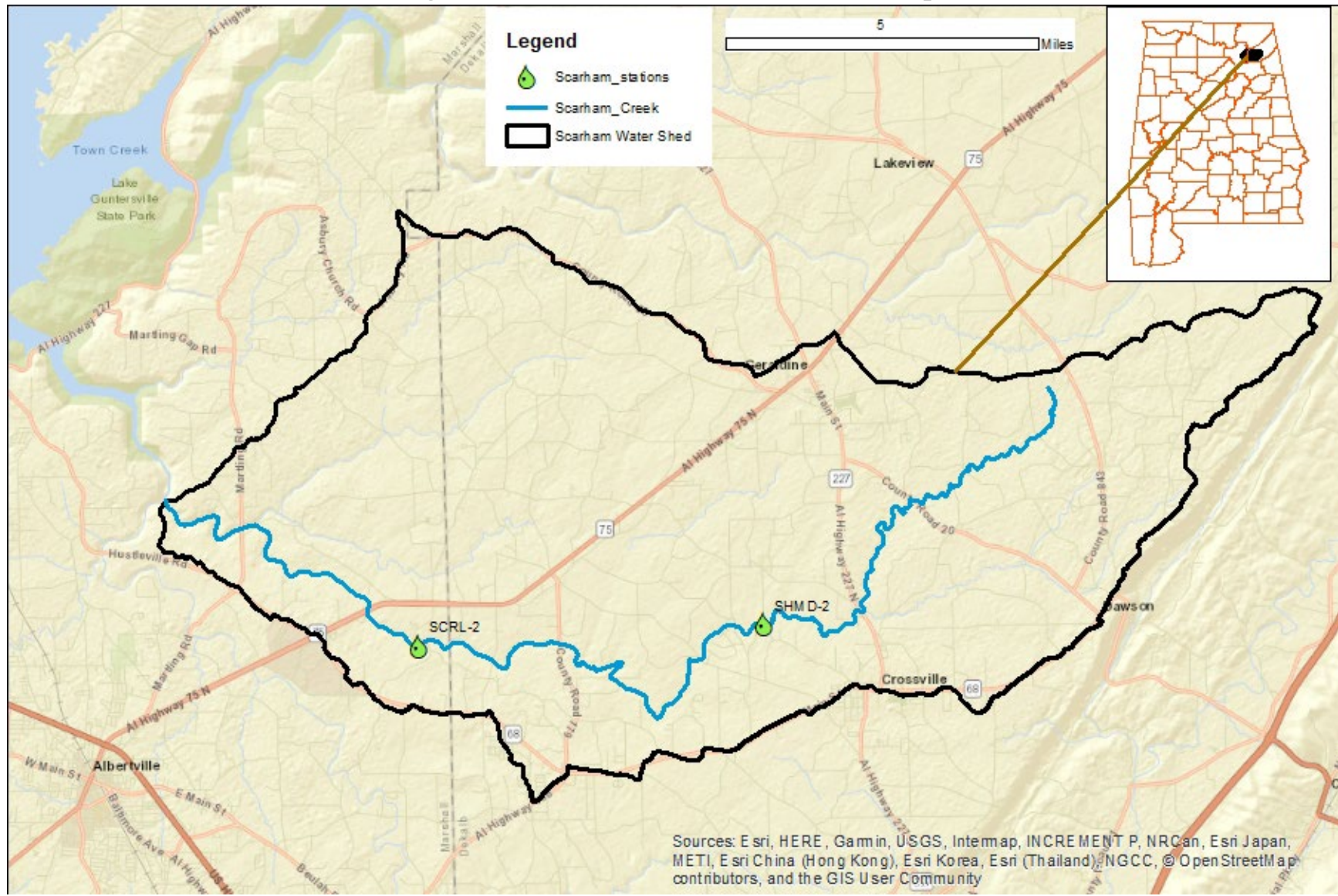
From 2014 to present, the Natural Resource Conservation Service (NRCS) designated Scarham Creek as a National Water Quality Initiative (NWQI) focus area. Hundreds of thousands of dollars have been spent funding Best Management Practices (BMPs) in the watershed. Based off data discussed below, it appears these BMPs helped improve water quality for Scarham Creek.

From 2015 to present, the Alabama Department of Environmental Management (ADEM) has conducted at least 100 sampling trips to stations SHMD-2 and SCRL-2 on Scarham Creek for multiple programs conducting various sampling activities. During these sampling trips, at least 14 samples of Endosulfan and Parathion have been collected, analyzed, and reported. All results are below Method Detection Limits (MDLs), and all MDLs are below ADEM criteria shown below. Water quality data is shown in the Appendix.

| Pollutant            | Criteria Effective June 14, 2025 |                    |              |                |                               |                          |
|----------------------|----------------------------------|--------------------|--------------|----------------|-------------------------------|--------------------------|
|                      | Aquatic Life Criteria, ug/l      |                    |              |                | Human Health Criteria, ug/l   |                          |
|                      |                                  |                    |              |                | Consumption of Water and Fish |                          |
|                      | Freshwater Acute                 | Freshwater Chronic | Marine Acute | Marine Chronic | Consumption of Water and Fish | Consumption of Fish Only |
| Endosulfan (alpha)   | 0.22                             | 0.056              | 0.034        | 0.0087         | 41.6                          | 51.9                     |
| Endosulfan (beta)    | 0.22                             | 0.056              | 0.034        | 0.0087         | 41.6                          | 51.9                     |
| Endosulfan (sulfate) |                                  |                    |              |                | 41.6                          | 51.9                     |
| Parathion            | 0.065                            | 0.013              |              |                |                               |                          |

Based on the analysis of all available water quality data and information collected on the 23.42-mile segment of Scarham Creek from Short Creek to its source, there are no longer any issues related to Endosulfan or Parathion. Based on Table 19 in the WQALM, the datasets in this report show the maximum number of samples has not been exceeded for delisting or declaring unimpaired. Consequently, ADEM has determined that Endosulfan and Parathion impairments on Scarham Creek no longer exist.

Figure 1.1: Scarham Creek Watershed Map:



## 2.0 Water Quality Target Identification

### 2.1 Endosulfan and Parathion

According to ADEM's Water Quality Criteria (Administrative Code 335-6-10), the maximum concentration for Endosulfan and Parathion are based off the following criteria:

#### 335-6-10-.01 Toxic Pollutant Criteria Applicable to State Waters.

(1) The U.S. Environmental Protection Agency has listed the chemical constituents given in Table 1 as toxic pollutants pursuant to Section 307(a)(1) of the Federal Water Pollution Control Act (FWPCA). Concentrations of these toxic pollutants in State waters shall not exceed the criteria indicated in Table 1 to the extent commensurate with the designated usage of such waters.

ADEM's Water Quality Criteria (Administrative Code 335-6-10) Table 1 sets the maximum concentration for Endosulfan and Parathion as shown below:

| Pollutant            | Criteria Effective June 14, 2025 |                    |              |                |                               |                          |
|----------------------|----------------------------------|--------------------|--------------|----------------|-------------------------------|--------------------------|
|                      | Aquatic Life Criteria, ug/l      |                    |              |                | Human Health Criteria, ug/l   |                          |
|                      | Freshwater Acute                 | Freshwater Chronic | Marine Acute | Marine Chronic | Consumption of Water and Fish | Consumption of Fish Only |
| Endosulfan (alpha)   | 0.22                             | 0.056              | 0.034        | 0.0087         | 41.6                          | 51.9                     |
| Endosulfan (beta)    | 0.22                             | 0.056              | 0.034        | 0.0087         | 41.6                          | 51.9                     |
| Endosulfan (sulfate) |                                  |                    |              |                | 41.6                          | 51.9                     |
| Parathion            | 0.065                            | 0.013              |              |                |                               |                          |

**Table 2.1 Scarham Creek Assessment Information**

| Assessment Unit ID  | Waterbody Name | Downstream  | Upstream   | Size        | Category | Use Classification |
|---------------------|----------------|-------------|------------|-------------|----------|--------------------|
| AL03150110-0201-700 | Scarham Creek  | Short Creek | Its Source | 23.42 miles | 4A       | F&W                |

### 2.2 Basis for Removing a Waterbody from Category 5 or 4A

Waterbodies may be removed from a 303(d) list (Category 5) for various reasons, including:

- Assessment of more recent water quality data demonstrates that the waterbody is meeting all applicable water quality standards. (Move to Category 1)
- A review of the original listing decision demonstrates that the waterbody should not have been included in Category 5. (Move to Category 1 or Category 2)

- TMDL has been completed. (Move to Category 4a)
- Other pollution control requirements are reasonably expected to result in the attainment of the water quality standards in the near future. These requirements must be specifically applicable to the particular water quality problem. (Move to Category 4b)
- Impairment is not caused by a pollutant. (Move to Category 4c)
- Natural causes, when it can be demonstrated the exceedance of a numeric water quality criterion is due to natural conditions and not to human disturbance activities. (Move to Category 1)

**Table 2.2 (Table 19 in WQALM)** shows the allowable number of exceedances of criteria for conventional pollutants for various sample sizes and a 90% confidence level. This table will be used to determine the number of allowable exceedances of Alabama numeric water quality criteria for pollutants listed in ADEM Administrative Code r. 335-6-10, with the exception of chlorophyll *a* criteria and the toxics criteria listed in the appendix to ADEM Administrative Code r. 335-6-10, for the waterbody to be removed from a 303(d) list for a specific pollutant (move to Category 1). In addition, the original basis for listing the waterbody will be considered as a part of the delisting process. Included in this evaluation will be a review of pollutant sources to determine which ones may have been removed or remediated, changes in land practices or uses, installation of new treatment facilities or best management practices, and changes in stream hydrology or morphology.

**Table 2.2 (Table 19 in WQALM): Maximum Number of Samples Exceeding the Numeric Criterion Necessary for Delisting \***

| Sample Size | Number of Exceedances | Sample Size  | Number of Exceedances |
|-------------|-----------------------|--------------|-----------------------|
| 8 thru 21   | 0                     | 104 thru 115 | 7                     |
| 22 thru 37  | 1                     | 116 thru 127 | 8                     |
| 38 thru 51  | 2                     | 128 thru 139 | 9                     |
| 52 thru 64  | 3                     | 140 thru 151 | 10                    |
| 65 thru 77  | 4                     | 152 thru 163 | 11                    |
| 78 thru 90  | 5                     | 164 thru 174 | 12                    |
| 91 thru 103 | 6                     | 175 thru 186 | 13                    |

\*For conventional parameters, including bacteria, at the 90% confidence level.

For waters originally placed in Category 5 due to a specific toxic pollutant or specific toxic pollutants, there should be no violations of the appropriate criteria in a preferred minimum of eight samples collected over a three-year period before the cause of impairment is removed or the water is placed in Category 1. As stated in section 4.10 Minimum Sample Size and Allowable Number of Water Quality Criterion Exceedances, the decision to use smaller data sets for making use support decisions will be made on a case-by-case basis using best professional judgment and the decision will be documented.

### **3.0 Data Collection & Analysis**

From 2015 to present, the Alabama Department of Environmental Management (ADEM) has conducted at least 100 sampling trips to stations SHMD-2 and SCRL-2 on Scarham Creek for multiple programs conducting various sampling activities. During these sampling trips, at least 14 samples of Endosulfan and Parathion have been collected, analyzed, and reported. All results are below Method Detection Limits (MDLs), and all MDLs are below ADEM criteria. All results are shown in the Appendixes.

### **4.0 Conclusion**

Based on the analysis of all available water quality data and information collected on the 23.42-mile segment of Scarham Creek from Short Creek to its source, there are no longer any issues related to Endosulfan or Parathion. Based on Table 19 in the WQALM, the datasets in this report show that the maximum number of samples has not exceeded the numeric criterion necessary for delisting or declaring unimpaired. Consequently, ADEM has determined that Endosulfan and Parathion impairments on Scarham Creek no longer exist.

## 5.0 Appendices:

**Table 5.1 Endosulfan**

| STATION_ID | Date      | Endosulfan I (ug/l) | DET_COND - Endosulfan I | Endosulfan II (ug/l) | DET_COND - Endosulfan II | Endosulfan sulfate (ug/l) | DET_COND - Endosulfan sulfate |
|------------|-----------|---------------------|-------------------------|----------------------|--------------------------|---------------------------|-------------------------------|
| SCRL-2     | 4/3/2019  | 0.009               | < MDL .009              | 0.01                 | < MDL .01                | 0.009                     | < MDL .009                    |
| SCRL-2     | 7/17/2019 | 0.009               | < MDL .009              | 0.01                 | < MDL .01                | 0.009                     | < MDL .009                    |
| SCRL-2     | 9/12/2019 | 0.009               | < MDL .009              | 0.01                 | < MDL .01                | 0.009                     | < MDL .009                    |
| SCRL-2     | 5/20/2020 | 0.009               | < MDL .009              | 0.01                 | < MDL .01                | 0.009                     | < MDL .009                    |
| SCRL-2     | 6/10/2020 | 0.009               | < MDL .009              | 0.01                 | < MDL .01                | 0.009                     | < MDL .009                    |
| SCRL-2     | 9/23/2020 | 0.009               | < MDL .009              | 0.01                 | < MDL .01                | 0.009                     | < MDL .009                    |
| SCRL-2     | 4/21/2021 | 0.009               | < MDL .009              | 0.01                 | < MDL .01                | 0.009                     | < MDL .009                    |
| SCRL-2     | 6/14/2021 | 0.009               | < MDL .009              | 0.01                 | < MDL .01                | 0.009                     | < MDL .009                    |
| SCRL-2     | 9/9/2021  | 0.009               | < MDL .009              | 0.01                 | < MDL .01                | 0.009                     | < MDL .009                    |
| SCRL-2     | 5/18/2022 | 0.002               | < MDL .002              | 0.003                | < MDL .003               | 0.003                     | < MDL .003                    |
| SCRL-2     | 7/29/2022 | 0.002               | < MDL .002              | 0.003                | < MDL .003               | 0.003                     | < MDL .003                    |
| SCRL-2     | 10/4/2022 | 0.002               | < MDL .002              | 0.003                | < MDL .003               | 0.003                     | < MDL .003                    |
| SCRL-2     | 5/17/2023 | 0.002               | < MDL .002              | 0.003                | < MDL .003               | 0.003                     | < MDL .003                    |
| SCRL-2     | 7/18/2023 | 0.002               | < MDL .002              | 0.003                | < MDL .003               | 0.003                     | < MDL .003                    |
| SCRL-2     | 9/26/2023 | 0.002               | < MDL .002              | 0.003                | < MDL .003               | 0.003                     | < MDL .003                    |
| SHMD-2     | 7/17/2019 | 0.009               | < MDL .009              | 0.01                 | < MDL .01                | 0.009                     | < MDL .009                    |
| SHMD-2     | 9/12/2019 | 0.009               | < MDL .009              | 0.01                 | < MDL .01                | 0.009                     | < MDL .009                    |
| SHMD-2     | 5/20/2020 | 0.009               | < MDL .009              | 0.01                 | < MDL .01                | 0.009                     | < MDL .009                    |
| SHMD-2     | 6/10/2020 | 0.009               | < MDL .009              | 0.01                 | < MDL .01                | 0.009                     | < MDL .009                    |
| SHMD-2     | 9/23/2020 | 0.009               | < MDL .009              | 0.01                 | < MDL .01                | 0.009                     | < MDL .009                    |
| SHMD-2     | 4/21/2021 | 0.009               | < MDL .009              | 0.01                 | < MDL .01                | 0.009                     | < MDL .009                    |
| SHMD-2     | 6/14/2021 | 0.009               | < MDL .009              | 0.01                 | < MDL .01                | 0.009                     | < MDL .009                    |
| SHMD-2     | 9/9/2021  | 0.009               | < MDL .009              | 0.01                 | < MDL .01                | 0.009                     | < MDL .009                    |
| SHMD-2     | 5/18/2022 | 0.002               | < MDL .002              | 0.003                | < MDL .003               | 0.003                     | < MDL .003                    |
| SHMD-2     | 7/29/2022 | 0.002               | < MDL .002              | 0.003                | < MDL .003               | 0.003                     | < MDL .003                    |
| SHMD-2     | 10/4/2022 | 0.002               | < MDL .002              | 0.003                | < MDL .003               | 0.003                     | < MDL .003                    |
| SHMD-2     | 5/22/2024 | 0.002               | < MDL .002              | 0.003                | < MDL .003               | 0.003                     | < MDL .003                    |
| SHMD-2     | 7/30/2024 | 0.002               | < MDL .002              | 0.003                | < MDL .003               | 0.003                     | < MDL .003                    |
| SHMD-2     | 9/17/2024 | 0.002               | < MDL .002              | 0.003                | < MDL .003               | 0.003                     | < MDL .003                    |

**Table 5.2 Parathion**

| STATION_ID | Date      | Parathion<br>Ethyl<br>(ug/l) | DET_COND -<br>Parathion<br>Ethyl | Parathion<br>Methyl<br>(ug/l) | DET_COND -<br>Parathion<br>Methyl |
|------------|-----------|------------------------------|----------------------------------|-------------------------------|-----------------------------------|
| SCRL-2     | 4/3/2019  | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SCRL-2     | 7/17/2019 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SCRL-2     | 9/12/2019 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SCRL-2     | 5/20/2020 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SCRL-2     | 6/10/2020 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SCRL-2     | 9/23/2020 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SCRL-2     | 4/21/2021 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SCRL-2     | 9/9/2021  | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SCRL-2     | 5/18/2022 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SCRL-2     | 7/29/2022 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SCRL-2     | 10/4/2022 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SCRL-2     | 5/17/2023 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SCRL-2     | 7/18/2023 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SCRL-2     | 9/26/2023 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SHMD-2     | 9/12/2019 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SHMD-2     | 5/20/2020 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SHMD-2     | 6/10/2020 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SHMD-2     | 9/23/2020 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SHMD-2     | 4/21/2021 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SHMD-2     | 9/9/2021  | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SHMD-2     | 5/18/2022 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SHMD-2     | 7/29/2022 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SHMD-2     | 10/4/2022 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SHMD-2     | 5/22/2024 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SHMD-2     | 7/30/2024 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |
| SHMD-2     | 9/17/2024 | 0.015                        | < MDL .015                       | 0.003                         | < MDL .003                        |