

pH TMDL for Big Black River Watershed

Big Black River Basin
Hinds and Warren
Counties, Mississippi

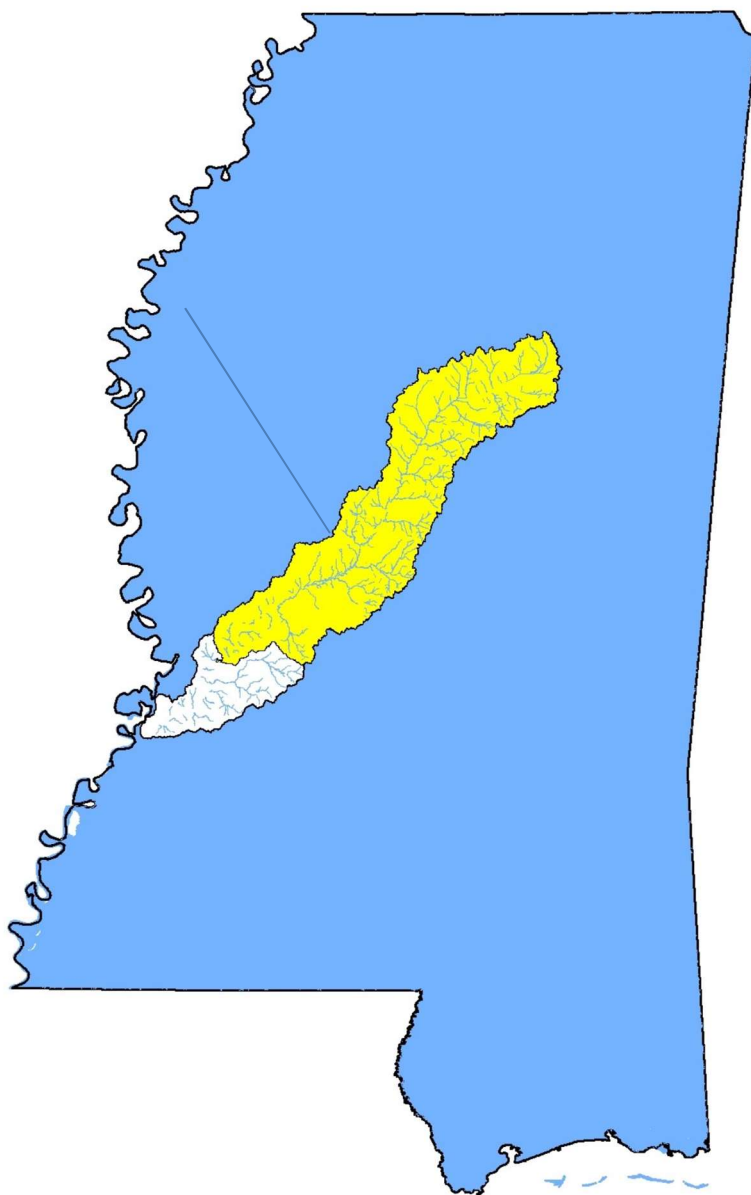
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FOREWORD

The report contains one or more Total Maximum Daily Loads (TMDLs) for water body segments found on Mississippi’s 2014 Section 303(d) List of Impaired Water Bodies. The implementation of the TMDLs contained herein will be prioritized within Mississippi’s rotating basin approach.

As additional information becomes available, the TMDLs may be updated. Such additional information may include water quality and quantity data, changes in pollutant loadings, modifications to the water quality standards or criteria, or changes in landuse within the watershed. In some cases, additional water quality data may indicate that no impairment exists.

Table 1. Conversion Factors

| From | To | multiply by | From | To | multiply by | From | To | multiply by |
|-----------------|-------------------|-------------|------------------------|--------------------|-------------|---------------|---------|-------------|
| mi ² | feet ² | 27,878,400 | meter ³ | liter | 1,000 | miles | feet | 5,280 |
| km ² | feet ² | 10,763,911 | Feet ³ /sec | gallons/ min | 448.8312 | km | feet | 3,280.84 |
| hectares | feet ² | 107,639 | meter ³ | gallons | 264.1721 | miles | meters | 1,609.34 |
| acre | feet ² | 43,560 | meter ³ | Feet ³ | 35.3147 | meters | feet | 3.2808 |
| mi ² | acre | 640 | Feet ³ | Liter | 28.3168 | km | miles | 0.6214 |
| km ² | acre | 247.1044 | Yard ³ | Feet ³ | 27 | days | seconds | 86,400 |
| km ² | hectares | 100 | Feet ³ | gallons | 7.4805 | mg/l * MGD | lbs/day | 8.3454 |
| hectares | acre | 2.4710 | Yard ³ | meter ³ | 0.7646 | µg/l * cfs | gm/day | 2.4500 |
| km ² | mi ² | 0.3861 | Feet ³ /sec | MGD | 0.6463 | tonnes | ton | 1.1 |

Table 2. Prefix Symbols

| Fraction | Prefix | Symbol | Multiple | Prefix | Symbol |
|-------------------|--------|--------|------------------|--------|--------|
| 10 ⁻¹ | deci | d | 10 | deka | da |
| 10 ⁻² | centi | c | 10 ² | hecto | h |
| 10 ⁻³ | milli | m | 10 ³ | kilo | k |
| 10 ⁻⁶ | micro | : | 10 ⁶ | mega | M |
| 10 ⁻⁹ | nano | n | 10 ⁹ | giga | G |
| 10 ⁻¹² | pico | p | 10 ¹² | tera | T |
| 10 ⁻¹⁵ | femto | f | 10 ¹⁵ | peta | P |
| 10 ⁻¹⁸ | atto | a | 10 ¹⁸ | exa | E |

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TMDL INFORMATION PAGE

Listing Information

| Name | ID | County | Cause |
|--|--------|---------------------|-------|
| Big Black River | 107811 | Hinds and Warren | pH |
| From confluence with Bear Creek to confluence with Clear Creek | | | |

Water Quality Standard

| Parameter | Beneficial use | Water Quality Criteria |
|-----------|----------------------|---|
| pH | Fish and Wildlife | The applicable water quality criteria, as described in the <i>WPC-2 State of Mississippi's Water Quality Criteria for Intrastate, Interstate, and Coastal Waters</i> , requires that the pH shall be within the range of 6.0 to 9.0 standard units (s.u.) |

Executive Summary

The Big Black River (107811) from the confluence with Bear Creek to the confluence with Clear Creek was assessed by the Mississippi Department of Environmental Quality (MDEQ) as not supporting its designated use for the pH standard on the State's 2014 Section 303(d) List of Impaired Water Bodies (MDEQ, 2014). This water quality limited segment is located in the Big Black Basin in Hinds and Warren Counties. The applicable water quality criteria, as described in the *WPC-2 State of Mississippi's Water Quality Criteria for Intrastate, Interstate, and Coastal Waters*, requires that the pH shall be within the range of 6.0 to 9.0 standard units (s.u.) (MDEQ, 2012).

The specific causes of the low pH for this water body are not known but probable causes may be attributed to stormwater runoff from fertilized soils from cropland, failed septic tanks, noncompliant point sources, and inactive natural gas pipelines. The wasteload allocation for the total maximum daily load (TMDL) requires that the pH in the effluent from permitted point sources shall be within the range of 6.0 to 9.0 s.u. The load allocation for the TMDL requires that the pH of waters originating from nonpoint sources shall be within the range of 6.0 to 9.0 s.u. These allocations provide for the year-round protection of water quality. The location of the watershed is shown in Figure 1.

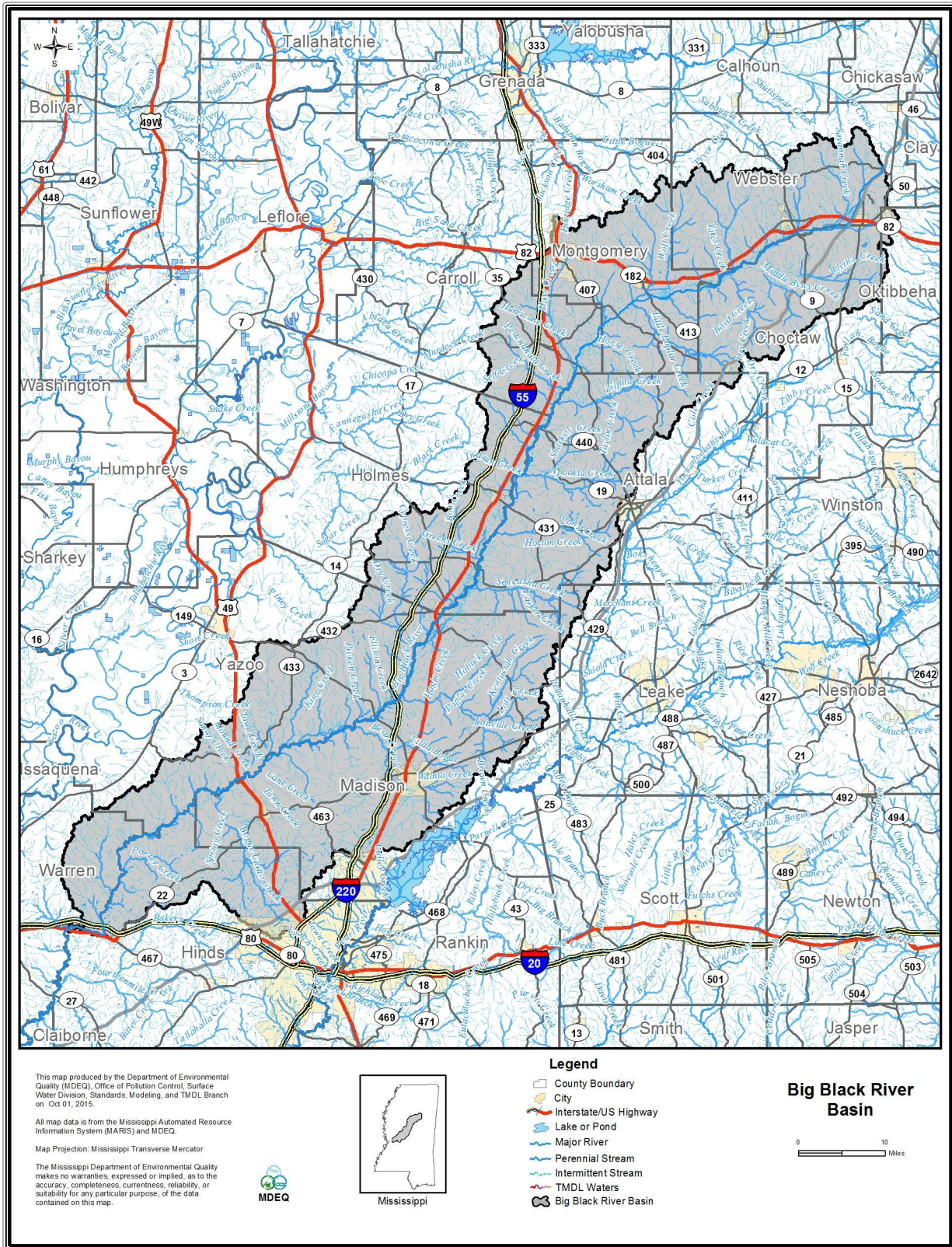


Figure 1. Location of the Big Black River Watershed

Introduction

The Big Black River (107811) was identified by MDEQ as not supporting the designated use for the pH standard on *Mississippi's 2014 Section 303(d) List of Impaired Water Bodies* (MDEQ, 2014). TMDLs are required for impaired waters on the §303(d) list as required by the Federal Clean Water Act §303(d) and the implementing regulations in accordance with 40 CFR.130. A TMDL establishes the maximum amount of a pollutant a water body can assimilate without exceeding the applicable water quality standard. The TMDL also allocates the total allowable load to individual sources or categories of sources through wasteload allocations (WLAs) for point sources, and through load allocations (LAs) for non-point sources. The WLAs and LAs in the TMDL provide a basis for states to reduce pollution from both point and non-point source activities that will lead to the attainment of water quality standards and protection of the beneficial use. The impaired segment of the Big Black River is shown in Figure 2.

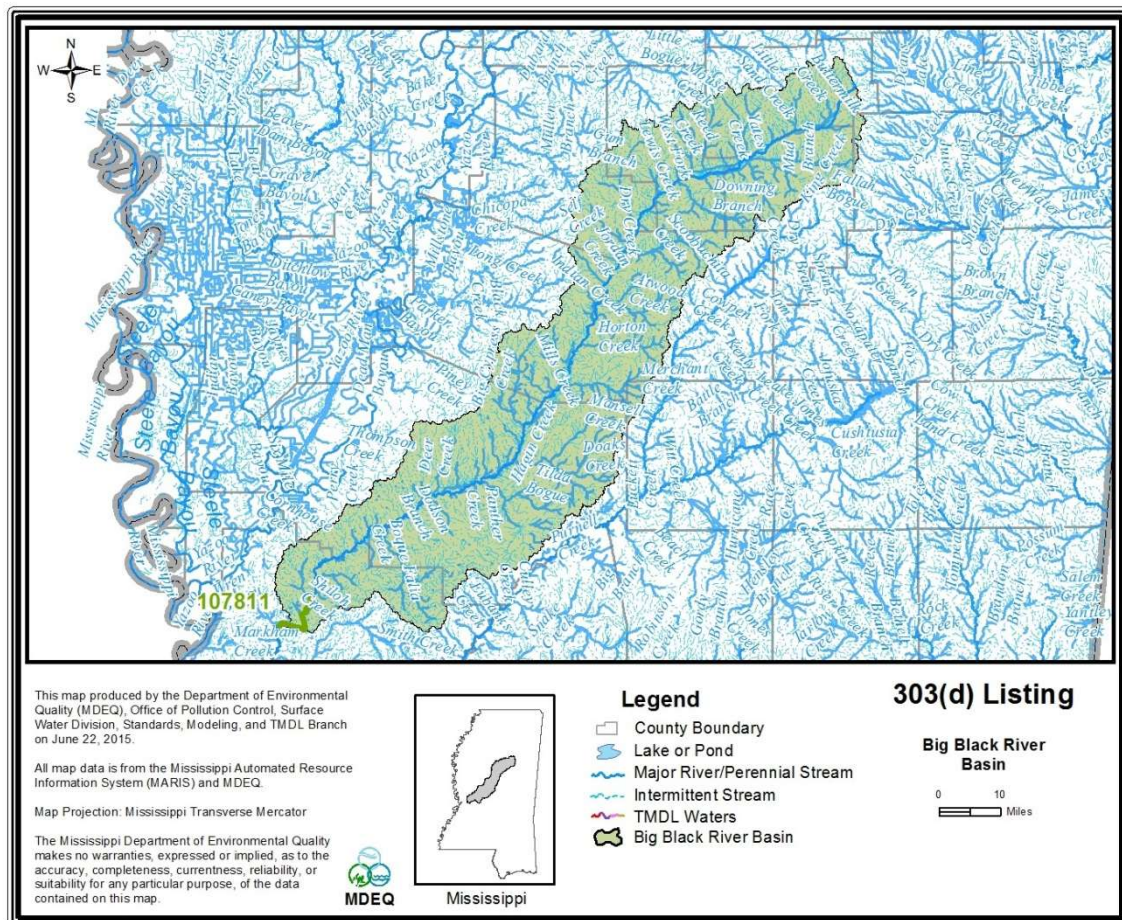


Figure 2. The Big Black River 303(d) Impaired Segment

Problem Definition

pH is a measure of the hydrogen ion concentration in water as well as a measure of the acidity or alkalinity. Specifically, pH is defined as the negative logarithm of the hydrogen ion concentration in terms of moles per liter.

$$\text{pH} = -\log [\text{H}^+]$$

pH values can range from 0 s.u. for a very acidic solution to 14 s.u. for a very basic solution. A pH equal to 7.0 s.u. represents neutrality. One of the most significant environmental impacts of pH is the effect that it has on the solubility and thus the bioavailability of potentially toxic substances that may be present in surface waters. As the pH in a water body becomes lower (i.e., the solution becomes more acidic) many insoluble toxic substances like cyanides, sulfides, and most metals become more soluble and thus more likely to have toxic effects on fish and other aquatic life. Slight increases in pH may greatly increase the toxicity of pollutants such as ammonia. (Lee, 1998)

Applicable Water Quality Standard

The TMDL for the Big Black River will be established at a level to ensure consistency with the applicable water quality criteria and protection of its designated use (i.e., Fish and Wildlife). The State of Mississippi *Water Quality Criteria for Intrastate, Interstate, and Coastal Waters* includes numeric water quality criteria for pH of 6.0 to 9.0 s.u. for waters with these designated uses (MDEQ, 2012).

Watershed Characterization

The impaired segment of the Big Black River is located in Hinds and Warren Counties. Landuse for the watershed is predominantly forest (Table 3 and Figure 4). The landuse distributions presented in Table 3 and Figure 3 were derived from the State of Mississippi's Automated Resource Information System (MARIS), which is based on 2011 Landsat Thematic Mapper digital images.

Table 3. Landuse in the Big Black River Watershed

| | Water | Urban | Forest | Scrub/ Barren | Pasture | Cropland | Wetland |
|--------|-----------|-----------|-----------|------------------|-----------|-----------|-----------|
| area | 17,966.39 | 101,328.4 | 778,848.5 | 162,926.6 | 331,930.9 | 158,349.3 | 209,907.8 |
| % area | 1.0% | 5.8% | 44.2% | 9.3% | 18.8% | 9.0% | 11.9% |

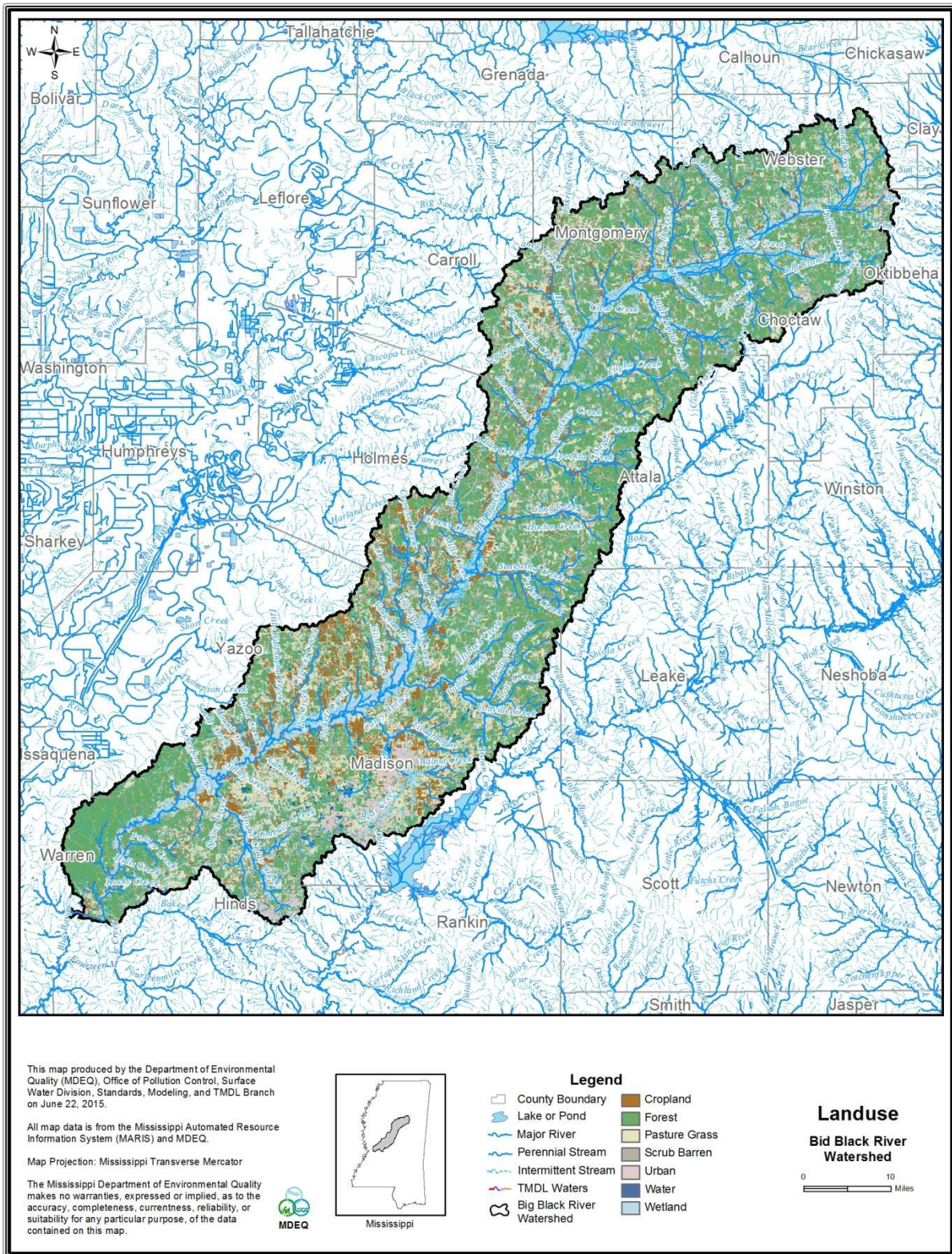


Figure 3. Landuse Distribution Map

Water Quality Data

MDEQ collected ambient monthly water quality samples from the Big Black River from 2001 to 2014 at 07290000. The monitoring station is depicted in Figure 4. Figure 5 shows the ambient data in comparison with the discharge measured in the stream. All of the water quality standard excursions were attributed to low pH. Table 4 shows a further breakdown of the pH violations as compared to the discharge measured on those days for station 07290000. MDEQ also looked at historical data for the Big Black River to assess whether the violations are attributed to natural occurring conditions. It is believed the low values are not associated with naturally occurring conditions due to the few violations noted by USGS during this timeframe. The data range for the historical data is available from 1972-1994. Only 3 violations out of 164 pH samples were observed. Figure 6 shows the historical USGS pH data.

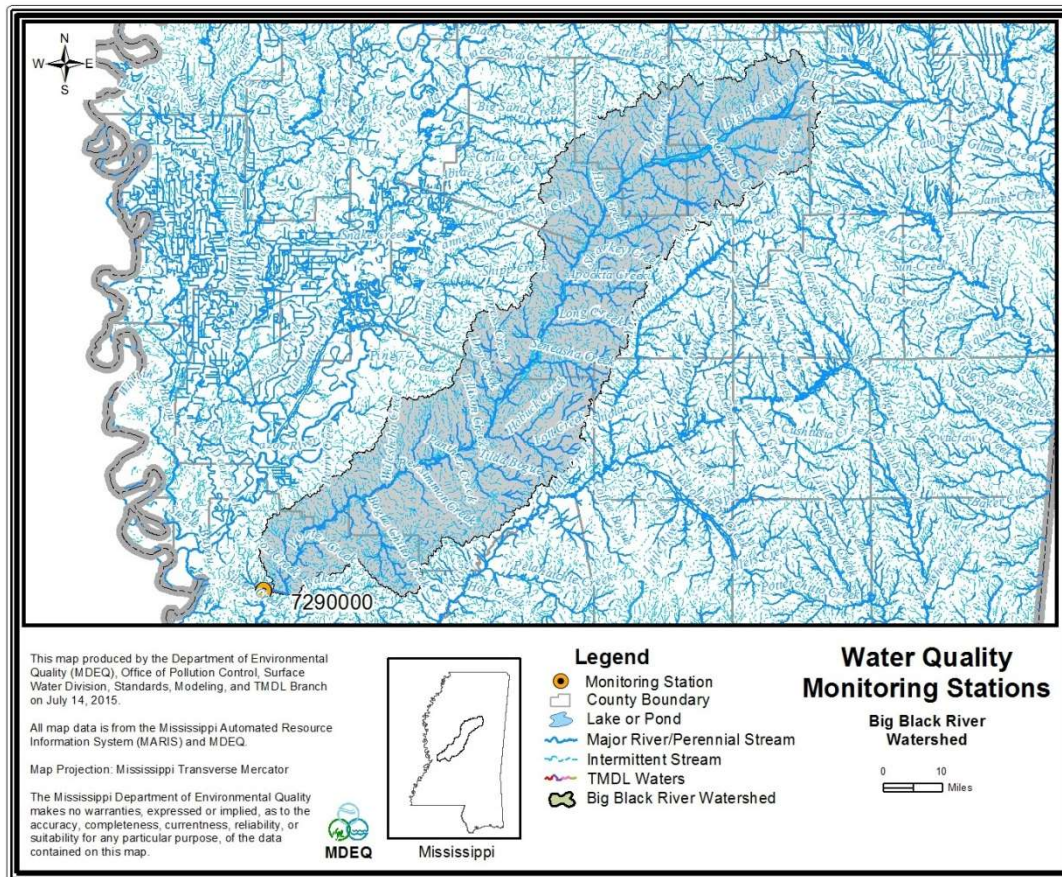


Figure 4. Monitoring Station for Ambient Site (07290000)

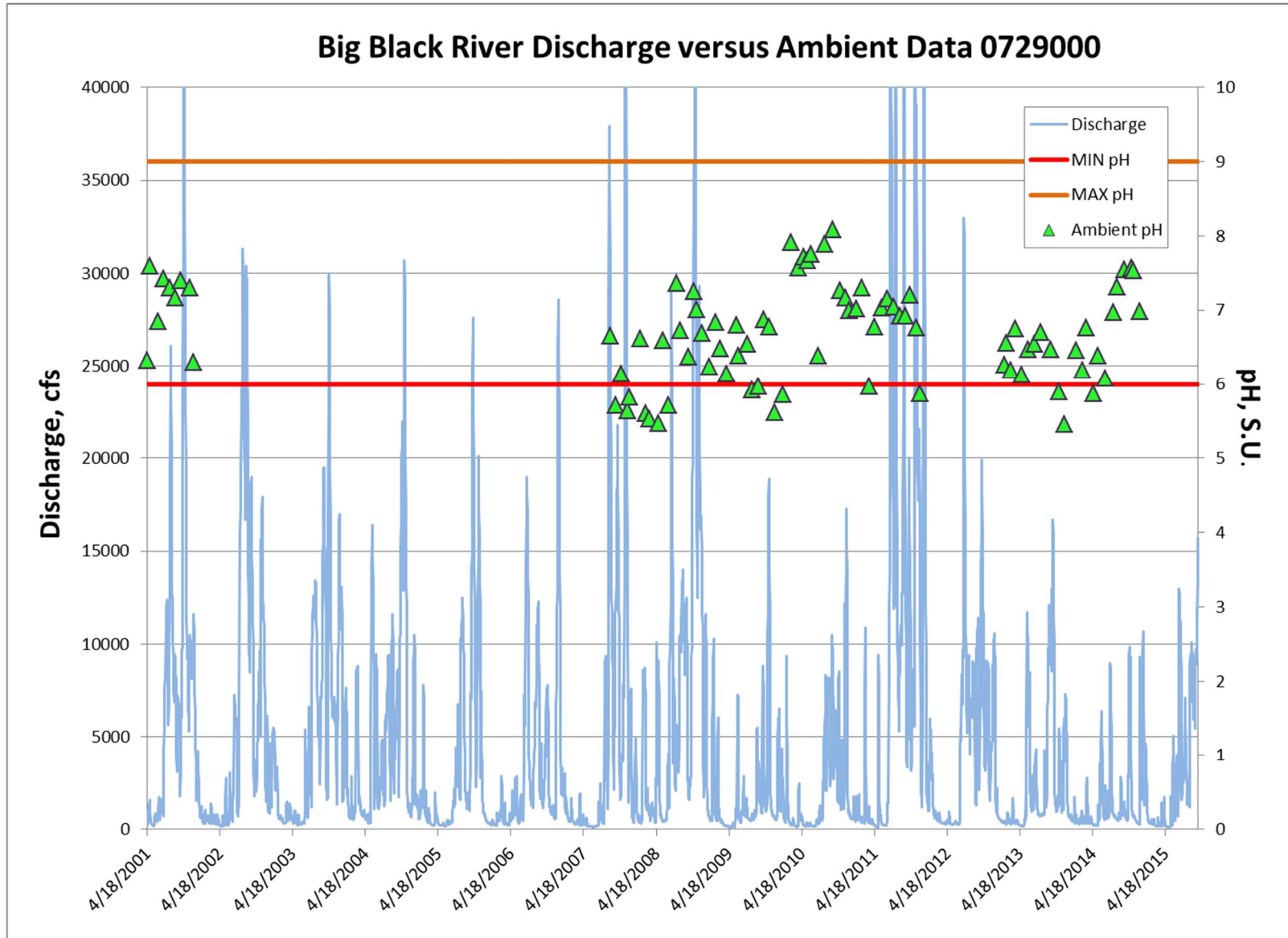


Figure 5. Big Black River Ambient pH Data and Discharge Data

Table 4. Ambient pH Violations versus USGS Discharge Data (07290000)

| Date | pH Value | Average discharge measured (cfs) |
|------------|----------|----------------------------------|
| 9/27/2007 | 5.72 | 557 |
| 11/27/2007 | 5.64 | 295 |
| 12/4/2007 | 5.82 | 310 |
| 2/25/2008 | 5.6 | 9390 |
| 3/12/2008 | 5.53 | 2970 |
| 4/29/2008 | 5.47 | 6180 |
| 6/19/2008 | 5.72 | 457 |
| 8/12/2009 | 5.92 | 1140 |
| 9/10/2009 | 5.97 | 525 |
| 12/3/2009 | 5.62 | 1530 |
| 1/12/2010 | 5.86 | 240 |
| 3/21/2011 | 5.97 | 6690 |
| 12/1/2011 | 5.87 | 619 |
| 10/28/2013 | 5.9 | 294 |
| 11/25/2013 | 5.46 | 1030 |
| 4/22/2014 | 5.87 | 24200 |

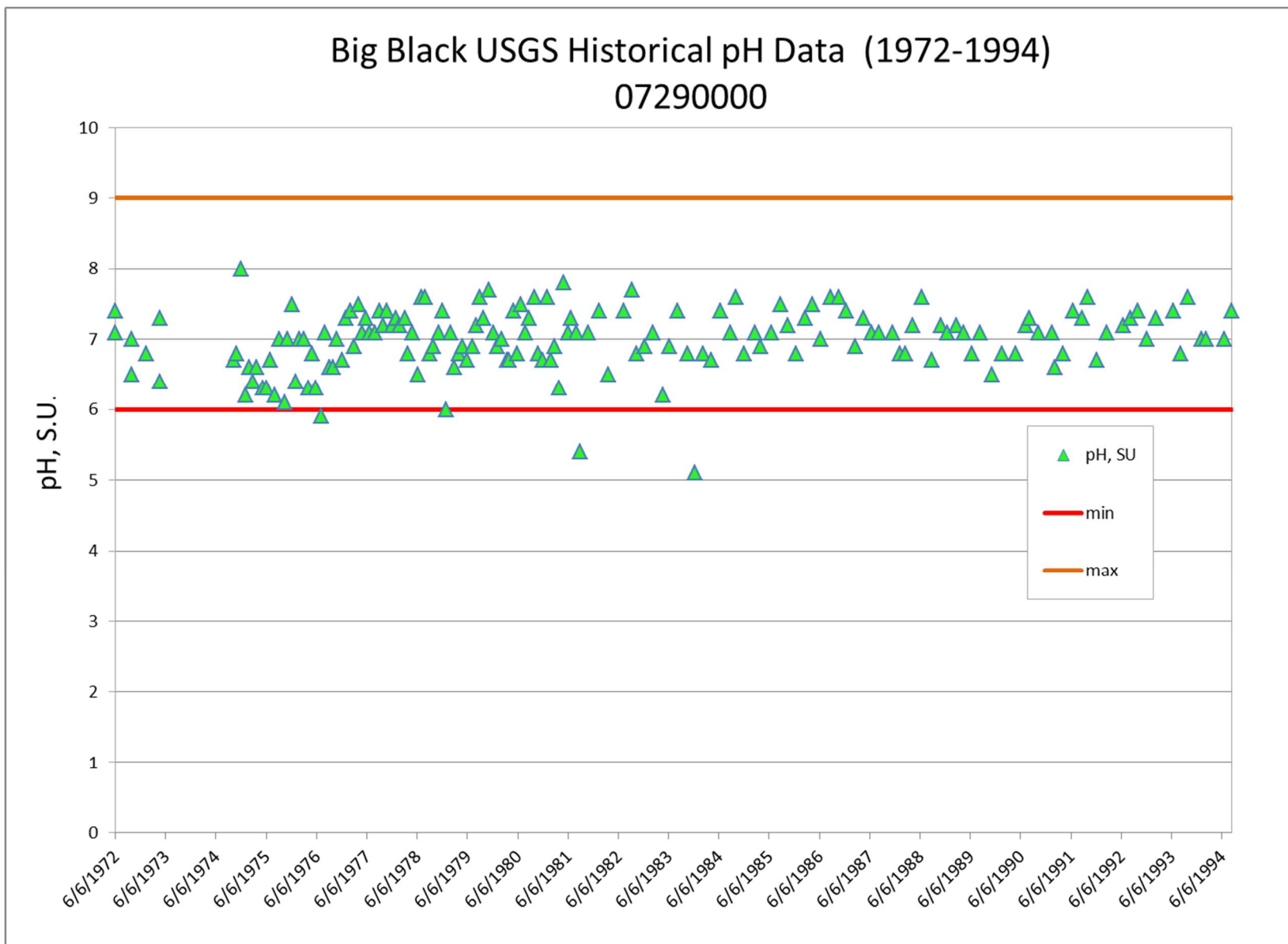


Figure 6. Big Black River Historical USGS pH Data (1972-94)

Table 5 below summarizes the pH violations by season. 18.8% of the pH measurements did not meet water quality standards. These violations occurred throughout the year with no specific pattern, and are shown in Table 6 according to the season that was violated. Only the violations for station 0729000 are shown. All of the ambient monitoring data are included in Appendix A. After reviewing all available data, including the historical data, it is believed the pH values do not correlate with any particular season or discharge of flow. There is insufficient information available to determine the cause for the lower pH values; however, probable causes may be attributed to stormwater runoff from fertilized soils for cropland, failed septic tanks, noncompliant point sources, and inactive natural gas pipelines.

Table 5. Assessment Table for Ambient pH

| Data Window | Number of Samples | Number of samples not meeting water quality standards (low pH) | Percentage of data not meeting water quality standards |
|-------------|-------------------|--|--|
| 2007 - 2014 | 85 | 16 | 18.8% |

Table 6. The Big Black River Ambient pH Violations by Season

| Date | pH Value | Season Violated* |
|------------|----------|------------------|
| 9/27/2007 | 5.72 | fall |
| 11/27/2007 | 5.64 | fall |
| 12/4/2007 | 5.82 | winter |
| 2/25/2008 | 5.6 | winter |
| 3/12/2008 | 5.53 | spring |
| 4/29/2008 | 5.47 | spring |
| 6/19/2008 | 5.72 | summer |
| 8/12/2009 | 5.92 | summer |
| 9/10/2009 | 5.97 | fall |
| 12/3/2009 | 5.62 | winter |
| 1/12/2010 | 5.86 | winter |
| 3/21/2011 | 5.97 | spring |
| 12/1/2011 | 5.87 | winter |
| 10/28/2013 | 5.9 | fall |
| 11/25/2013 | 5.46 | fall |
| 4/22/2014 | 5.87 | spring |

*Dec-Feb (winter), Mar-May (spring), Jun-Aug (summer), Sep-Nov (fall)

Source Identification

NPDES Dischargers

There are 90 point sources (126 outfalls) in the watershed. The point sources are shown in Figure 7 and Table 7. Currently, there are 64 that are active and 63 that are inactive. It is noted that an inactive point source is a NPDES facility that is not in use or is closed. An inactive point source may be reactivated when needed. There are data available for 72 of the point sources (active and inactive). Almost all of the discharge monitoring report (DMR) data are within the 6.0 S.U. to 9.0 S.U. range which is the water quality standard. Of the available DMR data, 9 facilities showed pH violations. These facilities and the DMR data are shown in Figure 8. All the available DMR data (violations and non-violations) are included in Appendix B for review.

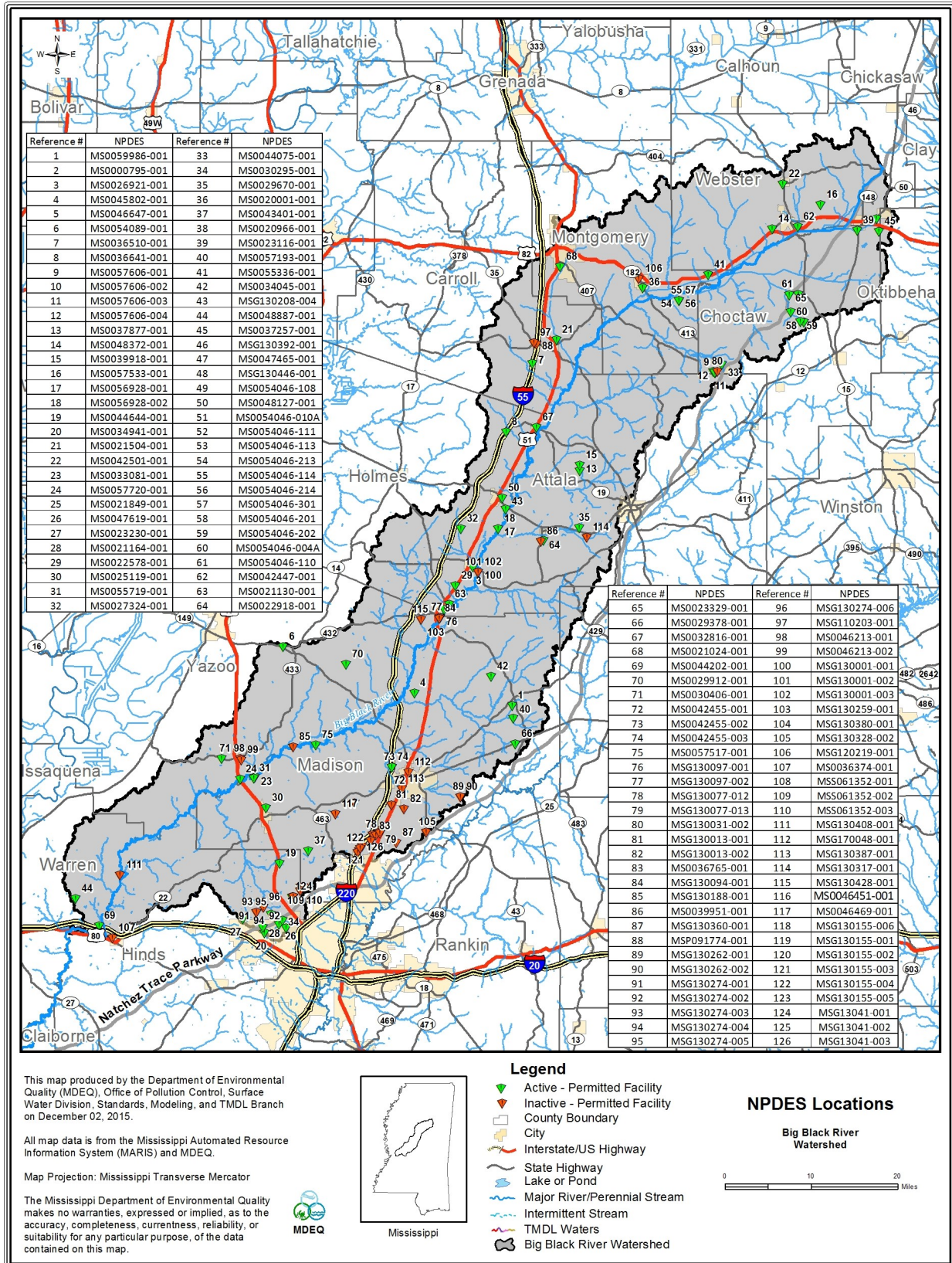


Figure 7. NPDES for the Big Black River Watershed

Table 7. NPDES Permitted Sources

| Agency ID | Name | Permit | County | Description | Ref # on Figure 4 |
|-----------|--|-----------|---------|--|-------------------|
| 19343 | Madison County School District, North Madison County Elementary School | MS0059986 | Madison | Outfall 001 (Treated domestic wastewater) | 1 |
| 6235 | Burrows Paper Corporation | MS0000795 | Holmes | Outfall 001 (Process Wastewater, Seal Water, and Non-contact Cooling Water) | 2 |
| 13152 | Goodman POTW | MS0026921 | Holmes | Outfall 001 (Domestic/ Municipal Wastewater) | 3 |
| 14093 | Duncan M Gray Episcopal Camp and Conference Center | MS0045802 | Madison | Outfall 001 (Treated Domestic Wastewater) | 4 |
| 14117 | Environmental Quality Management Services, Southern Oaks Subdivision | MS0046647 | Hinds | Outfall 001 (Domestic Wastewater) | 5 |
| 14335 | BMW Enterprises LLP, Benton Truck Stop | MS0054089 | Yazoo | Outfall 001 (Domestic Wastewater) | 6 |
| 13873 | MDOT, Interstate 55 South, Rest Area, Carroll | MS0036510 | Carroll | Outfall 001 (Domestic wastewater) | 7 |
| 13878 | MDOT, Interstate 55 North, Rest Area, Holmes | MS0036641 | Holmes | Outfall 001 (Domestic Wastewater) | 8 |
| 15595 | GenOn Wholesale Generation LP, Choctaw County Generating Station | MS0057606 | Choctaw | Outfalls 001, 002, 003, 004 (Discharges include facility stormwater and treated sanitary wastewater) | 9-12 |
| 13896 | Mississippi Baptist Convention Board, Central Hills Baptist Retreat | MS0037877 | Attala | Outfall 001 (Treated domestic wastewater) | 13 |
| 14175 | Central Mississippi Inc, Eupora Headstart Center | MS0048372 | Webster | Outfall 001 (Domestic Wastewater) | 14 |

| Agency ID | Name | Permit | County | Description | Ref # on Figure 4 |
|-----------|---|-----------|---------|--|-------------------|
| 13956 | Mississippi District Assemblies of God, Indian Springs Campground | MS0039918 | Holmes | Outfall 001 (Domestic wastewater) | 15 |
| 15667 | Church of God of Prophecy, Kamp Kumbaya | MS0057533 | Webster | Outfall 001 (Domestic Wastewater) | 16 |
| 12502 | Entergy Mississippi Attala Plant | MS0056928 | Attala | Outfalls 001, 002 (Cooling Tower Blowdown) | 17,18 |
| 14060 | Cock of the Walk | MS0044644 | Hinds | Outfall 001 (Domestic Wastewater) | 19 |
| 13843 | Hurricane Bay Car Wash | MS0034941 | Hinds | Outfall 001 (Treated Car Wash Effluent) | 20 |
| 13430 | Vaiden POTW | MS0021504 | Carroll | Outfall 001 (Treated Domestic Wastewater) | 21 |
| 13443 | Walthall POTW | MS0042501 | Webster | Outfall 001 (Municipal Wastewater) | 22 |
| 12204 | West Madison Utility District | MS0033081 | Madison | Outfall 001 (Treated domestic wastewater) | 23 |
| 13026 | Bentonia POTW | MS0057720 | Yazoo | Outfall 001 (Domestic/ Municipal Wastewater) | 24 |
| 13610 | Methodist Childrens Homes | MS0021849 | Hinds | Outfall 001 (Domestic Wastewater) | 25 |
| 13068 | Clinton Briars POTW | MS0047619 | Hinds | Outfall 001 (Domestic/ Municipal Wastewater) | 26 |
| 13071 | Clinton POTW, Lovett | MS0023230 | Hinds | Outfall 001 (Domestic/ Municipal Wastewater) | 27 |
| 13072 | Clinton POTW, Northeast | MS0021164 | Hinds | Outfall 001 (Domestic/ Municipal Wastewater) | 28 |

| Agency ID | Name | Permit | County | Description | Ref # on Figure 4 |
|-----------|--|-----------|------------|--|-------------------|
| 13620 | Holmes County School District, Goodman Pickens Elementary School | MS0022578 | Holmes | Outfall 001 (Domestic Wastewater) | 29 |
| 13134 | Flora POTW | MS0025119 | Madison | Outfall 001 (Municipal Wastewater) | 30 |
| 13135 | Flora POTW | MS0055719 | Madison | Outfall 001 (Treated Domestic Wastewater) | 31 |
| 13656 | Mississippi Department of Wildlife Fisheries and Parks, Holmes County State Park | MS0027324 | Holmes | Outfall 001 (Domestic wastewater) | 32 |
| 13140 | French Camp POTW | MS0044075 | Choctaw | Outfall 001 (Municipal Wastewater) | 33 |
| 13199 | Jackson POTW, Presidential Hills | MS0030295 | Hinds | Outfall 001 (Domestic/ Municipal Wastewater) | 34 |
| 13706 | Attala County Schools, McAdams High School | MS0029670 | Attala | Outfall 001 (Treated Domestic wastewater) | 35 |
| 13210 | Kilmichael POTW | MS0020001 | Montgomery | Outfall 001 (Treated Domestic wastewater) | 36 |
| 13214 | Lake Lorman POTW | MS0043401 | Madison | Outfall 001 (Treated domestic wastewater) | 37 |
| 13237 | Maben POTW | MS0020966 | Choctaw | Outfall 001 (Domestic Wastewater Discharge) | 38 |
| 13252 | Mathiston POTW | MS0023116 | Webster | Outfall 001 (Domestic/ Municipal Wastewater) | 39 |
| 15088 | Madison County School District, North Madison Middle School | MS0057193 | Madison | Outfall 001 (Treated Domestic Wastewater) | 40 |
| 14389 | 4D Grocery and Carwash | MS0055336 | Montgomery | Outfall 001 (Treated Carwash Effluent) | 41 |

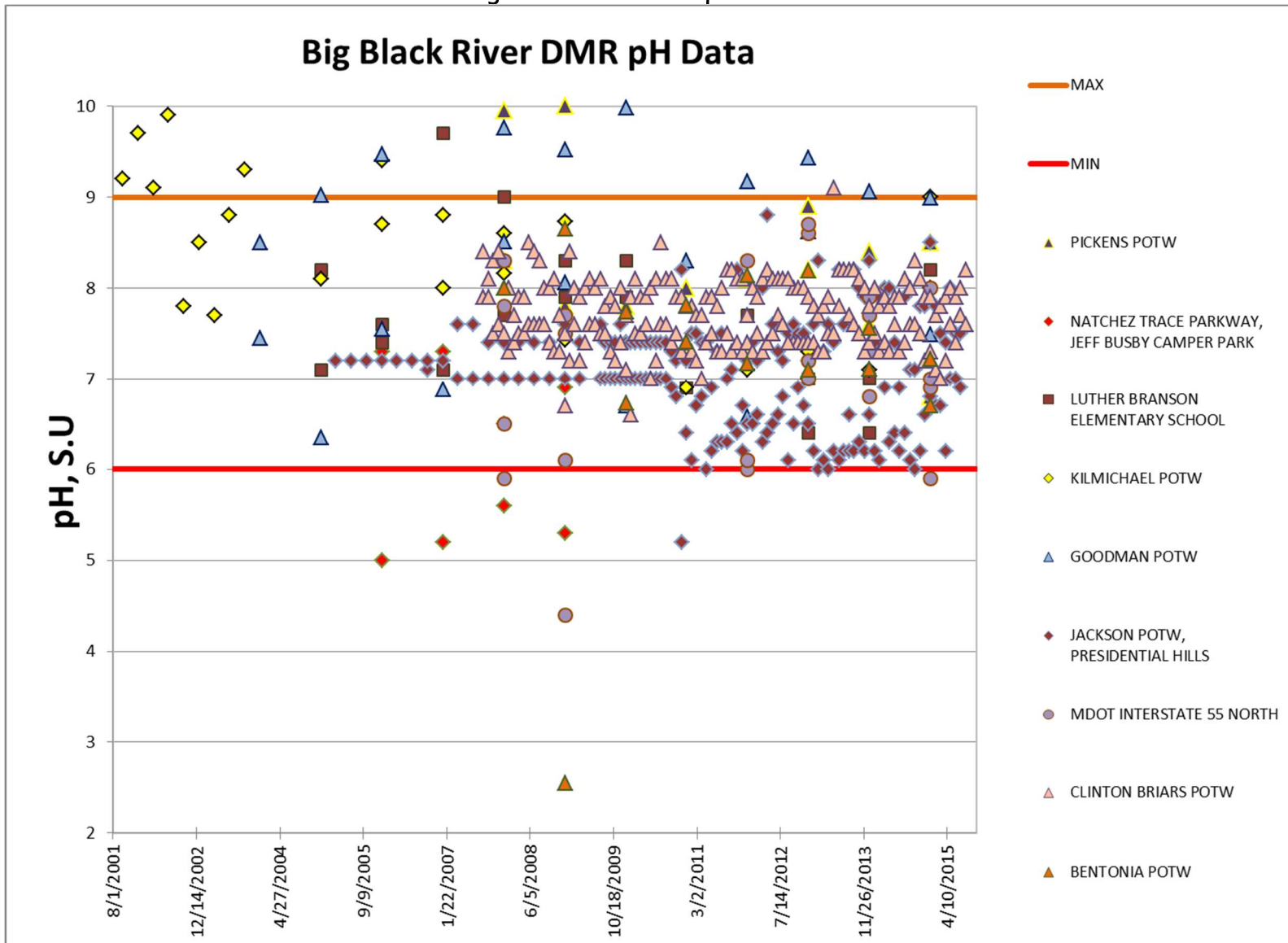
| Agency ID | Name | Permit | County | Description | Ref # on Figure 4 |
|-----------|---|-----------|---------|--|-------------------|
| 13816 | Madison County School District, Velma Jackson School | MS0034045 | Madison | Outfall 001 (Domestic Wastewater Discharge) | 42 |
| 3902 | Culkin Water Treatment Facility | MS0048887 | Warren | Outfall 001 (Industrial Wastewater) | 44 |
| 2195 | Sansing Meat Service | MS0037257 | Choctaw | Outfall 001 (Process Wastewater) | 45 |
| 5317 | Texas Eastern Transmission LP, Clinton Compressor Station | MSG130392 | Hinds | Outfall 001 (Hydrostatic Test Discharging) | 46 |
| 5317 | Texas Eastern Transmission LP, Clinton Compressor Station | MS0047465 | Hinds | Outfall 001 (Non-process Wastewater) | 47 |
| 5317 | Texas Eastern Transmission LP, Clinton Compressor Station | MSG130446 | Hinds | Outfall 001 (Hydrostatic Testing Discharge) | 48 |
| 676 | Mississippi Lignite Mining Company | MS0054046 | Choctaw | Outfalls 108, 010A, 111, 113, 213, 114, 201, 214, 202, 110, 004A (Stormwater Runoff) | 49, 51-61 |
| 13115 | Durant POTW | MS0048127 | Holmes | Outfall 001 (Domestic/ Municipal Wastewater) | 50 |
| 13124 | Eupora POTW | MS0042447 | Webster | Outfall 001 (Municipal Wastewater) | 62 |
| 13339 | Pickens POTW | MS0021130 | Holmes | Outfall 001 (Domestic/ Municipal Wastewater) | 63 |
| 13637 | Attala County Schools, Long Creek Elementary School | MS0022918 | Attala | Outfall 001 (Domestic Wastewater) | 64 |
| 13640 | Natchez Trace Parkway, Jeff Busby Camper Park | MS0023329 | Choctaw | Outfall 001 (Domestic Wastewater) | 65 |

| Agency ID | Name | Permit | County | Description | Ref # on Figure 4 |
|-----------|--|-----------|------------|--|-------------------|
| 13691 | Madison County School District, Luther Branson Elementary School | MS0029378 | Madison | Outfall 001 (Domestic Wastewater Discharge) | 66 |
| 13452 | West POTW | MS0032816 | Holmes | Outfall 001 (Domestic/ Municipal Wastewater) | 67 |
| 13455 | Winona POTW | MS0021024 | Montgomery | Outfall 001 (Treated Domestic Wastewater) | 68 |
| 1573 | Ceres Industrial Interplex | MS0044202 | Warren | Outfall 001(Treated Effluent Wastewater) | 69 |
| 13714 | Yazoo County School District, Linwood Elementary School | MS0029912 | Yazoo | Outfall 001 (Treated Domestic Wastewater) | 70 |
| 13725 | Yazoo County School District, Bentonia Gibbs School | MS0030406 | Yazoo | Outfall-001 (Domestic wastewater) | 71 |
| 13051 | Canton Municipal Utilities, Hydrograph Controlled Release POTW | MS0042455 | Madison | Outfalls 001, 002, 003 (Treated Domestic Wastewater) | 72-74 |
| 15644 | Canton Municipal Utilities, Beatties Bluff Wastewater Treatment Facility | MS0057517 | Madison | Outfall 001 (Treated Domestic Wastewater) | 75 |
| 19215 | Southern Natural Gas Company, Big Black River Replacement Project, 2nd North Main Pipeline | MSG130097 | Holmes | Outfall 001, 002 (Hydrostatic Testing Discharge) | 76,77 |
| 18295 | Mississippi Major Economic Impact Authority, Water Transmission Line | MSG130077 | Madison | Outfall 012, 013 (Hydrostatic Testing Discharge) | 78,79 |
| 16994 | Texas Eastern Transmission LP, McCool Rockport Road and Highway 407 | MSG130031 | Choctaw | Outfall 002 (Hydrostatic Test Discharge) | 80 |
| 16846 | Enmark Energy Inc, Nissan Automotive Plant | MSG130013 | Madison | Outfalls 001, 002 (Hydrostatic Test Discharge) | 81,82 |
| 10047 | Central Mississippi Industrial Park | MS0036765 | Madison | Outfall 001 (Industrial Wastewater) | 83 |

| Agency ID | Name | Permit | County | Description | Ref # on Figure 4 |
|-----------|--|-----------|------------|---|-------------------|
| 19094 | Southern Natural Gas Company, Big Black River Replacement Project, Gwinville Pickens Main Line | MSG130094 | Holmes | Outfall 001 (Hydrostatic Testing Discharge) | 84 |
| 36177 | Denbury Onshore LLC, Tinsley 24 Inch CO2 Pipeline Project | MSG130188 | Madison | Outfall 001 (Hydrostatic Testing Discharge) | 85 |
| 13957 | Central Mississippi Inc, Barlow Headstart Center | MS0039951 | Attala | Outfall 001 (Domestic Wastewater) | 86 |
| 57541 | Denbury Onshore LLC, South Gluckstadt 24 Inch Pipeline | MSG130360 | Madison | Outfall 001 (Hydrostatic Test Discharge) | 87 |
| 14980 | Stuckeys of Vaiden Inc | MSP091774 | Carroll | Outfall 001 (Remediated Groundwater) | 88 |
| 49617 | Denbury Resources Inc, Trace Dehydration Facility | MSG130262 | Madison | Outfalls 001,002 (Hydrostatic Test Discharge) | 89,90 |
| 52435 | Texas Eastern Transmission LP, Union Church Site 4 DOT Replacement | MSG130274 | Hinds | Outfall 001, 002, 003,004,005,006 (Hydrostatic Testing Discharge) | 91-96 |
| 16317 | APAC Tennessee Inc, Vaiden | MSG110203 | Carroll | Outfall 001 | 97 |
| 11748 | Memphis Hardwood Flooring Company, Bentonia Facility | MS0046213 | Yazoo | Outfall 001,002 - Overflow from Log Spray Recirculation Pond | 98,99 |
| 12791 | TPS McAdams LLC | MSG130001 | Holmes | Outfalls 001, 002, 003 Hydrostatic Test Discharge- | 100,101,102 |
| 49365 | Southern Natural Gas Company, 12 Inch Gwinville Pickens Loop Line Replacement | MSG130259 | Holmes | Outfall 001 Hydrostatic Test Discharge- | 103 |
| 62603 | Gulf South Pipeline Company LP, Hydrostatic Test Discharge PN 4017 | MSG130380 | Madison | Outfall 001 (Hydrostatic Test Discharge) | 104 |
| 55590 | Denbury Onshore LLC, 8-3 Valve to Tinsley CO2 Pipeline | MSG130328 | Madison | Outfall 002 (Hydrostatic Test Discharge) | 105 |
| 25087 | PELA GeoEnvironmental Inc, Kilmichael One Stop | MSG120219 | Montgomery | Outfall 001 (Remediated Groundwater) | 106 |

| Agency ID | Name | Permit | County | Description | Ref # on Figure 4 |
|-----------|--|-----------|---------|---|-------------------|
| 13118 | Edwards POTW, West | MS0036374 | Hinds | Outfall 001 (Domestic / Municipal Wastewater) | 107 |
| 40389 | NCL Waste LLC, North County Line Landfill | MSS061352 | Madison | Outfalls 001,002,003 (Non-contact Stormwater) | 108,109,110 |
| 64919 | Gulf South Pipeline Company LP, Hydrostatic Test Discharge PN 4699 | MSG130408 | Warren | Outfall 001 (Hydrostatic Test Discharge) | 111 |
| 1846 | Scott Penn Inc, Canton Woodyard | MSG170048 | Madison | Outfall 001 - (Overflow from log spray recirculation pond) | 112 |
| 63501 | Gulf South Pipeline Company LP, Hydrostatic Test Discharge PN 4581 | MSG130387 | Madison | Outfall 001 (Hydrostatic Test Discharge) | 113 |
| 55277 | Texas Gas Transmission LLC, 36 Inch Greenville Kosciusko Pipeline | MSG130317 | Attala | Outfall 001 (Hydrostatic Test Discharge) | 114 |
| 66376 | Southern Natural Gas Company, North Main Loop Line Replacement | MSG130428 | Yazoo | Outfall 001 (Hydrostatic Test Discharge) | 115 |
| 13052 | Canton Municipal Utilities, Lake Caroline Northeast Facility | MS0046451 | Madison | Outfall 001 (Treated domestic wastewater) | 116 |
| 13053 | Canton Municipal Utilities, Lake Caroline Southwest Facility | MS0046469 | Madison | Outfall 001 (Treated Domestic Wastewater) | 117 |
| 22935 | Texas Eastern Transmission LP, Park Way East Pipeline Replacement Project | MSG130155 | Madison | Outfalls 001, 002, 003, 004, 005, 006 (Hydrostatic Testing Discharge) | 118-123 |
| 23405 | Texas Eastern Transmission LP, 2006 Clinton Discharge SCC Retest Lines 14 and 18 | MSG13041 | Hinds | Outfalls 001, 002, 003 (Hydrostatic Test Discharge) | 124-126 |

Figure 8. Available DMR pH Violations



Total Maximum Daily Load (TMDL)

A TMDL establishes the total pollutant load a water body can receive and still achieve water quality standards. The components of a TMDL include a WLA for point sources, a LA for non-point sources, and a margin of safety (MOS) to account for uncertainty. 40 CFR.130.2(i) provides flexibility concerning how TMDLs are expressed and suggests that they may be expressed in terms of mass per time, toxicity, or other appropriate measure. For this TMDL as well as other pH TMDLs that have been established by MDEQ, it has been determined that the appropriate measure for the allocation should be in terms of pH standard units.

Wasteload Allocation

There are 90 point sources that are identified for this watershed. For future dischargers to discharge to this watershed or to tributaries in the watershed, effluent pH levels should be no less than 6.0 s.u. and no greater than 9.0 s.u. and shall not cause the pH to rapidly change more than 1 unit s.u. This is a standard NPDES permit requirement.

Load Allocation

The nonpoint sources causing or contributing to pH violations are unknown, but probable causes may be attributed to stormwater runoff from fertilized soils for cropland, failed septic tanks, noncompliant point sources, and inactive natural gas pipelines. The load allocation for this TMDL suggests that the pH of waters originating from any nonpoint source in the watershed shall be no less than 6.0 s.u. and no greater than 9.0 s.u. if possible based on the natural conditions found in the watershed.

Margin of Safety

The margin of safety in TMDLs is used to account for the lack of knowledge concerning the relationship between the pollutant loads and the resulting quality of the receiving water body. The allocations used in this TMDL ensure that loads from any point source(s) and loads originating from any non-point source activities must individually meet the pH target of 6.0 to 9.0 s.u. before entering the stream. As long as pH from both point and non-point source activities are consistent with the allocations in this TMDL, water quality standards will be met.

Seasonal Variation

The allocation proposed for this TMDL provides for year-round protection (i.e., protection during all seasons and environmental conditions) of the pH criteria. Based on the available data and information, critical conditions for this TMDL could not be determined. However, considering that this TMDL is protective during all seasons and environmental conditions, it will inherently be protective during critical conditions whenever they occur.

Recommendations

The wasteload allocation for this TMDL is considered and used by MDEQ through its NPDES permitting process. This TMDL recommends further monitoring from the point sources in their DMRs. The TMDL also recommends further ambient monitoring within the stream.

Achieving the load allocation will require a better understanding of the causes and sources of the low pH. Future monitoring and data collection should provide insight regarding the potential causes of the low pH in this watershed.

Next Steps

MDEQ has adopted the Basin Approach to Water Quality Management, a plan that divides Mississippi's major drainage basins into five groups. During each yearlong cycle, MDEQ resources for water quality monitoring will be focused on one of the basin groups. During the next monitoring phase in the Big Black River Basin, these watersheds may receive additional monitoring to identify any changes or improvements in water quality.

Public Participation

This TMDL will be published for a 30-day public notice. During this time, the public will be notified by publication in the newspaper. The public will be given an opportunity to review the TMDL and submit comments. MDEQ also distributes all TMDLs at the beginning of the public notice to those members of the public who have requested to be included on a TMDL mailing list. Anyone wishing to become a member of the TMDL mailing list should contact Mike Freiman at mfreiman@deq.state.ms.us.

All comments should be directed to Mike Freiman at mfreiman@deq.state.ms.us or Mike Freiman, MDEQ, PO Box 2261, Jackson, MS 39201. All comments received during the public notice period and at any public hearings become a part of the record of this TMDL and will be considered in the submission of this TMDL to EPA Region 4 for final approval.

References

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APPENDIX A

(Ambient pH Data for Station 07290000 2001-2014)

| STATION_ID | ACTIVITY_DATE | pH |
|------------|------------------|-------|
| 07290000 | 04/19/2001 13:03 | 6.33 |
| 07290000 | 05/02/2001 11:25 | 7.6 |
| 07290000 | 06/12/2001 10:50 | 6.85 |
| 07290000 | 07/10/2001 11:50 | 7.43 |
| 07290000 | 08/09/2001 10:50 | 7.3 |
| 07290000 | 09/07/2001 13:11 | 7.17 |
| 07290000 | 10/04/2001 11:25 | 7.4 |
| 07290000 | 11/19/2001 11:35 | 7.3 |
| 07290000 | 12/05/2001 11:20 | 6.3 |
| 07290000 | 08/29/2007 10:15 | 6.65 |
| 07290000 | 09/27/2007 10:20 | 5.72* |
| 07290000 | 10/24/2007 10:00 | 6.14 |
| 07290000 | 11/27/2007 10:00 | 5.64 |
| 07290000 | 12/04/2007 09:50 | 5.82 |
| 07290000 | 01/28/2008 10:05 | 6.62 |
| 07290000 | 02/25/2008 10:30 | 5.6 |
| 07290000 | 03/12/2008 09:25 | 5.53 |
| 07290000 | 04/29/2008 10:20 | 5.47 |
| 07290000 | 05/22/2008 10:15 | 6.59 |
| 07290000 | 06/19/2008 10:20 | 5.72 |
| 07290000 | 07/28/2008 10:10 | 7.37 |
| 07290000 | 08/14/2008 10:10 | 6.73 |
| 07290000 | 09/25/2008 10:30 | 6.37 |
| 07290000 | 10/22/2008 10:20 | 7.26 |
| 07290000 | 11/06/2008 10:25 | 7.01 |
| 07290000 | 12/02/2008 09:30 | 6.69 |
| 07290000 | 01/08/2009 09:50 | 6.24 |
| 07290000 | 02/09/2009 10:06 | 6.84 |
| 07290000 | 03/04/2009 10:15 | 6.48 |
| 07290000 | 04/07/2009 10:20 | 6.14 |
| 07290000 | 05/26/2009 10:05 | 6.8 |
| 07290000 | 06/03/2009 10:15 | 6.39 |
| 07290000 | 07/21/2009 10:15 | 6.55 |
| 07290000 | 08/12/2009 10:20 | 5.92 |
| 07290000 | 09/10/2009 10:30 | 5.97 |
| 07290000 | 10/07/2009 09:40 | 6.87 |
| 07290000 | 11/05/2009 10:30 | 6.78 |
| 07290000 | 12/03/2009 10:35 | 5.62 |
| 07290000 | 01/12/2010 10:40 | 5.86 |
| 07290000 | 02/23/2010 10:15 | 7.91 |
| 07290000 | 03/30/2010 10:55 | 7.57 |
| 07290000 | 04/29/2010 10:00 | 7.72 |
| 07290000 | 05/18/2010 10:20 | 7.67 |
| 07290000 | 06/02/2010 10:25 | 7.76 |

| STATION_ID | ACTIVITY_DATE | pH |
|------------|------------------|------|
| 07290000 | 07/08/2010 10:20 | 6.39 |
| 07290000 | 08/10/2010 10:25 | 7.89 |
| 07290000 | 09/22/2010 10:25 | 8.09 |
| 07290000 | 10/28/2010 10:45 | 7.27 |
| 07290000 | 11/22/2010 10:05 | 7.17 |
| 07290000 | 12/13/2010 10:45 | 7 |
| 07290000 | 01/18/2011 10:20 | 7.02 |
| 07290000 | 02/15/2011 09:55 | 7.3 |
| 07290000 | 03/21/2011 10:45 | 5.97 |
| 07290000 | 04/18/2011 10:05 | 6.78 |
| 07290000 | 05/23/2011 09:30 | 7.04 |
| 07290000 | 06/23/2011 09:54 | 7.16 |
| 07290000 | 07/21/2011 10:15 | 7.05 |
| 07290000 | 08/25/2011 09:20 | 6.92 |
| 07290000 | 09/22/2011 11:30 | 6.93 |
| 07290000 | 10/12/2011 11:00 | 7.2 |
| 07290000 | 11/15/2011 10:00 | 6.77 |
| 07290000 | 12/01/2011 09:55 | 5.87 |
| 07290000 | 01/28/2013 10:05 | 6.27 |
| 07290000 | 02/06/2013 10:10 | 6.56 |
| 07290000 | 02/28/2013 10:15 | 6.19 |
| 07290000 | 03/26/2013 09:40 | 6.75 |
| 07290000 | 04/25/2013 09:20 | 6.13 |
| 07290000 | 05/28/2013 09:55 | 6.47 |
| 07290000 | 06/27/2013 09:35 | 6.54 |
| 07290000 | 07/30/2013 09:45 | 6.71 |
| 07290000 | 09/18/2013 09:16 | 6.47 |
| 07290000 | 10/28/2013 09:31 | 5.9 |
| 07290000 | 11/25/2013 09:08 | 5.46 |
| 07290000 | 01/23/2014 08:00 | 6.46 |
| 07290000 | 02/26/2014 09:00 | 6.19 |
| 07290000 | 03/14/2014 08:25 | 6.76 |
| 07290000 | 04/22/2014 09:15 | 5.87 |
| 07290000 | 05/13/2014 08:20 | 6.39 |
| 07290000 | 06/18/2014 09:11 | 6.08 |
| 07290000 | 07/29/2014 09:05 | 6.97 |
| 07290000 | 08/18/2014 08:50 | 7.32 |
| 07290000 | 09/24/2014 08:48 | 7.55 |
| 07290000 | 10/28/2014 09:30 | 7.57 |
| 07290000 | 11/10/2014 08:53 | 7.53 |
| 07290000 | 12/12/2014 09:17 | 6.99 |

*Yellow denotes violations