



STATE OF MISSISSIPPI
MUNICIPAL SEPARATE
STORM SEWER SYSTEM (MS4) PERMIT



For the Discharge of Storm Water in Accordance with the National Pollutant Discharge Elimination System

THE CITY OF JACKSON
HINDS COUNTY

HAS BEEN GRANTED THIS PERMIT TO DISCHARGE STORM WATER FROM MUNICIPAL SEPARATE STORM SEWER SYSTEMS INTO STATE WATERS

in accordance with effluent limitations, inspection requirements and other conditions set forth in herein. This permit is issued in accordance with the provisions of the Mississippi Water Pollution Control Law (Section 49-17-1 et seq., Mississippi Code of 1972), and the regulations and standards adopted and promulgated thereunder, and under authority granted pursuant to Section 402(b) of the Federal Water Pollution Control Act.

Mississippi Environmental Quality Permit Board

Authorized Signature

Mississippi Department of Environmental Quality

Date Permit Issued: July 2, 2012

Permit No. MSS049786

Date Permit Expires: June 30, 2017

Agency Interest # 16788

Table of Contents

ACT1 (Jackson MS4) Permit Applicability:	
Narrative Requirements	
Permit Area	1
Discharges Authorized by This Permit	1
Discharges Not Authorized by This Permit	2
ACT2 (Jackson MS4) Reapplication Requirements:	
Submittal/Action Requirements	
Duty to Reapply	4
Continuation of an Expired Permit.....	4
Contents of MS4 Reapplication	4
Failure to Reapply:.....	4
ACT3 (Jackson MS4) Special Conditions:	
Narrative Requirements	
Discharges to Water Quality Impaired Waters and Total Maximum Daily Load Allocations	5
Discharge Compliance with Water Quality Standards	5
ACT4 (Jackson MS4) Total Maximum Daily Loads	
Narrative Requirements	
Requirements	6
ACT5 (Jackson MS4) Storm Water Management Program (SWMP):	
Submittal/Action Requirements	
Requirements	7
ACT6 (Jackson MS4) Best Management Practices, Measurable Goals and Implementation Schedules for the Six Minimum Measures:	
Submittal/Action Requirements	
Public Education and Outreach on Storm Water Impacts	8
Public Involvement/Participation.....	9
Illicit Discharge Detection and Elimination	10
Construction Site Storm Water Runoff Control	14
Post Construction Storm Water Management in New Development and Redevelopment	19
Pollution Prevention/Good Housekeeping for Municipal Operations	21
Reviewing and Updating Storm Water Management Program	30
Failure to Implement Storm Water Management Program	32
ACT7 (Jackson MS4) Procedures Necessary to Implement the Six Minimum Measures:	
Submittal/Action Requirements	
Public Education and Outreach on Storm Water Impacts	33
Public Involvement/Participation	33
Illicit Discharge Detection and Elimination	33
Construction Site Storm Water Runoff Control	35
Post Construction Storm Water Management in New Development and Redevelopment	36
Pollution Prevention/Good Housekeeping for Municipal Operations	37

Table of Contents

ACT8 (Jackson MS4) General Enforcement Requirements and Enforcement Response Plan:	
Submittal/Action Requirements	
Requirements	38
ACT9 (JACKSON MS4) Limitations, Inspections, Evaluations, Reporting and Recordkeeping:	
Limitation Requirements	
Storm Water Discharge Limitations	41
Recordkeeping Requirements	
Annual Reports	41
Deadline to Submit Annual Report	43
Recordkeeping	43
Submittal/Action Requirements	
Ambient Monitoring Requirements	44
Annual Inspection of Municipal Operations	45
Annual Storm Water Management Program Evaluation	45
ACT10 (Jackson MS4) Standard Permit Conditions:	
Narrative Requirements	
Duty to Comply	46
Expiration of Permit	46
Duty to Mitigate	46
Duty to Provide Information	46
Signatory Requirements	46
Duly Authorized Representative	47
Changes in Authorization	47
Certification	47
Oil and Hazardous Substance Liability	47
Property Rights	48
Severability	48
Proper Operation and Maintenance	48
Bypass Prohibition	48
Upset Conditions	49
Noncompliance Reporting	49
Inspection and Entry	49
Permit Actions	50
Scientific, Technical and Legal Environmental Assistance	50
Reopener Clause	51
ACT11 (Jackson MS4) Definitions:	52
APPENDICES	56

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT1 (Jackson MS4) Permit Applicability:

Narrative Requirements:

Condition No.	Condition
T-1	<p>PERMIT AREA:</p> <p>The permit covers all areas located within the political boundary of the City of Jackson, Mississippi. [WPC-1 Chapter One]</p>
T-2	<p>DISCHARGES AUTHORIZED BY THIS PERMIT:</p> <p>(1) The permitting of the City of Jackson's storm sewer system is required as a result of the U.S. Environmental Protection Agency's Phase I Storm Water Rule. This permit authorizes storm water discharges from the City of Jackson's Municipal Separate Storm Sewer System (MS4), as defined in 40 CFR 122.26(b)(7), to waters of the State.</p> <p>(2) The discharges of storm water commingled with discharges authorized by and in compliance with separate NPDES permits are authorized under this permit.</p> <p>(3) The discharge of emergency discharges required to prevent imminent threat to human health or prevent severe property damage, provided reasonable and prudent measures have been taken to minimize the impact of the discharge, are authorized under this permit. Emergency discharges must be reported to the Mississippi Department of Environmental Quality (MDEQ) in accordance with the noncompliance reporting procedures outlined in ACT10. [WPC-1 Chapter One]</p>
T-3	<p>(4) This permit authorizes the following non-storm water discharges provided: (1) they do not cause or contribute to a violation of water quality standards, (2) that the Executive Director of the Mississippi Department of Environmental Quality (MDEQ) has not identified the non-storm water discharges as causing or contributing to a violation of State Water Quality Standards or City ordinances and (3) the City of Jackson is implementing the Storm Water Management Program as set forth in ACT5 of this permit:</p> <ul style="list-style-type: none">- Water line flushing- Landscape irrigation- Diverted stream flows- Rising ground waters- Uncontaminated ground water infiltration (infiltration is defined as water other than wastewater that enters a storm sewer system, including -sewer service connections and foundation drains, from the ground through such means as defective pipes, pipe joints, connections, or manholes. Infiltration does not include, and is distinguished from, inflow). [WPC-1 Chapter One]

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT1 (continued):

Narrative Requirements:

Condition No.	Condition
---------------	-----------

- T-4
 - Uncontaminated pumped ground water
 - Discharges from potable water sources
 - Foundation drains
 - Uncontaminated air conditioning or compressor condensate and coil wash water with no detergents or additives
 - Irrigation water
 - Springs
 - Water from crawl space pumps
 - Footing drains
 - Lawn watering runoff
 - Water from individual residential car washing
 - Flows from riparian habitats and wetlands
 - Dechlorinated swimming pool discharges
 - Street wash water
 - Discharges or flows from fire fighting activities
 - Fire hydrant flushings
 - External building wash downs which do not use detergents. [WPC-1 Chapter One]

T-5 DISCHARGES NOT AUTHORIZED BY THIS PERMIT:

Non-storm water discharges, including spills, to the MS4 are prohibited except where discharges are allowable under the previous section of this ACT. This permit does not authorize:

- (1) Storm water discharges that are mixed with non-storm water unless such non-storm water discharges are in compliance with a separate NPDES permit.
- (2) Storm water discharges that are mixed with non-storm water discharges and that are determined to be a substantial contributor of pollutants to waters of the United States.
- (3) Storm water discharges associated with industrial activity as defined in 40 CFR 122.26(b)(14)(i) - (ix) and (xi). [WPC-1 Chapter One]

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT1 (continued):

Narrative Requirements:

Condition No.	Condition
T-6	<p data-bbox="220 605 1604 636">(4) Storm water discharges associated with construction activity as defined in 40 CFR 122.26(b)(14)(x) or 40 CFR 122.26(b)(15).</p> <p data-bbox="220 667 1961 812">(5) Discharges or discharge-related activities that are likely to jeopardize the continued existence of any species that is listed as endangered or threatened under the Endangered Species Act (ESA) or result in the adverse modification or destruction of habitat that is designated as critical under the ESA. Discharges under this permit are authorized only if the City of Jackson's storm water discharges, allowable non-storm water discharges, and discharge-related activities are not likely to jeopardize the continued existence of any species that is listed as endangered or threatened ("listed") under the ESA or result in the adverse modification or destruction of habitat that is designated as critical under the ESA ("critical habitat").</p> <p data-bbox="220 846 1915 932">(6) Implementation of a Storm Water Management Program (SWMP) which directly and adversely affect properties listed or eligible for listing in the National Register of Historic Places, unless the regulated entity is in compliance with requirements of the National Historic Preservation Act and has coordinated any necessary activities to avoid or minimize such direct and adverse impacts with the appropriate State Historic Preservation Officer.</p> <p data-bbox="220 966 1915 1023">(7) Storm water discharges, which result in violation of State Water Quality Standards (see ACT3, DISCHARGE COMPLIANCE WITH WATER QUALITY STANDARDS). [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT2 (Jackson MS4) Reapplication Requirements for the City of Jackson's Municipal Separate Storm Sewer System (MS4):

Submittal/Action Requirements:

Condition No.	Condition
S-1	<p>DUTY TO REAPPLY:</p> <p>The City of Jackson shall submit a new application 180 days before this existing permit expires. The fourth year annual report shall be deemed to fulfill the reapplication requirements. [WPC-1 Chapter One]</p>
S-2	<p>CONTINUATION OF AN EXPIRED PERMIT:</p> <p>Where a complete reapplication package has been submitted, as required by this permit, and the permit expires without a permit being reissued, conditions of this permit will continue in effect until the Permit Board makes a final determination regarding reissuance of this permit. [WPC-1 Chapter One]</p>
S-3	<p>CONTENTS OF JACKSON'S MUNICIPAL SEPARATE STORM SEWER SYSTEM REAPPLICATION:</p> <p>The reapplication for the City of Jackson's individual NPDES Storm Water Permit shall be signed in accordance with ACT10, T-5 of this permit. The fourth year annual report shall be the principal reapplication document. In addition to the fourth year annual report, the following basic information shall be included in the reapplication:</p> <ul style="list-style-type: none">(1) The names, titles, phone numbers, mail codes and email addresses of the primary administrative and technical permittee contacts.(2) An organizational chart with roles and responsibilities for Jackson's Storm Water Management Program (SWMP) for each department or division.(3) A list of receiving waters that are on the latest State of Mississippi 303(d) list of impaired waters. [WPC-1 Chapter One]
S-4	<p>FAILURE TO REAPPLY:</p> <p>Failure to submit a reapplication package as required by this permit in accordance with State and Federal Law and Regulations will result in violations of State Law. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT3 (Jackson MS4) Special Conditions:

Narrative Requirements:

Condition No.	Condition
T-1	<p>DISCHARGES TO WATER QUALITY IMPAIRED WATERS AND TOTAL MAXIMUM DAILY LOAD (TMDL) ALLOCATIONS:</p> <p>If there are storm water discharges to a 303(d) listed impaired waterbody or a waterbody with a Total Maximum Daily Load (TMDL), the SWMP must include a section describing how the program will control the discharge of the pollutants of concern and not cause or contribute to violations of water quality standards. The required description must identify specific measures and Best Management Practices (BMPs) that will be implemented to collectively control the discharge of the pollutants of concern so as not to cause or contribute to violations of water quality standards. During the term of the permit (5 years), additional measures may be required when a TMDL has been specified for a receiving waterbody or when a Watershed Management Plan has been adopted for a watershed. [WPC-1 Chapter One]</p>
T-2	<p>DISCHARGE COMPLIANCE WITH WATER QUALITY STANDARDS</p> <p>Discharges must not be causing or have the reasonable potential to cause or contribute to a violation of a water quality standard. If a discharge authorized under this permit is later determined to cause or have the reasonable potential to cause or contribute to the violation of an applicable water quality standard, MDEQ will notify the regulated entity of such water quality violation(s) in writing and will provide the public information used by MDEQ to make this determination. The regulated entity must take all necessary actions required by their SWMP to ensure future discharges do not cause or contribute to the violation of a water quality standard and document these actions in the SWMP. If such violations remain or re-occur, then additional measures such as the modification or addition of BMPs will be required by the Permit Board. Compliance with this requirement does not preclude any enforcement activity as provided by the Clean Water Act for the underlying violation. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT4 (Jackson MS4) Total Maximum Daily Loads (TMDLs):

Narrative Requirements:

Condition No.	Condition
T-1	<p data-bbox="210 600 1974 722">As defined in ACT11, Total Maximum Daily Load (TMDL) means the calculated maximum permissible pollutant loading to a water body at which water quality standards can be maintained. TMDLs are the sum of wasteload allocations (WLAs) and load allocations (LAs) for any given pollutant. TMDLs have been established by MDEQ for the following receiving streams/pollutants within the City of Jackson's MS4. The following WLAs identify storm water runoff from the City of Jackson's MS4 as a potential source of pollutant loading to the above referenced receiving streams.</p> <p data-bbox="210 747 1533 844">Pearl River - Sediment (from Ross Barnett Reservoir spillway to confluence with Strong River) Pearl River - Total Nitrogen and Total Phosphorus (entire traverse through Hinds County) Hanging Moss Creek - Nutrients and Organic Enrichment/Low Dissolved Oxygen (from Headwaters to Pelahatchie Creek)</p> <p data-bbox="210 868 1974 1023">The TMDL load assessments note that properly designed and well-maintained storm water Best Management Practices (BMPs) are expected to provide attainment of the water quality standards for these streams. The Measurable Goals, BMPs and compliance schedules and procedures outlined in ACTs 5, 6 and 7 of this permit were selected to address the TMDLs established for the above referenced receiving streams. Compliance with these permit conditions should meet the established waste load allocations for non-point source runoff from the City of Jackson MS4. Copies of the full TMDL reports are included in the Appendices A, B and C of this permit. The City will be notified by MDEQ if additional TMDLs are established subsequent to permit issuance. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT5 (Jackson MS4) Storm Water Management Program (SWMP):

Submittal/Action Requirements:

Condition No.	Condition
S-1	<p>REQUIREMENTS:</p> <p>The City of Jackson must continue to implement and enforce a Storm Water Management Program (SWMP) designed to reduce the discharge of pollutants from the Municipal Separate Storm Sewer System (MS4) to the Maximum Extent Practicable (MEP) to protect water quality and to satisfy applicable water quality requirements of the Clean Water Act. The SWMP shall comprise six elements or minimum measures that, when implemented in concert, are expected to result in significant reductions of pollutants discharged into receiving waterbodies.</p> <p>The City of Jackson's SWMP will continue to be improved and modified as the program is evaluated annually and over subsequent five-year permit cycles. Therefore, the City of Jackson must review the existing SWMP and make necessary changes in order to be consistent with the current SWMP requirements found in this permit. A revised SWMP must be attached to the first annual report required by ACT6 of this permit.</p> <p>The City's Storm Water Management Program, at a minimum, must be implemented for all areas located within the political boundary of the City of Jackson. The program is not required to address discharges to the MS4 that occur outside the City of Jackson's jurisdiction (not owned or operated by the City of Jackson). [WPC-1 Chapter One]</p>
S-2	<p>In previous permits the City was required to develop measurable goals to be included in the SWMP. This is no longer the case. The conditions of ACT6 prescribe the specific measurable goals, BMPs and implementation schedules that the City is required to implement as part of its SWMP. Therefore, in an effort to avoid duplication and potential confusion, the City is no longer required to repeat these requirements in its SWMP document, unless the City chooses to implement more stringent requirements.</p> <p>Therefore, consistent with the recommendations contained in EPA's MS4 Permit Improvement Guide, dated April 2010 (Document No. EPA 833-R-10-001), the primary purpose of the City's SWMP is to contain the documents and procedures necessary for the City of Jackson to implement the conditions of ACT6. The minimum requirements that must be contained in the procedures and documents are found in ACT7. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (Jackson MS4) Best Management Practices, Measurable Goals and Implementation Schedules for the Six Minimum Control Measures:

Submittal/Action Requirements:

Condition No.	Condition
S-1	<p data-bbox="222 639 1104 669">(1) PUBLIC EDUCATION AND OUTREACH ON STORM WATER IMPACTS:</p> <p data-bbox="222 699 1938 784">The City of Jackson shall implement programs to educate their community on the pollution potential of common activities, and increase awareness of the direct links between land activities, rainfall-runoff and storm drains to their local water resources. It should provide the public with clear guidance on steps and specific actions that they can take to reduce their storm water pollution-potential. At a minimum, the City shall implement the following measurable goals:</p> <p data-bbox="222 816 1959 901">(A) The City shall distribute storm water educational brochures to target audiences listed below. A minimum of 300 brochures shall be distributed once every two years through direct mailouts, workshop handouts, permit review meetings, event booth handouts (i.e., Earth Day, Waterfest), public meetings (i.e., ward, precinct) and/or electronic mailouts. Target audiences for the City's educational brochures shall include:</p> <ul data-bbox="222 933 653 1442" style="list-style-type: none"><li data-bbox="222 933 396 963">(i) Homeowners<li data-bbox="222 995 369 1024">(ii) Engineers<li data-bbox="222 1057 560 1086">(iii) Contractors and developers<li data-bbox="222 1118 525 1148">(iv) Automobile repair shops<li data-bbox="222 1180 474 1209">(v) Painting contractors<li data-bbox="222 1242 525 1271">(vi) Construction companies<li data-bbox="222 1304 386 1333">(vii) Architects<li data-bbox="222 1365 575 1395">(viii) Lawn/landscape companies<li data-bbox="222 1427 653 1456">(ix) Restaurants. [WPC-1 Chapter One]

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-2	<p>(x) Municipal workers responsible for park maintenance, landscaping, automobile repairs, street and drainage repairs, and other activities</p> <p>(B) The City shall present storm water educational information to the community through public meetings. The City shall make a presentation to each precinct at least three (3) times per year.</p> <p>(C) The City shall continue to maintain and annually update its Stormwater Management Program website, http://www.jacksonms.gov/government/publicworks, to provide educational resources for the public. MDEQ may, at its discretion, provide or suggest information for the website.</p> <p>(D) The City shall perform annual storm water training for municipal personnel involved in implementing its Storm Water Management Plan.</p> <p>(E) The City shall submit an Annual Report in the approved format to MDEQ by the 28th day of each January for the previous calendar year. The report shall include the status of the City's efforts in meeting each measurable goal of this minimum measure listed above. [WPC-1 Chapter One]</p>
S-3	<p>(2) PUBLIC INVOLVEMENT/PARTICIPATION:</p> <p>The City of Jackson shall implement a program to provide opportunities to engage and involve the public in process of community storm water management. At a minimum, the City shall implement the following measurable goals:</p> <p>(A) The City shall continue to maintain and update its SWMP website to provide the public with a mechanism to report complaints relating to storm water issues. The City shall log the number of complaints received, the results of complaint investigations and the corrective actions taken.</p> <p>(B) The City shall coordinate a storm drain marking program to inform the public that the drainage goes to surface waters. The drain marking can be performed by the City or by community volunteer groups. A minimum of 60 previously unmarked drains shall be marked per year.</p> <p>(C) Within the first 2 years of this permit term, the City shall inspect the approximately 2,200 drains marked in previous efforts and re-mark any that are missing markers or that have illegible markers. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-4	<p>(D) The City shall sponsor and/or participate in at least 17 community events related to protecting storm water within the community. These events may include Earth Day, Waterfest, Great American Clean-Up, stream clean-ups, waste collection days and precinct meetings.</p> <p>(E) The City shall continue to operate and promote, via its website and handouts, the Environmental Service Center for the collection of recyclable materials. This provides an alternative to illegal dumping.</p> <p>(F) The City shall submit an Annual Report in the approved format to MDEQ by the 28th day of each January for the previous calendar year. The report shall include the status of the City's efforts in meeting each measurable goal of this minimum measure listed above. [WPC-1 Chapter One]</p>
S-5	<p>(3) ILLICIT DISCHARGE DETECTION AND ELIMINATION:</p> <p>The City of Jackson shall develop, implement and enforce a program to detect, and eliminate illicit discharges (see Definitions) into the City's MS4. Storm water ordinances shall be the regulatory mechanism to implement the program elements of this minimum measure. The City will continue to implement the following program elements.</p> <p>(A) Within 120 days of permit issuance, the City shall provide MDEQ with a report, documenting its investigation of the MS4 outfalls identified as containing excessive pollutants in Table 1 of the April 2009 MS4 Outfall Field Screening Evaluation Report prepared by Neel-Schaffer (Appendix H). The City's report should identify the outfall, the steps used to identify the source of the illicit discharge, the source of the illicit discharge, the date the illicit discharge was eliminated or a schedule when it will be eliminated and a description of any enforcement action taken.</p> <p>(B) Maintain the City's storm sewer system map by updating it to reflect additions and/or revisions to the system. The map shall show the information listed below, if applicable. At a minimum, the map shall be reviewed and updated annually. The City shall document the results of these reviews/updates. A revised storm sewer system map must be attached to the first annual report required by ACT9 of this permit, with an updated copy submitted electronically annually thereafter.</p> <p>(i) MS4 outfalls</p> <p>(ii) Drainage areas</p> <p>(iii) Location and name of receiving water bodies. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-6	<p>(iv) Dry weather field screening stations with an individual alphanumeric identifier</p> <p>(v) Map scale for distance</p> <p>(vi) Priority areas, such as:</p> <ul style="list-style-type: none">(a) Areas with older infrastructure that are more likely to have illicit connections;(b) Industrial, commercial, or mixed use areas;(c) Areas with a history of past illicit discharges;(d) Areas with a history of illegal dumping;(e) Areas with onsite sewage disposal systems;(f) Areas with older sewer lines or a history of sewer overflows or cross-connections; and(g) Areas upstream of sensitive waterbodies. <p>(C) One-fifth of the 120 mapped and designated outfalls on the storm sewer system map will be screened annually for illicit discharges and improper disposal within the watershed of Hanging Moss Creek receiving priority. At the end of the five year permit cycle all outfalls will have been screened. The 16 designated outfalls within the Hanging Moss Creek watershed will be screened annually. In addition, if the City is made aware of non-storm water discharges that occur during the permit term outside of the annually screened areas, the City must include field screening stations in those areas also. [WPC-1 Chapter One]</p>
S-7	<p>(D) The illicit discharge or improper disposal will be investigated within ten (10) days of discovery.</p> <p>(E) A log shall document, at a minimum, the location of the illicit discharge or improper disposal, the date of discovery, result of routine screening or complaint investigation, any sampling data, and date of corrective action. A follow-up inspection shall be required once the illicit discharge has been reported eliminated. Field inspection forms similar to that found in Appendix D shall be used to provide the information to complete the required log. A summary of the inspections and the number of illicit discharges and improper disposal sites eliminated shall be documented.</p> <p>(F) Perform dry weather screenings of storm sewer system outfalls in priority areas that may represent more likely sources of illicit discharges (i.e., older neighborhoods with deteriorating storm drain systems or which may have a higher likelihood of cross connections with the sanitary sewer system). The inspection procedures, inspection reports, and enforcement actions shall be evaluated annually. Dry weather screening shall consist of field observations and monitoring at selected stations. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-8	<p>(G) Monitoring requirements- If the discharge cannot be identified and no likely source is determined then water quality sampling can be used to determine whether the flow is likely to have resulted from an illicit discharge. At a minimum, the City is required to conduct an analysis for ammonia and detergent-surfactants. Ammonia and detergent-surfactants are the best parameters to detect sewage which in the City of Jackson is documented to be the most numerous illicit discharge.</p> <p>If the type of discharge still cannot be determined, then at a minimum, the analysis shall include the parameters of fluoride and potassium. This will aid in determining if the discharge is from a potable water source or an industrial or commercial waste source. Samples must be collected and analyzed consistent with the procedures required by 40 CFR Part 136.</p> <p>(H) Develop benchmark concentration levels for analytical monitoring results whereby exceedance of the benchmark will require follow-up investigations to be conducted to identify and eliminate the source causing the exceedance of the benchmark.</p> <p>(I) Train new City inspectors upon initial hiring or assignment (i.e. before conducting inspections) and provide refresher training to all inspectors every five years to ensure they are knowledgeable on how to identify illicit connections and discharges. A training log of lecture content and attendance shall be maintained by the City.</p> <p>(J) Continue to implement the countywide emergency spill response program that addresses spills and leaks. This program is coordinated through City fire, police, the County Sheriff and the Mississippi Emergency Management Agency and MDEQ. Response to emergency spills and leaks shall be immediate. A copy of this program must be included in the SWMP. [WPC-1 Chapter One]</p>
S-9	<p>(K) Continue to maintain and operate the City of Jackson's Environmental Service Center to provide a means for the public to properly dispose of oil, antifreeze, pesticides, herbicides, paints, solvents, and other potentially harmful chemicals.</p> <p>(L) Collect containerized trash and debris at least weekly.</p> <p>(M) Provide, collect, and maintain litter receptacles in strategic public areas, especially during major public events.</p> <p>(N) Implement the comprehensive solid waste management program, which involves reducing, recycling, and composting municipal solid waste. The City shall document the waste reduction achieved each year. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-10	<p>NPDES Storm Water Permitted Industrial Facilities:</p> <p>(A) Maintain the inventory of all industrial storm water facilities that are connected to the City of Jackson's storm sewer system. For the purpose of this permit, industrial storm water facilities are those regulated under MDEQ's Baseline, Mining, Hot Mix Asphalt, Ready-Mix Concrete Storm Water General Permits. The City shall review and update the list on an annual basis. The results of the annual review shall be documented.</p> <p>(B) Maintain a list of potential industrial spill locations. A GIS database with locations of facilities, subject to the reporting requirements of Section 313 of SARA Title III, shall be maintained so that when the field screening takes place, cross correlation is possible with any chemicals detected. At a minimum the database shall be reviewed and updated annually.</p> <p>(C) Inspect, at a minimum, one-fifth (1/5) of industrial storm water facilities identified in (B) each year. The purpose of the inspection is to identify existing or potential illicit discharges or other prohibited practices found in the City's Stormwater Ordinance. Any enforcement response shall be according to the City's Enforcement Response Plan (ERP). The results of the inspections shall be documented in the Industrial Facility Inspection Report Form contained in Appendix F. [WPC-1 Chapter One]</p>
S-11	<p>(D) Include a prioritized list of facilities that have a high, medium, or low potential to pollute storm water runoff in the Fourth Annual Report. This priority list will be based on facility inspections by the City and documented in the Industrial Facility Inspection Reports. This list will aid in the prioritization of inspections in the next permit cycle. For example, the industrial facilities that are in the high priority category will have a more frequent inspection requirement.</p> <p>(E) The City shall use information documented in the Industrial Facility Inspection Report form found in Appendix F to maintain the inventory of industrial facilities, the list of potential spill locations, documentation of facility inspections, and the prioritization of potential polluters.</p> <p>(F) The City shall submit an Annual Report in the approved format to MDEQ by the 28th day of each January for the previous calendar year. This report shall include the status of the City's efforts in meeting the every measurable goal of the minimum measure listed above. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-12	<p data-bbox="220 605 982 634">(4) CONSTRUCTION SITE STORM WATER RUNOFF CONTROL:</p> <p data-bbox="220 664 1932 722">The City of Jackson shall implement and enforce the SWMP to reduce pollutants in storm water runoff to the storm water conveyance system from construction activities. Storm water ordinances shall be the regulatory mechanism to implement the program elements of this minimum measure.</p> <p data-bbox="220 751 751 781">(A) The following discharges shall be prohibited:</p> <ul style="list-style-type: none"> <li data-bbox="220 813 1087 842">(i) Wastewater from washout of concrete unless managed by appropriate controls <li data-bbox="220 875 1293 904">(ii) Discharges from dewatering of trenches and excavations unless managed by appropriate controls <li data-bbox="220 937 1608 966">(iii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials <li data-bbox="220 998 1209 1027">(iv) Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance <li data-bbox="220 1060 873 1089">(v) Soaps or solvents used in vehicle and equipment washing <li data-bbox="220 1122 1178 1151">(vi) Wastewater from sanitary facilities, including portable toilets. [WPC-1 Chapter One]
S-13	<p data-bbox="220 1170 1932 1346">(B)The City of Jackson shall require each owner or contractor disturbing one acre of land by clearing, grading or excavating (or other land disturbing activities) to submit a site specific storm water management plan for review and approval prior to the issuance of a building permit. The acreage threshold may be less if the activity involves a "larger common plan of development or sale" (see Definitions), where the total acreage is based on a cumulative planned disturbance greater than one (1) acre. The City must document the number of site plans reviewed and indicate which are active at any specific time. The plans shall address the following minimum components that must be in accordance with the design standards set forth in the most current edition of "Erosion Control, Sediment Control and Stormwater Management on Construction sites and Urban Areas (Three Volumes)."</p> <ul style="list-style-type: none"> <li data-bbox="220 1378 1932 1502">(i) Vegetative practices shall be designed to preserve existing vegetation where possible and re-vegetate disturbed areas as soon as practicable after grading or construction. Such practices may include, but are not limited to, surface roughening, temporary seeding, permanent seeding, mulching, sod stabilization, vegetative buffer strips, and protection of trees. When a disturbed area will be left undisturbed for 14 days or more, the appropriate temporary or permanent vegetative practices shall be implemented within 7 calendar days. [WPC-1 Chapter One]

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-14	<p>(ii) Structural practices shall divert flows from exposed soils, store flows or otherwise limit runoff from exposed areas. Such practices may include, but are not limited to, construction entrance/exit, straw bale dikes, silt fences, earth dikes, brush barriers, drainage swales, check dams, subsurface drains, pipe slope drains, level spreaders, drain inlet protection, outlet protection, detention/retention basins, sediment traps, temporary sediment basins or equivalent sediment controls.</p> <p>(iii) For drainage locations (a drainage point at boundary of land disturbing activity) that serve an area with ten (10) or more disturbed acres at one time, a temporary (or permanent) sediment basin providing at least 3600 cubic feet (133 cubic yards) of storage per acre drained shall be provided until final stabilization (see Definitions) of the site. Sediment basins must be installed before major site grading and utilize outlet structures that withdraw water from the surface and that are designed for a minimum 2-year, 24-hour storm event. If flocculants are being introduced, sediment basins must be downstream of the point of introduction and include baffles to increase sediment removal efficiency and turbidity reduction. [WPC-1 Chapter One]</p>
S-15	<p>(iv) A description of post-construction control measures for projects that disturb one (1) or more acres. Post-construction control measures should be installed to control pollutants in storm water after construction is complete. These controls include, but are not limited to, one or more of the following: on-site infiltration of runoff, flow attenuation using open vegetated swales, exfiltration trenches and natural depressions, constructed wetlands and retention/detention structures. Where needed, velocity dissipation devices shall be placed at detention or retention pond outfalls and along the outfall channel to provide for a non-erosive flow.</p> <p>(v) A description and list of practices appropriate to prevent pollutants from entering storm water from construction sites because of poor housekeeping. Specific areas shall be designated for equipment maintenance and repair and concrete chute wash off. In addition, the plan shall provide for: waste receptacles at convenient locations, regular collection of waste, protected storage areas for chemicals, paints, solvents, fertilizers, and other potentially toxic materials and adequately maintained sanitary facilities.</p> <p>(vi) A scaled site map shall be prepared showing boundaries of property and proposed construction activity, original and proposed contours (if practicable), drainage patterns, adjacent receiving water bodies, north arrow, all erosion and sediment controls (vegetative and structural), any post-construction control measures, and location of housekeeping practices. If the construction project is a linear construction project (e.g., pipeline, highway, etc.), a scaled site map is not required, however standard diagrams (e.g., cross sections showing dimensions and labeled components) of erosion and sediment controls to be used must be submitted. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-16	<p>(C) The City shall require proof of issuance of applicable MDEQ approvals/permits prior to City approval of the Stormwater Management Plan. Examples of the MDEQ approval/permit coverage are as follows:</p> <ul style="list-style-type: none">(i) Small Construction General Permit: Coverage for land disturbances of one (1) acre to less than five (5) acres. Coverage is required for disturbances less than one acre if part of a larger common plan of development or sale.(ii) Large Construction General Permit: Coverage for land disturbances of five (5) acres and greater. Coverage is required for disturbances less than five acres if part of a larger common plan of development or sale.(iii) Registration Form for Residential Lot Coverage and Large Construction General Permit coverage number for residential lots in subdivision covered under a Large Construction General Permit. [WPC-1 Chapter One]
S-17	<p>(D) The City shall require proof of issuance of applicable U. S. Army Corps of Engineers approval or permits prior to City approval if waters of the United States are being filled, rerouted or dammed.</p> <p>(E) The City shall inspect all construction sites with a disturbed area of 2,000 square feet and greater in order to enforce the proper implementation of the storm water management plan. At a minimum, the inspections shall take place prior to land disturbance (to ensure all necessary erosion and sediment controls are in place), during site grading and at the time of the following building code inspections: Foundation, Framing and Final. At the conclusion of the project, the City must inspect all projects to ensure that all graded areas have reached final stabilization and that all temporary control measures are removed. Additional inspections for sites five (5) acres and greater and for sites on one (1) acre and greater that are adjacent to perennial water bodies shall be required after a 2-year 24-hour storm event.</p> <p>(F) The City shall use the Stormwater Construction Site Inspection Report Form found in Appendix E and distribute it to City construction site inspectors. This form shall be completed by the City for each site inspection in order to document the number of construction site inspections performed and number and description of enforcement cases handled. Inspection findings must be documented and maintained for review by MDEQ. In addition, the City must revise as necessary the written procedures outlining the inspection procedures. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-18	<p>The form and procedures shall reflect the purpose of the site inspections, which are to:</p> <ul style="list-style-type: none">(i) Ensure all necessary erosion and sediment controls have been selected, installed, implemented, and maintained according to the storm water management plan and according to design standards set forth in the most current edition of "Erosion Control, Sediment Control and Stormwater Management on Construction sites and Urban Areas (Three Volumes)."(ii) Ensure all the inspections have been conducted with the specified frequencies.(iii) Ensure the site has have reached final stabilization and that all temporary control measures are removed.(iv) Assess compliance with the stormwater management plan and applicable ordinances.(v) Assess the appropriateness of planned control measures and their effectiveness.(vi) Visually observe and record non-storm water discharges, potential illicit connections, and potential discharge of pollutants in storm water runoff.(vii) Provide education and outreach on storm water pollution prevention, as needed.(viii) Procedures outlining the steps, including enforcement measures that will be followed in addressing deficiencies with construction site BMPs and/or their implementation (i.e., re-inspection, enforcement). The procedures must include a mechanism to elevate enforcement of problem sites to MDEQ. These procedures must significantly adhere to the City's ERP found in ACT8. [WPC-1 Chapter One]
S-19	<p>(G) Conduct appropriate education and training measures for city personnel that review storm water management plans and inspect construction sites. Personnel training conducted to meet the requirements of this ACT shall be documented. Training records shall include employee's name and/or worker identification number, date of training, contents of training, an indication whether it was initial or refresher training and the employee's signature acknowledging that training was received. The City shall document details regarding construction inspector training.</p> <p>Initial training for all personnel that are responsible for implementing and/or complying with the requirements of this permit shall be performed within twelve (12) months of permit issuance. Newly hired employees responsible for implementing and/or complying with the requirements of this permit shall receive initial training prior to performing such responsibilities. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-20	<p>All employees responsible for implementing and/or complying with the requirements of the storm water management plan and the City of Jackson storm water ordinances permit shall receive refresher training at least every five (5) years. Refresher training, at a minimum, shall include a discussion of preferred controls, regulation changes and any policy, permit or procedure updates. In addition, significant changes that affect the implementation of the SWMP shall be communicated to inspectors immediately.</p> <p>(H) The City shall conduct appropriate education and training for contractors and/or require verification that contractors have received training in the proper installation of erosion and sediment controls and know the requirements of the City of Jackson ordinance and the submitted storm water management plan before building permits can be issued. The City must document the number of training classes provided to contractors and developers. For those contractors that do not go through a City training program, the City shall document names of said contractor, the type of training received and the mechanism used to verify training.</p> <p>(I) The City shall enforce the ordinances requiring the submittal of a storm water management plan for construction sites and for the control of erosion on privately owned vacant property. [WPC-1 Chapter One]</p>
S-21	<p>(J) The City shall conduct an annual review of ordinances that address construction activities for needed updates and revisions and shall submit for adoption within one (1) year of permit issuance. Amendments shall be submitted to MDEQ for review 30 days before proposed adoption.</p> <p>(i) The City shall update the Stormwater Quality Protection Ordinance (Sec. 122-305(g)) to reflect that coverage under the State construction storm water general permit is required for sites of one (1) acre or more, rather than five (5) acres.</p> <p>(ii) The City shall update the Stormwater Quality Protection Ordinance (Sec. 122-305(g)) to reflect that erosion and sediment control plan shall be required prior to any grading or other earthwork which affects an area larger than 2,000 square feet. The parenthetical "but less than 5 acres" must be deleted.</p> <p>(K) The City shall submit an Annual Report in the approved format to MDEQ by the 28th day of each January for the previous calendar year. The report shall include the status of the City's efforts in meeting each measurable goal of this minimum measure listed above. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-22	<p data-bbox="220 605 1554 636">(5) POST-CONSTRUCTION STORM WATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT:</p> <p data-bbox="220 662 1984 755">The City of Jackson shall implement and enforce a program to address post-construction storm water management in new development and redevelopment projects that disturb greater than or equal to one (1) acre, including projects less than one (1) acre that are part of a larger common plan of development or sale, that discharge into the City of Jackson's MS4.</p> <p data-bbox="220 781 772 812">The City must develop or implement the following:</p> <p data-bbox="220 837 1743 868">(A) Storm water Ordinances shall be the regulatory mechanism to address post construction runoff from new development and redevelopment.</p> <p data-bbox="220 894 1984 1019">At a minimum the City shall require drainage calculation to be submitted to them for new development and redevelopment that analyses storm water runoff before and after the proposed development. The storm water rates from the completed construction improvements shall not exceed the pre-construction runoff rates plus one cubic foot per second (cfs). However, if post-construction runoff exceeds these rates, sufficient detention storage shall be provided to limit project area runoff to pre-construction runoff rates.</p> <p data-bbox="220 1045 1984 1144">At a minimum, storm water management plan measures shall be designed to control runoff for a 100-year, 24 hour storm occurrence, including all on-site and off-site runoff contributions. During the next annual review the City shall consider requiring storm water management plans to be designed to control runoff for the 2-year, 5-year, 10-year, 25-year, and 50-year 24-hour storm events. [WPC-1 Chapter One]</p>
S-23	<p data-bbox="220 1166 1984 1258">(B) Conduct annual reviews of ordinances that address post construction runoff from new development and redevelopment projects. The ordinances shall not limit the post-construction minimum measure to a single type of BMP. Draft ordinances or amendments shall be submitted to MDEQ for review 30 days before proposed adoption. The results of the annual reviews, a list of any deficiencies and a corrective action plan/schedule shall be documented.</p> <p data-bbox="220 1284 1984 1377">(C) Ensure adequate long term operation and maintenance of BMPs. The City of Jackson shall require a maintenance agreement and provide verification of maintenance provisions for post-construction management practices. These agreements shall allow the City to conduct inspections of the management practices and also account for transfer of responsibility in leases and/or deed transfers. Verification shall include one or more of the following as applicable:</p> <p data-bbox="220 1403 1984 1469">(i) The developer's signed statement accepting responsibility for maintenance until the maintenance responsibility is legally transferred to another party; [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-24	<ul style="list-style-type: none"> (ii) Written conditions in the sales or lease agreement that require the recipient to assume responsibility for maintenance; (iii) Written conditions in project conditions, covenants and restrictions for residential properties assigning maintenance responsibilities to a home owner's association, or other appropriate group, for maintenance of structural and treatment control management practices; (iv) Written agreement that would allow the City the authority to recover costs of necessary maintenance from the responsible party. (v) Any other legally enforceable agreement that assigns permanent responsibility for maintenance of structural or treatment control management practices. (D) Maintain an up-to-date inventory of structural controls and management practices. The inventory shall list structural controls/management practices that the City maintains and also list separately others that have been privately implemented since the date of this permit issuance as a result of the City's ordinance. The City shall document the inventory of structural controls (type and location of structural control/management practice) and submit it on its annual reports to MDEQ. Structural controls/management practices required by Jackson's program shall, as appropriate, include: <ul style="list-style-type: none"> (i) Storage practices such as wet ponds and extended detention outlet structures. (ii) Filtration practices such as grassed swales, bioretention cells, sand filters and filter strips. (iii) Infiltration practices such as infiltration basins, infiltration trenches and pervious concrete. [WPC-1 Chapter One]
S-25	<ul style="list-style-type: none"> (E) Ensure the appropriate implementation of the structural controls/management practices by considering the following: <ul style="list-style-type: none"> (i) Pre-construction review of BMP design (ii) Inspections during construction to verify BMPs are built and properly designed (iii) Post-construction inspection and maintenance of BMPs (iv) Penalty provisions for non-compliance according to the ERP. [WPC-1 Chapter One]

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-26	<p>(F) Enforce the Landscaping Ordinance requiring green space, tree planting, parking islands, buffers, etc. This ordinance shall be reviewed annually to assess the need for update and/or revision. During the next annual review, following permit issuance, the City should consider the inclusion of additional non-structural BMPs such as: protection of sensitive areas (i.e., wetlands and riparian areas), maintenance and/or enlargement of open spaces, buffers along intermittent and perennial water bodies and minimization of impervious surfaces. The results of the annual ordinance reviews shall be documented by the City.</p> <p>(G) Conduct and document at least one (1) pre-construction review of structural control/management practice design.</p> <p>(H) Conduct and document at least one (1) site inspection during construction to verify structural controls/management practices are built and properly designed. The City shall document the number of construction inspections conducted.</p> <p>(I) Conduct and document inspections of all permanent structural controls/management practices within the City's MS4 (both private and City owned) to ensure their proper operation and maintenance. The City shall inspect all of the existing structures and permanent management practices during the first two (2) years of the permit. The City shall re-inspect all of the structures and permanent BMPs on a rotating basis over the next three (3) years. Structures found in need of maintenance and/or repair will be scheduled for a greater frequency of inspection.</p>
S-27	<p>The documentation should include the type and location (latitude and longitude coordinates) of the structural control/management practice, the date of inspection, the name of the inspector, any deficiencies and a corrective action plan schedule. [WPC-1 Chapter One]</p> <p>(J) Evaluate the potential water quality impacts in the engineering and design of future flood management structures/projects.</p> <p>(K) The City shall submit an Annual Report in the approved format to MDEQ by the 28th day of each January for the previous calendar year. The report shall include the status of the City's efforts in meeting each measurable goal of this minimum measure listed above. [WPC-1 Chapter One]</p>
S-28	<p>(6) POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS:</p> <p>The City of Jackson shall:</p> <p>(A) Develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from the City of Jackson's operations. The program shall include the following components. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-29	<p>(i) Continue program of cleaning out storm sewer inlets, catch basins, storm sewers and drainage channels according to the schedules outlined in the City's Operations and Maintenance Policy Manual. Inspections, maintenance and cleanings shall be documented in a log maintained by the City and shall be available for MDEQ inspection.</p> <p>(ii) Maintain the City's operation and maintenance policy through annual reviews/updates. At a minimum the City shall:</p> <p>(a) Inspect entire drainage system, every two years</p> <p>(b) Inspect all drainage areas capable of obstructions, identified in Appendix J, monthly during dry season (summer and fall). [WPC-1 Chapter One]</p>
S-30	<p>(c) Inspect all drainage areas capable of obstructions, identified in Appendix J, bi-monthly during wet season (winter and spring)</p> <p>(d) Inspect all drainage areas capable of obstructions, identified in Appendix J, prior to an anticipated 10 year, 24-hour rain event and after such an event occurs.</p> <p>The Bridges and Drainage Maintenance Division will remove trash, obstructions, or any other natural occurring debris from within the drainage system upon notification and the Department of Public Works shall maintain the storm drain inlets</p> <p>The inspections, maintenance shall be documented on the "Department of Public Works Drainage Maintenance and Inspection Log" and/or the Department of Public Works Inlet Maintenance Flood Prevention Report, Exhibit E."</p> <p>(iii) Continue program of sweeping at least 400 miles per year of curb and gutter arterial roadways. The City shall annually document the number of miles swept, the amount of waste collected and the disposal locations. The City must ensure that water and material will not re-enter the MS4.</p> <p>(iv) Continue the use of sand for deicing emergencies in lieu of salt or other deicing chemicals to minimize storm water impacts. Sand shall be swept up for reuse and to prevent its runoff as soon as the ice melts. Sand shall be stored in a covered or contained location.</p> <p>(v) Continue to evaluate existing O & M programs for public right-of-ways and drainage channels to ensure these programs limit the discharge of pollutants from pesticides, herbicides, fertilizers, and landscape debris [40 CFR 122.26 (d)(2)(iv)(A)(6)]. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-31	<p>(B) In addition to implementing the existing "pollution prevention/good housekeeping program for municipal operations" BMPs identified in (A) above, the City must, at a minimum, implement the following practices.</p> <p>(i) Develop and implement an employee-training program to prevent and reduce storm water pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance. This program must identify any existing or available materials the City of Jackson plans to use. The training program should be coordinated with the outreach programs developed for the public information minimum measure and the illicit discharge minimum measure. The City must document and report annually to MDEQ the number of employee-training programs conducted and the number of employees trained.</p> <p>(ii) Obtain permits for all storm water discharges associated with industrial activity as defined in 40 CFR 122.26(b)(14)(i) - (xi) that the City owns or operates. The City must evaluate these regulations for applicability and ensure that all City owned or operated industrial activities have appropriate permit coverage. The City must also include a list of industrial facilities [in the first annual report for those listed in 40 CFR 122.26(b)(14)(i) - (ix) and (xi)] that the City of Jackson owns or operates which are covered by General Storm Water Permits or have individual NPDES Storm Water Permits. Such facilities may include, but not be limited to, wastewater treatment plants with flows of one (1) million gallons per day or more, airports, landfills, dirt pits, transportation facilities with maintenance shops, and recycling facilities. [WPC-1 Chapter One]</p>
S-32	<p>(C) The City must maintain its Storm Water Pollution Prevention Plans (SWPPP) for all listed municipal operations.</p> <p>(i) The City must continue to update and maintain an inventory of municipally-owned or operated facilities and storm water controls, including but not limited to the following:</p> <ul style="list-style-type: none"> - Composting facilities - Equipment storage and maintenance facilities - Hazardous waste handling and transfer facilities - Landfills - Landscape maintenance on municipal property - Materials storage yards. [WPC-1 Chapter One]

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-33	<ul style="list-style-type: none"> - Public buildings, including schools, libraries, police stations, fire stations, municipal buildings, and similar buildings - Public parking lots - Public golf courses - Public swimming pools - Public works yards - Recycling facilities - Solid waste handling and transfer facilities - Street repair and maintenance sites - Vehicle storage and maintenance yards - Municipally-owned and/or maintained structural storm water controls <p>(ii) The list of municipally-owned or operated facilities and storm water controls must be maintained and available for review by MDEQ.</p> <p>(iii) The municipally-owned or operated facilities must be located and identified on the City of Jackson Water Basin Map. The map will then identify the storm water outfalls corresponding to each of the facilities as well as the receiving waters to which these facilities discharge. The map must be maintained and updated annually and be available for review by MDEQ.</p> <p>(iv) The City must complete the Storm Water Pollution Prevention Plan and Spill Response Plan (found in Appendix I) for each of the municipally owned or operated facilities identified by (i) above. The completion of this site specific plan will provide a comprehensive assessment of the pollutants; the pollutant discharge potential and the BMPs used to eliminate or reduce the pollutant and discharge potential. The plan must also identify the manager of each facility and their contact information and be updates as necessary. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-34	<p>A copy of the facility-specific plan must be maintained and be available for review by MDEQ. The plan must be kept on-site at each of the municipally-owned or operated facilities' offices for which it was completed or if an office does not exist, be kept downtown in the Municipal Office Building.</p> <p>The City must install, implement and maintain these control measures identified in the plan and they must and be updated as necessary.</p> <p>(v) Based on the plans required by paragraph (iv) above, the City must identify as "high-priority" those facilities that have a high potential to generate storm water pollutants. Among the factors that must be considered in giving a facility a high priority ranking is the amount of urban pollutants stored at the site, the identification of improperly stored materials, activities that should not be exposed to storm (e.g., changing automotive fluids, chemicals storage), proximity to perennial waterbodies, poor housekeeping practices, and discharge of pollutant(s) of concern (nutrients, sediment, BOD) to impaired water(s). High priority facilities must include maintenance yards, hazardous waste facilities, fuel storage locations, and any other facilities at which chemicals or other materials have a high potential to be discharged in storm water. [WPC-1 Chapter One]</p>
S-35	<p>(vi) Those facilities designated "high priority" will be assessed at least once per quarter. A comprehensive inspection including all storm water controls, must be performed, with specific attention paid to waste storage areas, dumpsters, vehicle and equipment maintenance/fueling areas, material handling areas, and similar potential pollutant-generating areas. The quarterly inspection results must be documented and records kept with the plan. This inspection must be done in accordance with the developed requirements in the plan. The inspection report must also include any identified deficiencies and the corrective actions taken to fix the deficiencies.</p> <p>In addition, at least once per quarter, the inspector must visually observe the quality of the storm water discharges (unless climate conditions preclude doing so). Any observed problems (e.g., color, foam, sheen, turbidity) that can be associated with pollutant sources or controls must be remedied within three (3) days or before the next storm event, whichever is sooner. Visual observations must be documented, and records kept with the plan. This inspection must be done in accordance with the developed plan. The inspection report must also include any identified deficiencies and the corrective actions taken to fix the deficiencies.</p> <p>(vii) Those facilities not designated "high priority" will be assessed annually with the results documented and maintained with the plan. The documentation must include the results of the initial assessment, any identified deficiencies and corrective actions taken. Corrective actions should be taken within 14 days of identifying the deficiency or before the next storm event, whichever comes first. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-36	<p>A copy of the facility-specific plan must be maintained and be available for review by MDEQ. The plan must be kept on-site at each of the municipally-owned or operated facilities' offices for which it was completed or if an office does not exist, be kept downtown in the Municipal Office Building.</p>
	<p>The City must install, implement and maintain these control measures identified in the plan and they must and be updated as necessary.</p>
	<p>(v) Based on the plans required by paragraph (iv) above, the City must identify as "high-priority" those facilities that have a high potential to generate storm water pollutants. Among the factors that must be considered in giving a facility a high priority ranking is the amount of urban pollutants stored at the site, the identification of improperly stored materials, activities that should not be exposed to storm (e.g., changing automotive fluids, chemicals storage), proximity to perennial waterbodies, poor housekeeping practices, and discharge of pollutant(s) of concern (nutrients, sediment, BOD) to impaired water(s). High priority facilities must include maintenance yards, hazardous waste facilities, fuel storage locations, and any other facilities at which chemicals or other materials have a high potential to be discharged in storm water. [WPC-1 Chapter One]</p>
S-37	<p>(vi) Those facilities designated "high priority" will be assessed at least once per quarter. A comprehensive inspection including all storm water controls, must be performed, with specific attention paid to waste storage areas, dumpsters, vehicle and equipment maintenance/fueling areas, material handling areas, and similar potential pollutant-generating areas. The quarterly inspection results must be documented and records kept with the plan. This inspection must be done in accordance with the developed requirements in the plan. The inspection report must also include any identified deficiencies and the corrective actions taken to fix the deficiencies.</p>
	<p>In addition, at least once per quarter, the inspector must visually observe the quality of the storm water discharges (unless climate conditions preclude doing so). Any observed problems (e.g., color, foam, sheen, turbidity) that can be associated with pollutant sources or controls must be remedied within three (3) days or before the next storm event, whichever is sooner. Visual observations must be documented, and records kept with the plan. This inspection must be done in accordance with the developed plan. The inspection report must also include any identified deficiencies and the corrective actions taken to fix the deficiencies.</p>
	<p>(vii) Those facilities not designated "high priority" will be assessed annually with the results documented and maintained with the plan. The documentation must include the results of the initial assessment, any identified deficiencies and corrective actions taken. Corrective actions should be taken within 14 days of identifying the deficiency or before the next storm event, whichever comes first. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-38	<p>(viii) Continue to implement the City's Spill Prevention and Response Plan, which contains procedures to prevent, contain, and respond to spills from municipal and other vehicles. Inspection of all municipal vehicles, solid waste collection vehicles, containerized trucks, street sweepers, vacuum trucks and fuel trucks shall be performed monthly or as often as necessary to prevent spills and leaks from occurring. Continue to implement the Storm Water Pollution Prevention Plan (SWPPP) for the engineering maintenance facility. These plans shall be evaluated annually and modified as necessary. The results of the evaluation shall be documented by the City.</p> <p>(ix) The City's program must specifically address the following areas:</p> <p>(a) Maintenance activities, maintenance schedules, and long-term inspection procedures for controls to reduce floatables (including froth, oil and floating solids) and other pollutants to the storm sewer system.</p> <p>(b) Controls for reducing or eliminating the discharge of pollutants from streets, roads, highways, municipal parking lots, maintenance and storage yards, waste transfer stations, fleet or maintenance shops with outdoor storage areas, sand storage locations and waste transfer stations. [WPC-1 Chapter One]</p>
S-39	<p>(c) Procedures for the proper disposal of waste removed from the City's storm sewer system and other operations, including dredge spoil, accumulated sediments, floatables, and other debris.</p> <p>(d) Procedures to ensure that new flood management projects are assessed for impacts on water quality and existing projects are assessed for incorporation of additional water quality protection devices or practices. (See ACT6 (5)(D) for examples.)</p> <p>(x) Develop and implement a program to monitor pollutants in runoff from any operating or closed municipal landfills or other treatment, storage or disposal facilities for municipal waste, which shall identify priorities and procedures for inspections and establishing and implementing control measures for such discharges. [40 CFR 122.26 (d)(2)(iv)(A)(5)]. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-40	<p>(xi) Vehicle maintenance activities performed by the City shall be addressed. Vehicle maintenance activities include adding or changing fluids including fuel, lubrication, mechanical repairs, parts degreasing, and vehicle or equipment washing. This permit does not authorize the discharge of municipal vehicle wash water. Vehicles and equipment shall be maintained for clean and effective operation to prevent impacts on storm water quality.</p> <p>Example BMPs at maintenance facilities include:</p> <ul style="list-style-type: none">- Implementation of a spill prevention program- Addressing spills and leaks that happen during fuel or oil delivery- Installation of spill and overflow protection devices- Discouraging the topping off of fuel tanks- Preventing rainfall on or storm water run-on to fueling areas- Prohibiting the hosing or washing down of fueling areas and promoting the use of dry cleanup methods for fueling area spills (sweeping and using oil absorbent products)- Checking for leaking oil and fluids on all vehicles- Draining oil filters before disposing or recycling- Prohibiting the pouring of liquid waste onto the ground, into State waters or drains- Providing sufficient storage for used oil- Recycling engine fluids and batteries- Segregating and labeling waste- Buying recycled products- Properly training employees. [WPC-1 Chapter One]
S-41	<ul style="list-style-type: none">- Routinely inspecting tanks and equipment for leaks- Installing secondary containment around above ground liquid storage tanks- Placing outside materials and products under roof- Using temporary covers, drip pans, diversion dikes and buffer zones- Providing security- Installing oil & water separators- Implementing waste reduction practices- Using "environment friendly (i.e. biodegradable detergents)" products. [WPC-1 Chapter One]

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-42	<p>(D) Implement the following actions for the City's Municipal Garage:</p> <ul style="list-style-type: none"> (i) The generic SWPPP and Spill Response Plan developed by the City (dated Nov 2009) shall be used as a template to develop a specific plan for the Municipal Garage. All BMPs in the plan shall take place immediately or within six (6) months of the date of permit issuance. At a minimum the plan shall contain the following: (ii) As wrecked or damaged vehicles arrive place drip pans under them immediately, even if it is believed that all fluids have leaked out before the vehicle reached the garage. (iii) Promptly transfer used fluids to the proper waste or recycling containers. Do not leave full drip pans or other containers open or exposed to storm water. (iv) Drain all fluids, including air conditioner coolant, from wrecked vehicles and "parts" cars. Also drain engines, transmissions, and other parts that contain fluid. (v) Store cracked batteries in non-leaking secondary container. Do this with all cracked batteries, even if you think all the acid has drained out. If a battery is dropped, or comes from a wrecked vehicle place in secondary containment. (vi) Used oil and oil filters, antifreeze and batteries shall be sent to offsite recycling facilities. (vii) Fluids such as degreasers, solvents, transmission and hydraulic fluid shall also be recycled if feasible. If not they shall be disposed of properly. Under no circumstances shall be poured down a drain or washed or hosed down with water. (viii) Petroleum contaminated soil shall be removed and properly disposed. [WPC-1 Chapter One]

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-43	<p>(ix) Petroleum contaminated pavement shall have sorbet material applied and disposed of properly.</p> <p>(x) Vehicles shall not be parked within 15 feet of a water of the State (ditches, drains, swales, etc.). This practice shall be implemented immediately upon issuance of the permit. Existing vehicles that are within 15 feet of a water of the State shall be moved within six (6) months of the date of this permit.</p> <p>(xi) Vehicle parts shall be sold, recycled, or put under storm resistant shelters within six (6) months of the date of this permit.</p> <p>(xii) A minimum of 100 vehicles shall be auctioned or sent to permitted and licensed scrap yards yearly.</p> <p>(xiii) Vehicle wash water from the outside washing bay shall be collected and sent to the City sewer or shall be treated via an oil/water separator. The connection to the City sewer or oil/water separator shall be installed within six (6) months of the date of issuance of this permit.</p> <p>(xiv) The facility shall have lidded dumpsters.</p> <p>(xv) Initial training for all personnel that are responsible for implementing and/or complying with the requirements of this permit shall be performed within six (6) months of permit issuance. Newly hired employees responsible for implementing and/or complying with the requirements of this permit, including inspections, shall receive initial training prior to performing such responsibilities. All employees responsible for implementing and/or complying with the requirements of the SWMP and/or SWPPP shall receive refresher training every five years.</p> <p>(E) The City shall submit an Annual Report in the approved format to MDEQ by the 28th day of each January for the previous calendar year. The report shall include the status of the City's efforts in meeting each measurable goal of this minimum measure listed above. [WPC-1 Chapter One]</p>
S-44	<p>REVIEWING AND UPDATING STORM WATER MANAGEMENT PROGRAMS (SWMPs):</p> <p>(1) SWMP Review: The City of Jackson must complete an annual review of their SWMP in conjunction with preparation of the annual report required under ACT6 of this permit. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-45	<p>(2) SWMP Update: The City of Jackson may change their Storm Water Management Program during the life of the permit in accordance with the following procedures:</p> <p>(A) Changes adding (but not subtracting or replacing) components, control measures, or requirements to the Storm Water Management Program may be made at any time upon written notification to MDEQ. These changes must be documented in the annual report.</p> <p>(B) Changes subtracting or replacing ineffective or impracticable components, control measures, or requirements, specifically identified in the SWMP, with alternate components, controls, or requirements may be requested at any time. Unless denied by the Permit Board, changes proposed in accordance with the criteria below shall be deemed approved and may be implemented 60 days from submittal of the request. If request is denied, the Permit Board, or MDEQ acting on behalf of the Permit Board, will respond in writing. The regulated entity's modification requests must include the following:</p> <p>(i) An analysis of why the components, control measures, goals, or requirements are ineffective or impracticable (including cost analyses).</p> <p>(ii) Expectations on the effectiveness of replacement components, control measures, goals, or requirements. [WPC-1 Chapter One]</p>
S-46	<p>(iii) An analysis of why the replacement components, control measures, goals, or requirements are expected to achieve the goals of the components, controls, or requirements to be replaced.</p> <p>(C) Change requests or notifications must be made in writing and signed in accordance with ACT10, T-5 or T-6 of this permit.</p> <p>(3) SWMP Updates Required by MDEQ:</p> <p>(A) The Permit Board may require changes to the SWMP as needed to:</p> <p>(i) Address impacts on receiving water quality caused, or contributed to, by discharges from the MS4.</p> <p>(ii) Include additional control measures when a Total Maximum Daily Load (TMDL) has been specified for a receiving waterbody, when a Watershed Management Plan has been adopted for a watershed or if the SWMP proves to be inadequate in reducing pollutants in storm water runoff. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT6 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-47	<p>(iii) Include more stringent requirements necessary to comply with new Federal statutory or regulatory requirements.</p> <p>(iv) Include such other conditions necessary to comply with the requirements of the Clean Water Act.</p> <p>(B) Changes requested by the Permit Board must be made in writing, set forth the time schedule for the regulated entity to develop the changes, and offer the regulated entity the opportunity to propose alternative program changes to meet the objective of the requested modification. All changes required by the Permit Board will be made in accordance with 40 CFR 124.5, 40 CFR 122.62, or as appropriate 40 CFR 122.63.</p> <p>(4) Transfer of Operational Authority, or Responsibility for SWMP Implementation: The City of Jackson must implement the Storm Water Management Program on all new areas added to the City's portion of the MS4 (or for which the City becomes responsible for implementation of storm water quality controls) as expeditiously as practicable, but not later than one year from addition of the new areas. Implementation may be accomplished in a phased manner to allow additional time for controls that cannot be implemented immediately.</p> <p>(A) Within 90 days of a transfer of operational authority, or responsibility for SWMP implementation, the City must have a plan for implementing the City's SWMP on all affected areas. The plan may include schedules for implementation. Information on all new annexed areas and any resulting updates required to the SWMP must be included in the annual report. [WPC-1 Chapter One]</p>
S-48	<p>(B) Only those portions of the SWMP specifically required as permit conditions shall be subject to the modification requirements of 40 CFR 124.5. Addition of components, controls, or requirements to the SWMP or changes substituting or replacing ineffective or impracticable components, control measures or requirements shall be considered minor changes to the SWMP and not modifications to the permit.</p>

FAILURE TO IMPLEMENT STORM WATER MANAGEMENT PROGRAM (SWMP):

Any permit noncompliance constitutes a violation of the Mississippi Water Pollution Control Law and is grounds for enforcement action against the MS4. In addition, failure by the MS4 to initiate appropriate enforcement actions as defined in the SWMP may be the basis for State determination that the MS4 has failed to take timely enforcement action. In instances where the State determines that the MS4 has not initiated timely and appropriate enforcement action, the State may proceed with any or all enforcement options against the discharger and MS4 under the Clean Water Act. [WPC-1 Chapter One]

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT7 (Jackson MS4) Procedures Necessary to Implement the Six Minimum Control Measure Requirements:

Submittal/Action Requirements:

Condition No.	Condition
S-1	<p>The City must have the required documents and written procedures describing the key processes the City will utilize to implement the provisions of this permit, including any forms associated with the implementation of said procedures. At a minimum the following procedures and forms must be included in the City's SWMP and be submitted with the first Annual Report.</p>
	<p>(1) PUBLIC EDUCATION AND OUTREACH ON STORM WATER IMPACTS:</p>
	<p>Written procedures for implementing this program, including the components described in ACT6, (1), must be incorporated into the SWMP.</p>
	<p>(2) PUBLIC INVOLVEMENT/PARTICIPATION:</p>
	<p>Written procedures for implementing this program, including the components described in ACT6, (2), must be incorporated into the SWMP. [WPC-1 Chapter One]</p>
S-2	<p>(3) ILLICIT DISCHARGE DETECTION AND ELIMINATION:</p>
	<p>Written procedures for implementing this program, including the components described in ACT6, (3), must be incorporated into the SWMP. At a minimum the procedures must include the following:</p>
	<p>(A) Procedures for annual review and update of the City's storm sewer system map to reflect the requirements of ACT6, (3).</p>
	<p>(B) Procedures for conducting dry weather screenings of the City's storm sewer system. The procedures should include the following and the inspection checklist found in Appendix D.</p>
	<p>(C) Sample runoff according to requirements outlined in ACT6, (3)(G) if flow or ponded runoff is observed at a field screening station and there has been at least 144 hours of dry weather. The City must also record general information such as time since last rain, quantity of last rain, site descriptions (e.g., conveyance type, dominant watershed land uses), flow estimation (e.g., width of water surface, approximate depth of water, approximate flow velocity, flow rate), and visual observations (e.g., odor, color, clarity, floatables, deposits/stains, vegetation condition, structural condition, and biology). [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT7 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-3	<p>(D) Dry weather screening procedures-When dry-weather flow is observed, visual or odor observations (e.g., observation of pieces of toilet paper, strongly colored or very muddy discharge, or the odor of sewage or chemicals) may provide enough information to determine that the discharge is illicit and to identify the likely source. Inspectors will use the inspection form found in Appendix D to aid in this determination.</p> <p>(E) Procedures for investigating and tracing illicit discharges or other sources of non-storm water including enforcement measures that will be followed in eliminating illicit discharges or other sources of non-storm water should include the following:</p> <p>(i) At a minimum, the City is required to conduct an investigation(s) to identify and locate the source of any continuous or intermittent non-storm water discharge within 48 hours of becoming aware of the illicit discharge.</p> <ul style="list-style-type: none">- Illicit discharges suspected of being sanitary sewage and/or significantly contaminated must be investigated first.- Investigations of illicit discharges suspected of being cooling water, wash water, or natural flows may be delayed until after all suspected sanitary sewage and/or significantly contaminated discharges have been investigated, eliminated and/or resolved.- The City must report immediately the occurrence of any dry weather flows believed to be an immediate threat to human health or the environment to MDEQ at 601/961-5171.- The City must track all investigations to document at a minimum the date(s) the illicit discharge was observed, the results of the investigation, any follow-up of the investigation, and the date the investigation was closed. [WPC-1 Chapter One]
S-4	<p>(ii) At a minimum, the City is required to determine and document through its investigations the source of all potential illicit discharges. If the source of the illicit discharge is found to be a discharge authorized under an active NPDES permit, no further action is required.</p> <p>(iii) If an illicit discharge is found, but within six (6) months of the beginning of the investigation neither the source nor the same non-storm water discharge has been identified/observed, then the City must maintain written documentation for audit review.</p> <p>(iv) If the observed discharge is intermittent, the City must document that a minimum of three (3) separate investigations were made to observe the discharge when it was flowing. If these attempts are unsuccessful, the City must maintain written documentation for review by the permitting authority. However, since this is an ongoing program, the City should periodically recheck this suspected intermittent discharge. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT7 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-5	<p>(F) Corrective Action to Eliminate Illicit Discharge - Once the source of the illicit discharge has been determined, the City must immediately notify the responsible party of the problem, and require the responsible party to conduct all necessary corrective actions to eliminate the non-storm water discharge. The timeframe for eliminating a connection or discharge will depend on the type of connection or discharge and how difficult elimination will be. A discharge that poses a significant threat to human or environmental health should be discontinued and eliminated immediately. Clear guidance should be provided in the procedures on the timeframe for removing discharges and connections. Typically, discharges should be stopped within seven (7) days of notification by the municipality, and illicit connections should be repaired within 30 days of notification. At a minimum, upon notification that the discharge has been eliminated, the City must conduct a follow-up investigation and field screening, if necessary, to verify that the discharge has been eliminated. The City is required to document its follow-up investigation. Resulting enforcement actions must follow the SWMP ERP.</p> <p>(G) The City shall submit an Annual Report in the approved format to MDEQ by the 28th day of each January for the previous calendar year. The above procedures and any documents required by the permit shall be evaluated annually and any changes documented.</p> <p>(4) CONSTRUCTION SITE STORM WATER RUNOFF CONTROL:</p> <p>Written procedures for implementing this program, including the components described in ACT6, (4), must be incorporated into the SWMP. At a minimum, the procedures must include the following. [WPC-1 Chapter One]</p>
S-6	<p>(A) The City must continue to require each operator of a construction activity to prepare and submit a storm water management plan prior to the disturbance of land for the City's review and written approval. The City must make it clear to operators of construction activity that they are prohibited from commencing construction activity until they receive receipt of written approval of the plan. If the storm water management plan is revised, the City must review and approve those revisions.</p> <p>(B) The City must continue to implement site plan review procedures that meet the following minimum requirements:</p> <p>(i) The City must not approve any storm water management plans unless it contains appropriate site-specific construction site control measures that meet the minimum requirements in (4) (b) (i-vi). [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT7 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-7	<p>(ii) The storm water pollution prevention plan (SWPPP) developed pursuant to the State of Mississippi's Large or Small Construction Storm Water General Permits may substitute for the storm water management plan for projects where a SWPPP is developed. The City is responsible for reviewing those portions of the SWPPP that comply with the City's requirements.</p> <p>(iii) The storm water management plan must include the rationale used for selecting control measures, including how the control measure protects a waterway or storm water conveyance.</p> <p>(iv) The City must use qualified individuals, knowledgeable in the technical review of storm water management plans to conduct such reviews.</p> <p>(v) The City must document its review of each storm water management plan using a checklist or similar process.</p> <p>(vi) Construction Site Inspection Form for inspectors to utilize during the required site inspections similar to the form found in Appendix E.</p> <p>(vii) Enforcement measures that will be followed in addressing deficiencies with construction site BMPs and/or their implementation. These procedures shall follow the Enforcement Measures guidelines found in ACT8, (3). [WPC-1 Chapter One]</p>
S-8	<p>(5) POST-CONSTRUCTION STORM WATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT:</p> <p>Written procedures for implementing this program, including the components described in ACT6, (5), must be incorporated into the SWMP. At a minimum the procedures must include the following:</p> <p>(A) Procedures for annual review and update of the City's inventory of structural controls and management practices.</p> <p>(B) Procedures for conducting the required pre-construction design review of structural controls and management practices. The procedures should include a checklist for reviewing the design prior to construction.</p> <p>(C) Checklist for conducting the required site inspections during construction. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT7 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-9	(D) Checklist for conducting the required annual operation and maintenance inspection of all permanent structural controls and management practices. (E) Procedures for addressing deficiencies identified during the annual operation and maintenance inspections. [WPC-1 Chapter One]
S-10	(6) POLLUTION PREVENTION / GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS: Written procedures for implementing this program, including the components described in ACT6, (6), must be incorporated into the SWMP. [WPC-1 Chapter One]

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT8 (Jackson MS4) General Enforcement Requirements and Enforcement Response Plan (ERP):

Submittal/Action Requirements:

Condition No.	Condition
S-1	<p>(1) Copies of ordinances and any other regulatory mechanism, if applicable, necessary to implement and enforce the requirements of this permit. At a minimum the ordinances that must be included are the Article IV. Section 122.301-309 Storm Water Quality Protection Ordinance and the City's Landscaping Ordinance, Section 1-20.</p> <p>(2) Statement from the City's legal counsel certifying to the adequacy of legal authority to enforce the ordinances and regulations to implement the provisions of this permit.</p> <p>(3) The City must continue to implement, and revise within 120 days if necessary, an enforcement response plan (ERP), which sets out the City's potential responses to violations and addresses repeat and continuing violations through progressively stricter responses as needed to achieve compliance. The ERP must be submitted to MDEQ with the first Annual Report. The ERP must describe how the City will use each of the following types of enforcement responses based on the type of violation and must include enforcement-action timeframes from discovery of violation to the initiation of the enforcement response. [WPC-1 Chapter One]</p>
S-2	<p>A. Verbal Warnings - Verbal warnings are primarily consultative in nature. At a minimum, verbal warnings must specify the nature of the violation and required corrective action.</p> <p>B. Written Notices - Written notices of violation (NOVs) must stipulate the nature of the violation and the required corrective action, with deadlines for taking such action.</p> <p>C. Escalated Enforcement Measures - The City must have the legal ability to employ any combination of the enforcement actions below (or their functional equivalent), and to escalate enforcement responses where necessary to address persistent non-compliance, repeat or escalating violations, or incidents of major environmental harm:</p> <p>(i) Citations (with Fines) - The ERP must indicate when the City will assess monetary fines, which may include civil and administrative penalties.</p> <p>(ii) Stop Work Orders - The City must have the authority to issue stop work orders that require construction activities to be halted, except for those activities directed at cleaning up, abating discharge, and installing appropriate control measures. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT8 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-3	<p>(iii) Withholding of Plan Approvals or Other Authorizations - Where a facility is in non-compliance, the ERP must address how the City's own approval process affecting the facility's ability to discharge to the MS4 can be used to abate the violation.</p> <p>(iv) The City may also use other escalated measures provided under local legal authorities. The City may perform work necessary to improve erosion control measures and collect the funds from the responsible party in an appropriate manner, such as collecting against the project's bond or directly billing the responsible party to pay for work and materials.</p> <p>D. The City must track instances of non-compliance either in hard-copy files or electronically. The enforcement case documentation must include, at a minimum, the following:</p> <ul style="list-style-type: none">(i) Name of owner/operator of facility or site of violation(ii) Location of storm water source (i.e., construction project, industrial facility)(iii) Description of violation. [WPC-1 Chapter One]
S-4	<p>(iv) Required schedule for returning to compliance</p> <p>(v) Description of enforcement response used, including escalated responses if repeat violations occur or violations are not resolved in a timely manner</p> <p>(vi) Accompanying documentation of enforcement response (e.g., notices of noncompliance, notices of violations)</p> <p>(vii) Any referrals to different departments or agencies</p> <p>(viii) Date violation was resolved</p> <p>E. If the violation of the SWMP causes or contributes to violation of water quality standards the MDEQ, Municipal Environmental Compliance and Enforcement Branch should be contacted within 10 days of utilizing escalated enforcement measures. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT8 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-5	<p data-bbox="222 605 1864 662">F. The City is required to identify chronic violators of any SWMP component and reduce the rate of noncompliance recidivism. The City must summarize inspection results by these chronic violators and include incentives, disincentives, or an increased inspection frequency at the operator's sites.</p> <p data-bbox="222 695 1409 727">(4) Once developed, the SWMP shall be available in hard copy format to those responsible for implementation.</p> <p data-bbox="222 760 1942 816">(5) Listing of responsible persons for implementing or coordinating the measurable goals and BMPs outlined in this ACT. The City should develop and submit a chart with roles and responsibilities for Jackson's SWMP for each department or division. An organization chart for the City must also be submitted.</p> <p data-bbox="222 849 1871 906">(6) Annual analysis of the capital, operation and maintenance expenditures needed, allocated and spent, as well as the necessary staff resources needed and allocated to meet the requirements of this permit, including any development, implementation and enforcement activities required. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT9 (Jackson MS4) Limitations, Inspections, Evaluations, Reporting and Record Keeping:

Limitation Requirements:

Condition No.	Parameter	Condition
L-1		<p>STORM WATER DISCHARGE LIMITATIONS:</p> <p>Storm water shall be free from:</p> <ul style="list-style-type: none">(1) Debris, oil, scum, and other floating materials other than in trace amounts(2) Eroded soils and other materials that will settle to form objectionable deposits in receiving waters(3) Suspended solids, turbidity and color at levels inconsistent with the receiving waters(4) Substances in concentrations that would cause violation of State Water Quality Criteria in the receiving waters. [WPC-2]

Record-Keeping Requirements:

Condition No.	Condition
R-1	<p>ANNUAL REPORTS:</p> <p>The City of Jackson must prepare and submit an annual report to MDEQ. The objective of the annual report is to summarize the progress made in implementing the conditions of the permit and all elements of the SWMP. The annual report shall be in the approved MDEQ format. A template of the approved MDEQ annual report format is included with the permit. Annual reports in 3-ring binders will not be accepted due to limited filing space. The annual reports must include, at a minimum:</p> <ul style="list-style-type: none">(1) The status of compliance with permit conditions, an assessment of the progress towards achieving the identified measurable goals for each of the minimum control measures. [WPC-1 Chapter One]

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT9 (continued):

Record-Keeping Requirements:

Condition No.	Condition
R-2	<p>(2) Results of information collected and analyzed, including monitoring data, if any, during the reporting period. The fourth Annual Report shall include sampling results. The results shall be used to assess the effectiveness and adequacy of the SWMP, estimate pollutant loadings, identify and prioritize portions of the MS4, and identify water quality improvements or degradations.</p> <p>(3) A summary of the storm water activities planned during the next reporting cycle.</p> <p>(4) A summary of approved changes to the SWMP.</p> <p>(5) Notice that you are relying on another government entity to satisfy some of your permit obligations (if applicable).</p> <p>(6) Annual projected expenditures and budget for year following each annual report.</p> <p>(7) The number of small construction projects receiving approval from the City. Small construction projects are land disturbance activities of equal to or greater than one (1) acre and less than five (5) acres or are part of a larger common plan of development or sale with a planned disturbance of equal to or greater than one (1) acre and less than five (5) acres. Small construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, and original purpose of the facility (i.e. an existing ditch, channel, or other similar storm water conveyance, as well as routine grading of existing dirt roads, asphalt overlays of existing roads, and similar maintenance activities). [WPC-1 Chapter One]</p>
R-3	<p>(8) The number of large construction projects receiving approval from the City. Large construction projects are land disturbance activities of equal to or greater than five (5) acres or are part of a larger common plan of development or sale with a planned disturbance of equal to or greater than five (5) acres. Large construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, and original purpose of a ditch, channel, or other similar storm water conveyance. Large construction activity does not include the routine grading of existing dirt roads, asphalt overlays of existing roads, and similar maintenance activities.</p> <p>(9) The number and type of inspections conducted and enforcement actions taken.</p> <p>(10) The number of illicit discharges detected and the number of illicit discharges eliminated. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT9 (continued):

Record-Keeping Requirements:

Condition No.	Condition
R-4	<p>(11) The number, type (i.e., detention basin, manufactured system, etc.) and location of post-construction management practices installed at new development and redevelopment projects.</p> <p>(12) Certification that the SWMP is up to date. The annual report shall be certified according to ACT10, T-5, T-6 of this permit.</p> <p>(13) Identification of violations of water quality standards.</p> <p>DEADLINE TO SUBMIT ANNUAL REPORT:</p> <p>The annual reports required by this ACT are to be submitted annually postmarked no later than the 28th day of January. The City of Jackson shall contact MDEQ for Annual Report format. If this permit expires prior to being reissued, the City must continue to submit the annual report(s) until the permit can be renewed. The first submission may be for less than a 12-month period. Reports shall be submitted to the MDEQ at the following address:</p> <p>Chief, Environmental Compliance and Enforcement Division Office of Pollution Control, Dept of Environmental Quality P.O. Box 2261 Jackson, Mississippi 39225. [WPC-1 Chapter One]</p>
R-5	<p>RECORDKEEPING:</p> <p>All records, reports and information resulting from activities required by this permit shall be retained for a period of at least three years from the date of the application, inspection or report. The City of Jackson must make records required by this permit, including the Jackson's SWMP, available to the public at reasonable times during regular business hours (the City may assess a reasonable charge for copying). The City may require a member of the public to provide advance notice, per the City's standard procedure. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT9 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-1	<p>AMBIENT MONITORING REQUIREMENTS:</p> <p>In addition to the monitoring requirements for illicit discharge detection and elimination the City shall conduct ambient monitoring during the second and fourth year of the permit cycle. The sampling parameters shall, at a minimum, include turbidity, total phosphorus, total nitrogen, dissolved oxygen, flow, and pH.</p> <p>The frequency shall be, at a minimum, after two (2) storm events in the wet season (November - April) and after two (2) storm events during the dry season (May - October). The storm events should be greater than 0.1 inches in magnitude and occurring at least 72 hours from the previously measurable storm (greater than 0.1 inch of rainfall).</p> <p>In order to ensure the ambient monitoring plan chooses sampling locations that sufficiently represent the MS4 area the plan shall include all 11 sub-watersheds of the Pearl River (Purple Creek, White Oak Creek, Hanging Moss Creek, Eubanks Creek, Belhaven Creek, Town Creek, Lynch Creek, Three Mile Creek, Hardy Creek, Cany Creek, Trahon Creek). This represents nearly 100 % of the surface area draining to the Pearl River. The sampling stations must be located near the terminus of the above designated creeks so that it integrates most, if not all discharges upstream of the station or stations, but before mixing with the Pearl River where dilution by such a large water body may make results difficult to interpret. In addition, the City must determine if any similar monitoring is occurring within the MS4 and if it is logical to link efforts. Additional sites may be selected at the City's discretion. [WPC-1 Chapter One]</p>
S-2	<p>A proposed monitoring plan shall be submitted with the first annual report. Samples must be collected and analyzed consistent with the procedures required by 40 CFR Part 136.</p> <p>The results of this study, to be submitted with the with the second and fourth annual reports, will aid MDEQ and the City in the assessment of the SWMP's effectiveness and adequacy; identify and prioritize portions of the MS4; and identify water quality improvements and degradations. The trends identified by this study and reported in the fourth year re-application package will aid in the development or modification of the measurable goals for the next Permit MSSO49786. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT9 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-3	<p data-bbox="210 600 871 633">ANNUAL INSPECTION OF MUNICIPAL OPERATIONS:</p> <p data-bbox="210 657 1984 812">During the term of this permit, identified personnel shall, as often as needed but no less than once annually inspect all areas contributing to storm water discharges associated with the municipal operations that are impacted by Jackson's SWMP. These areas include industrial facilities that the City owns or operates which are covered by General Storm Water Permits or have individual NPDES Storm Water Permits. These areas also include parks, maintenance facilities, and city barns. The inspections must evaluate whether Jackson's SWMP adequately minimizes pollutant loadings, that BMPs are being properly implemented and whether additional control measures are needed. [WPC-1 Chapter One]</p>
S-4	<p data-bbox="210 836 1165 868">ANNUAL STORM WATER MANAGEMENT PROGRAM (SWMP) EVALUATION:</p> <p data-bbox="210 893 1984 1015">Identified personnel must, as often as needed but no less than once annually, evaluate the City of Jackson's SWMP. The evaluation must determine if the SWMP is being properly implemented in accordance with the City's SWMP and terms and conditions of this permit, the appropriateness of identified BMPs, whether additional practices are needed, and the progress towards achieving identified measurable goals. Results of the evaluations shall be included in the Annual Reports. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT10 (Jackson MS4) Standard Permit Conditions:

Narrative Requirements:

Condition No.	Condition
T-1	<p>DUTY TO COMPLY:</p> <p>Any permit noncompliance constitutes a violation of the Mississippi Water Pollution Control Law and is grounds for enforcement action. [WPC-1 Chapter One]</p>
T-2	<p>EXPIRATION OF PERMIT:</p> <p>At least 180 days prior to the expiration date of this permit pursuant to the State law and regulation, the permittee who wishes to continue to operate under this permit shall submit an application to the Permit Board for reissuance. The Permit Board may grant permission to submit an application later than this, but no later than the expiration date of the permit. [WPC-1 Chapter One]</p>
T-3	<p>DUTY TO MITIGATE:</p> <p>The City of Jackson shall take all reasonable steps to minimize or prevent any discharge in violation of this permit that is likely to adversely affect human health or the environment. [WPC-1 Chapter One]</p>
T-4	<p>DUTY TO PROVIDE INFORMATION:</p> <p>The City of Jackson shall furnish to the MDEQ, within a reasonable time, any information which the MDEQ may request to determine compliance with this permit. [WPC-1 Chapter One]</p>
T-5	<p>SIGNATORY REQUIREMENTS:</p> <p>All permit application forms, reports, certifications, or information submitted to MDEQ, or that this permit requires be maintained by the City shall be signed and certified as follows:</p> <ol style="list-style-type: none">(1) The permit application and SWMP(s) submitted to the MDEQ shall be signed by the ranking elected official.(2) All reports required by this permit, and other information requested by the Permit Board shall be signed by a person described above or a duly authorized representative (see T-6 of this ACT). [WPC-1 Chapter One]

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT10 (continued):

Narrative Requirements:

Condition No.	Condition
T-6	<p>DULY AUTHORIZED REPRESENTATIVE:</p> <p>A person is a duly authorized to sign submissions to MDEQ only if:</p> <p>(1) The authorization is made in writing by a person described in Signatory Requirements, above, and submitted to the MDEQ.</p> <p>(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated activity, such as manager, operator, superintendent or one having overall environmental responsibility (a duly authorized representative may be a named individual or any individual occupying a named position). [WPC-1 Chapter One]</p>
T-7	<p>CHANGES TO AUTHORIZATION:</p> <p>If an authorization is no longer accurate because a different individual or position has permit responsibility, a new authorization satisfying the above requirements must be submitted to the MDEQ prior to or together with any reports, information or applications signed by the representative. [WPC-1 Chapter One]</p>
T-8	<p>CERTIFICATION:</p> <p>Any person signing documents under this section shall make the following certification:</p> <p>I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. [WPC-1 Chapter One]</p>
T-9	<p>OIL AND HAZARDOUS SUBSTANCE LIABILITY:</p> <p>Nothing in this permit shall relieve the City of Jackson from responsibilities, liabilities, or penalties under Section 311 of the Clean Water Act (CWA). [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT10 (continued):

Narrative Requirements:

Condition No.	Condition
T-10	<p>PROPERTY RIGHTS:</p> <p>The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. [WPC-1 Chapter One]</p>
T-11	<p>SEVERABILITY:</p> <p>The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby. [WPC-1 Chapter One]</p>
T-12	<p>PROPER OPERATION AND MAINTENANCE:</p> <p>The City of Jackson shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the City of Jackson to achieve compliance with the conditions of this permit including the storm water pollution prevention plan. Proper operation and maintenance includes adequate laboratory controls with appropriate quality assurance procedures and requires the operation of backup or auxiliary facilities when necessary to achieve compliance with permit conditions. [WPC-1 Chapter One]</p>
T-13	<p>BYPASS PROHIBITION:</p> <p>Bypass (see 40 CFR 122.41(m)) is prohibited and enforcement action may be taken against a regulated entity for a bypass, unless: (1) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage; (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if the regulated entity should, in the exercise of reasonable engineering judgment, have installed adequate backup equipment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and (3) The regulated entity submitted notices per T-15 of this ACT. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT10 (continued):

Narrative Requirements:

Condition No.	Condition
T-14	<p data-bbox="220 605 483 634">UPSET CONDITIONS:</p> <p data-bbox="220 665 1963 844">An upset (see 40 CFR 122.41(n)) constitutes an affirmative defense to an action brought for noncompliance with technology-based permit limitations if a regulated entity shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence, that: (1) An upset occurred and the regulated entity can identify the specific cause(s) of the upset, (2) The permitted facility was at the time being properly operated, (3) The regulated entity submitted notices per T-5 of this ACT. The regulated entity took remedial measures as required under T-3 of this ACT. In any enforcement proceeding, the regulated entity has the burden of proof that an upset occurred. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. [WPC-1 Chapter One]</p>
T-15	<p data-bbox="220 870 619 899">NONCOMPLIANCE REPORTING:</p> <p data-bbox="220 930 1963 987">(1) Anticipated Noncompliance. The City of Jackson shall give at least ten (10) days advance notice, if possible, before any planned noncompliance with permit requirements.</p> <p data-bbox="220 1018 1963 1136">(2) Unanticipated Noncompliance. The City of Jackson shall notify MDEQ orally within 24 hours from the time he or she becomes aware of unanticipated noncompliance. A written notice shall be provided to MDEQ within five (5) working days of the time he or she becomes aware of the circumstances. The written report shall describe the cause, the exact dates and times, steps taken or planned to reduce, eliminate, or prevent reoccurrence of the noncompliance and, if the noncompliance has not ceased, the anticipated time for correction. [WPC-1 Chapter One]</p>
T-16	<p data-bbox="220 1162 546 1192">INSPECTION AND ENTRY:</p> <p data-bbox="220 1222 1963 1252">The City of Jackson shall allow MDEQ or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to</p> <p data-bbox="220 1282 1963 1437">(1) Enter upon the regulated entity's premises where a regulated activity is located or conducted or where records must be kept under the conditions of this permit; (2) Have access to and copy at reasonable times any records that must be kept under the conditions of this permit; and (3) Inspect at reasonable times any facilities or equipment. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT10 (continued):

Narrative Requirements:

Condition No.	Condition
T-17	<p>PERMIT ACTIONS:</p> <p>This permit may be modified, revoked and reissued, or terminated for cause. A request by the regulated entity for permit modification, revocation and reissuance, or termination, or a certification of planned changes or anticipated noncompliance does not stay any permit condition. [WPC-1 Chapter One]</p>
T-18	<p>SCIENTIFIC, TECHNICAL AND LEGAL ENVIRONMENTAL ASSISTANCE</p> <p>As provided in ACT3 of this permit, where a discharge authorized under this permit is determined to cause or have the reasonable potential to cause or contribute to the violation of an applicable water quality standard or other requirement of a regulation promulgated by the Commission on Environmental Quality or any of the minimum control measures set forth in its SWMP and required by this permit (referred to herein as "Environmental Requirement"), MDEQ shall, in writing, notify the regulated entity of the actual or potential violation of the Environmental Requirement. After receiving such notification from MDEQ, the regulated entity may request MDEQ assistance in determining the source of the pollutant discharge to the MS4, which is causing the MS4 to violate or have the potential to violate the Environmental Requirement. Such requests are proper where MDEQ's scientific, technical, or other environmental knowledge may assist the regulated entity in isolating and addressing sources of actual or potential violation of the Environmental Requirement which are not readily discoverable by the regulated entity after completing the procedures required by the regulated entity's SWMP. When a regulated entity requests MDEQ assistance, MDEQ will provide to the regulated entity available public information relevant to MDEQ's notification.</p> <p>The Commission shall retain jurisdiction and responsibility to enforce compliance with all applicable Commission regulations and the permit. The regulated entity shall retain jurisdiction and responsibility to enforce compliance with its SWMP, local laws, regulations, and ordinances. MDEQ, as appropriate and able, will provide technical assistance to the regulated entity as it pursues judicial or administrative enforcement procedures. However, the implementation of the SWMP remains the responsibility of the regulated entity. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT10 (continued):

Narrative Requirements:

Condition No.	Condition
T-19	<p data-bbox="220 605 478 638">REOPENER CLAUSE:</p> <p data-bbox="220 662 1984 751">This permit shall be modified, or alternately, revoked and reissued, to comply with any applicable effluent standard, limitation or storm water regulation issued or approved under Section 301(b)(2)(C), and (D), 304(b)(2), 307(a)(2) and 402(p) of the Federal Water Pollution Control Act if the effluent standard, limitation or regulation so issued or approved:</p> <ul data-bbox="220 784 1339 876" style="list-style-type: none"><li data-bbox="220 784 1339 816">(1) Contains different conditions or is otherwise more stringent than any effluent limitation in the permit<li data-bbox="220 849 1024 876">(2) Controls any pollutant not limited in the permit. [WPC-1 Chapter One]

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT11 (Jackson MS4) Definitions:

Narrative Requirements:

Condition No.	Condition
T-1	<p>All definitions contained in Section 502 of the Act and 40 CFR 122 shall apply to this permit and are incorporated herein by reference. For convenience, simplified explanations of some regulatory/statutory definitions have been provided, but in the event of a conflict, the definition found in the Statute or Regulation takes precedence.</p> <p>BEST MANAGEMENT PRACTICES (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of State waters. BMPs also include treatment requirements, operating procedures, and practices to control runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. [WPC-1 Chapter One]</p>
T-2	<p>CODES OF FEDERAL REGULATIONS (CFR) are documents containing all finalized regulations. The contents of 40 CFR are all related to the environmental aspects. [WPC-1 Chapter One]</p>
T-3	<p>COMMISSION means the Mississippi Commission on Environmental Quality. [WPC-1 Chapter One]</p>
T-4	<p>CONTROL MEASURE as used in this permit, refers to any Best Management Practice or other method used to prevent or reduce the discharge of pollutants to waters of the State. [WPC-1 Chapter One]</p>
T-5	<p>CWA OR "THE ACT" means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub.L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483 and Pub. L. 97-117, 33 U.S.C. 1251 et.seq. [WPC-1 Chapter One]</p>
T-6	<p>DISCHARGE-RELATED ACTIVITIES include: activities which cause, contribute to, or result in storm water point source pollutant discharges; and measures to control storm water discharges, including the siting, construction and operation of best management practices (BMPs) to control, reduce or prevent storm water pollution. [WPC-1 Chapter One]</p>
T-7	<p>ENFORCEMENT RESPONSE PLAN (ERP) is a plan which outlines the City's potential responses to violations. [WPC-1 Chapter One]</p>
T-8	<p>FINAL STABILIZATION means all soil disturbing activities at the site have been completed, and that a uniform perennial vegetative cover with a density of at least 70% for the area has been established or equivalent measures (i.e., concrete or asphalt paving, rip rap, etc.) have been employed. [WPC-1 Chapter One]</p>
T-9	<p>ILLICIT CONNECTION means any man-made conveyance connecting an illicit discharge directly to a municipal separate storm sewer. [WPC-1 Chapter One]</p>

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT11 (continued):

Narrative Requirements:

Condition No.	Condition
T-10	ILLICIT DISCHARGE means any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and those non-storm water discharges identified in ACT1, T-3 (4) of this permit. [WPC-1 Chapter One]
T-11	LARGER COMMON PLAN OF DEVELOPMENT OR SALE means a contiguous area where multiple separate and distinct construction activities are occurring under one plan. The plan in a common plan of development or sale is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that construction activities may occur on a specific plot. [WPC-1 Chapter One]
T-12	MAJOR RECEIVING WATER(S) are those waters of the State that are named on an United States Geological Quadrangle Map. [WPC-1 Chapter One]
T-13	MAXIMUM EXTENT PRACTICABLE (MEP) is the statutory standard that establishes the level of pollutant reductions that operators of regulated MS4s must achieve. The CWA requires that NPDES permits for discharges from MS4s "shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods." Compliance with the conditions of the permit and the series of steps associated with identification and implementation of the minimum control measures will satisfy the MEP standard. EPA has intentionally not provided a precise definition of MEP to allow maximum flexibility in MS4 permitting. MS4s need the flexibility to optimize reductions in storm water pollutants on a location-by-location basis. EPA envisions that this evaluative process will consider such factors as conditions of receiving waters, specific local concerns, and other aspects included in a comprehensive watershed plan. Other factors may include MS4 size, climate, implementation schedules, current ability to finance the program, beneficial uses of receiving water, hydrology, geology, and capacity to perform operation and maintenance. The pollutant reductions that represent MEP may be different for each MS4, given the unique local hydrologic and geologic concerns that may exist and the differing possible pollutant control strategies. Therefore, each regulated entity will determine appropriate BMPs to satisfy each of the six minimum control measures through an evaluative process. [WPC-1 Chapter One]
T-14	EPA envisions application of the MEP standard as an iterative process. MEP should continually adapt to current conditions and BMP effectiveness and should strive to attain water quality standards. Successive iterations of the mix of BMPs and measurable goals will be driven by the objective of assuring maintenance of water quality standards. If, after implementing the six minimum control measures there is still water quality impairment associated with discharges from the MS4, after successive permit terms the regulated entity will need to expand or better tailor its BMPs within the scope of the six minimum control measures for each subsequent permit. EPA envisions that this process may take two to three permit terms. [WPC-1 Chapter One]
T-15	MEASURABLE GOALS are a municipality's storm water program goals, which are intended to gauge permit compliance and program effectiveness. [WPC-1 Chapter One]

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT11 (continued):

Narrative Requirements:

Condition No.	Condition
T-16	MUNICIPALITY refers to a city, town, county, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes. [WPC-1 Chapter One]
T-17	MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man made channels, or storm drains): (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States; (ii) Designed or used for collecting or conveying storm water; (iii) Which is not a combined sewer; and (iv) Which is not part of a Publicly Owned Treatment Works (POTW). [WPC-1 Chapter One]
T-18	NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) refers to Section 402 of the federal Clean Water Act. [WPC-1 Chapter One]
T-19	PERMIT BOARD means the Mississippi Environmental Quality Permit Board established pursuant to Miss. Code Ann. § 49-17-28. [WPC-1 Chapter One]
T-20	SIX MINIMUM CONTROL MEASURES are six elements termed "minimum control measures" in a storm water management program which when implemented should result in significant reduction in pollutants discharged into receiving waters. The six minimum control measures are: Public Education and Outreach, Public Involvement and Participation, Illicit Discharge Detection and Elimination, Construction Site Runoff Control, Post-Construction Runoff Control, Pollution Prevention and Good Housekeeping. [WPC-1 Chapter One]
T-21	STORM WATER means rainfall runoff, snowmelt runoff, and surface runoff. [WPC-1 Chapter One]
T-22	STORM WATER MANAGEMENT PLAN means a plan that must be submitted to the City pursuant to ordinance, to apply for permission, or permit, to construct improvements or construct other activities that address the management of volume, velocity and quality of storm water. [WPC-1 Chapter One]
T-23	STORM WATER MANAGEMENT PROGRAM (SWMP) refers to a comprehensive program to manage the quality of storm water discharged from the municipal separate storm sewer system. [WPC-1 Chapter One]
T-24	STORM WATER POLLUTION PREVENTION PLAN (SWPPP) means a plan that identifies activities at municipal owned or operated facilities or at non-owned industrial facilities, requiring and NPDES permit, that could cause pollution of storm water, and a description of measures or practices to eliminate or reduce those pollutants. [WPC-1 Chapter One]

Permit to Discharge Wastewater in Accordance with National Pollutant Discharge Elimination System

ACT11 (continued):

Narrative Requirements:

Condition No.	Condition
T-25	TOTAL MAXIMUM DAILY LOAD (TMDL) means the calculated maximum permissible pollutant loading to a waterbody at which water quality standards can be maintained. TMDLs are the sum of wasteload allocations (WLAs) and load allocations (LAs) for any given pollutant. [WPC-1 Chapter One]

APPENDICES

APPENDIX A

City of Jackson
Total Maximum Daily Load Report
Pear River Basin - Sediment

Total Maximum Daily Load

Designated Streams in the

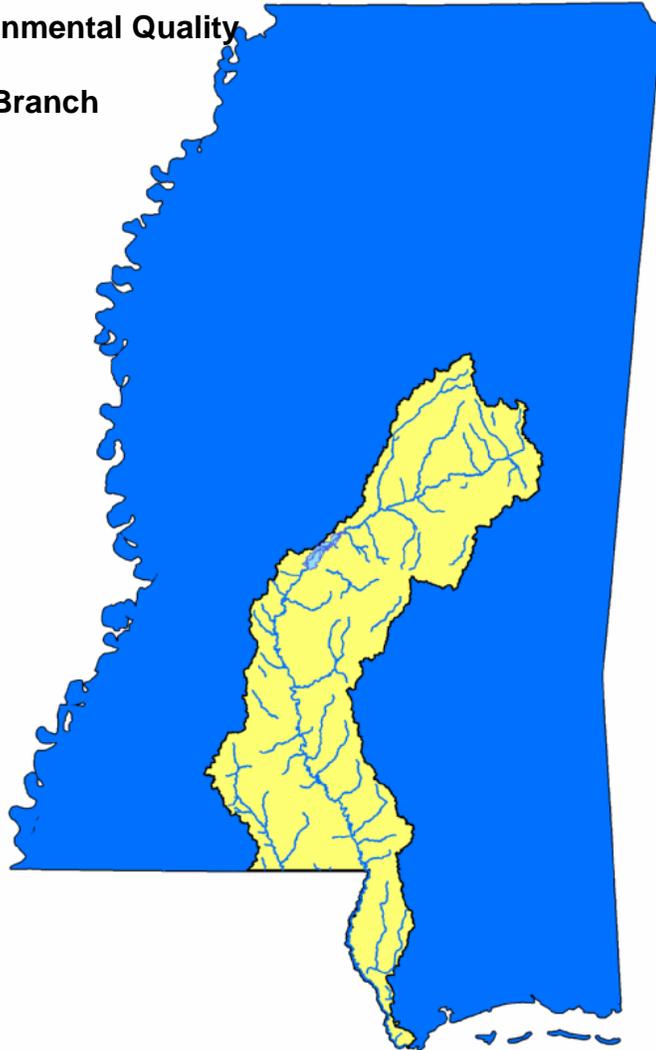
Pearl River Basin

for
Impairment Due to Sediment

Prepared By

Mississippi Department of Environmental Quality
Office of Pollution Control
Standards, Modeling, and TMDL Branch

MDEQ
P.O. Box 2261
Jackson, MS 39225
(601) 961-5171
www.deq.state.ms.us



FOREWORD

This report contains one or more Total Maximum Daily Loads (TMDLs) for water body segments found on Mississippi's 1996 Section 303(d) List of Impaired Waterbodies. Because of the accelerated schedule required by the consent decree, many of these TMDLs have been prepared out of sequence with the State's rotating basin approach. The implementation of the TMDLs contained herein will be prioritized within Mississippi's rotating basin approach.

The amount and quality of the data on which this report is based are limited. As additional information becomes available, the TMDLs may be updated. Such additional information may include water quality and quantity data, changes in pollutant loadings, or changes in landuse within the watershed. In some cases, additional water quality data may indicate that no impairment exists.

Conversion Factors

To convert from	To	Multiply by	To convert from	To	Multiply by
mile ²	acre	640	acre	ft ²	43560
km ²	acre	247.1	days	seconds	86400
m ³	ft ³	35.3	meters	feet	3.28
ft ³	gallons	7.48	ft ³	gallons	7.48
ft ³	liters	28.3	hectares	acres	2.47
cfs	gal/min	448.8	miles	meters	1609.3
cfs	MGD	0.646	tonnes	tons	1.1
m ³	gallons	264.2	µg/l * cfs	gm/day	2.45
m ³	liters	1000	µg/l * MGD	gm/day	3.79

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	µ	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

CONTENTS

TMDL INFORMATION	v
EXECUTIVE SUMMARY	viii
1.0 INTRODUCTION	1
1.1 Background.....	1
1.2 Applicable Water Body Segment Use	1
1.3 Applicable Water Body Segment Standard	1
2.0 TMDL ENDPOINT AND WATER QUALITY ASSESSMENT	5
2.1 Selection of a TMDL Endpoint and Critical Condition.....	5
3.0 SOURCE ASSESSMENT and LOAD ESTIMATION	6
3.1 Assessment of Point Sources	6
3.2 Assessment of Nonpoint Sources	7
3.3 Existing Load Estimation.....	10
4.0 DETERMINING THE TARGET SEDIMENT LOAD	11
4.1 Selecting a Reference Condition (Simon, et al., 2002a).....	11
4.2 Analysis of Available Suspended-Sediment Data (Simon, et al., 2002a)	13
4.3 Target Sediment Yields	14
5.0 ALLOCATION.....	16
5.1 Wasteload Allocations	16
5.2 Load Allocations.....	16
5.3 Incorporation of a Margin of Safety (MOS).....	17
5.4 Calculation of the TMDL	17
5.5 Seasonality	18
6.0 CONCLUSION.....	19
6.1 Next Steps.....	18
6.2 Public Participation.....	20
DEFINITIONS.....	21
ABBREVIATIONS	27
REFERENCES	28

FIGURES

Figure 1. Location of Pearl River Basin.....	2
Figure 2. Location of the Pearl River Basin §303(d) Listed Segments (Northern Portion).....	3
Figure 3. Location of the Pearl River Basin §303(d) Listed Segments (Southern Portion).....	4
Figure 4. Pearl River Basin Landuse Distribution	8
Figure 5. Six Stages of Channel Evolution (Simon and Hupp, 1986)	12
Figure 6. Pearl River Basin with Level III Ecoregions	14

TABLES

Table i. Water Body Listing Information.....	v
Table ii. Water Quality Standard	vii
Table iii. Total Maximum Daily Loads.....	vii
Table 1. Unstable Stream Sediment Yield Ranges for Level III Ecoregions within the Pearl River Basin	ix
Table 2. Pearl River Basin MS4 Permits	7
Table 3. Pearl River Basin Landuse Distribution (in acres)	8
Table 4. §303(d) Listed Segments with Appropriate Level III Ecoregion	9
Table 5. Unstable Stream Sediment Yield Ranges for Level III Ecoregions within the Pearl River Basin	9
Table 6. Stable Stream Sediment Yield Range for Level III Ecoregions within the Pearl River Basin	13
Table 7. TMDL Yields.....	16

TMDL INFORMATION

Table i. Water Body Listing Information

ID	Name	County	Cause	Mon./ Eval.
513811	Bahala Creek	Copiah	Biological Impairment due to Sediment	Monitored
Near Tyrus: From headwaters to confluence with Russell Creek				
MS159E	Big Creek	Hinds	Biological Impairment due to Sediment	Monitored
Near Byram: From headwaters to Pearl River				
MS121BE	Bogue Chitto Creek	Kemper Neshoba	Sediment	Evaluated
Near Cleveland: From headwaters to mouth at Pearl River				
MS165CE	Campbell Creek	Rankin Simpson	Biological Impairment due to Sediment	Monitored
Near D'Lo: From headwaters to mouth at Strong River				
MS151E1	Cane Creek	Rankin	Biological Impairment due to Sediment	Monitored
Near Goshen Springs: From headwaters at railroad tracks South of HWY 43 to Ross Barnett Reservoir flood pool				
MS189E	Clabber Creek	Pike	Biological Impairment due to Sediment	Monitored
Near Johnstons Station: From headwaters to the Bogue Chitto River				
MS149E	Coffee Bogue Creek	Leake Scott	Biological Impairment due to Sediment	Monitored
Near Branch: From headwaters to the Pearl River				
MS137CE	Conehatta Creek	Newton	Biological Impairment due to Sediment	Monitored
Near Hazel: From headwaters to mouth at Big Canal				
MS167DE	Dabbs Creek	Rankin Newton	Biological Impairment due to Sediment	Monitored
Near D'Lo: From headwaters to the Strong River				
MS152E	Eutacutachee Creek	Rankin	Biological Impairment due to Sediment	Monitored
Near Pelahatchie: From headwaters to Pelahatchie Creek				
MS187HE	Halbert Branch	Lincoln	Biological Impairment due to Sediment	Monitored
Near Brookhaven: From headwaters to confluence at East Bogue Chitto Creek				
MS155E	Hanging Moss Creek	Madison Hinds	Biological Impairment due to Sediment	Monitored
At Jackson: From headwaters to the Pearl River				
MS122E1	Hughes Creek	Winston	Biological Impairment due to Sediment	Monitored
At Louisville: From headwaters to County Road at Estes				
MS184JE	Juniper Creek	Pearl River	Biological Impairment due to Sediment	Monitored
Near Millard: From headwaters to confluence with Hobolochitto Creek				
MS132E	Lobutchka Creek	Winston Attala Choctaw	Biological Impairment due to Sediment	Monitored
Near Zama: From headwaters to the 133 watershed boundry				
MS120E	Nanah Waiya Creek	Winston Neshoba Kemper	Sediment	Evaluated
Near Handle: From headwaters to the Pearl River				
MS123NE	Noxapater Creek	Winston Neshoba	Sediment	Evaluated
Near Stallo: From headwaters to the Pearl River				

Table i continued. Water Body Listing Information

ID	Name	County	Cause	Mon./ Eval.
MSLMPRLRE	Pearl River	Simpson Lawrence Copiah	Sediment	Evaluated
From Confluence with Strong River to confluence with Holiday Creek				
MSLPRLRE	Pearl River	Marion Pearl River Hancock	Sediment	Evaluated
Near Morgantown: From confluence of Holiday Creek to mouth at Mississippi Sound				
MSUMPRLR1E	Pearl River	Hinds Rankin Copiah	Sediment	Evaluated
At Jackson: from Ross Barnett Reservoir spillway to confluence with Strong River				
MSUMPRLR2E	Pearl River	Leake Madison	Sediment	Evaluated
Near Pigtown: from confluence with Yockanookany River to Riverbend Campsite on Natchez Trace				
MSUPRLRE	Pearl River	Neshoba Leake	Sediment	Evaluated
From headwaters at confluence with Bogue Chitto Creek to confluence with Yockanookany River				
MS153PE	Pelahatchie Creek	Scott Rankin	Sediment	Evaluated
Near Fannin: from headwaters at Morton Creek to Ross Barnett Reservoir flood pool				
MS125PE	Pinishook Creek	Winston Neshoba	Biological Impairment due to Sediment	Monitored
Near Burnside: from headwaters to the Pearl River				
MS161E	Rhodes Creek	Hinds	Biological Impairment due to Sediment	Monitored
Near Rosemary: from headwaters to the Pearl River				
MS158E	Richland Creek	Rankin	Biological Impairment due to Sediment	Monitored
Near Richland: from headwaters to the Pearl River				
MS143E	Shockaloo Creek	Scott	Biological Impairment due to Sediment	Monitored
Near Forest: from headwaters to confluence with Little Canal				
MS191SE	Silver Creek	Pike	Biological Impairment due to Sediment	Monitored
Near Smithburg: from headwaters to Louisiana				
MSSTRONGE	Strong River	Scott Smith Simpson	Biological Impairment due to Sediment	Monitored
From headwaters in watershed 164 to confluence with Purvis Creek				
MS142E1	Tallabogue Creek	Scott	Biological Impairment due to Sediment	Monitored
Near Forest: from headwaters to the confluence with Little Canal				
MS122E	Tallahaga Creek	Neshoba Winston	Biological Impairment due to Sediment	Monitored
Near Claytown: from headwaters to Big Slough				
MS144E	Tuscolameta Creek	Scott Leake	Biological Impairment due to Sediment	Monitored
Near Walnut Grove: from confluence of Big and Little Canal to the Pearl River				

Table ii. Water Quality Standard

Parameter	Beneficial use	Narrative Water Quality Criteria
Sediment/Siltation	Aquatic Life Support	Waters shall be free from materials attributable to municipal, industrial, agricultural, or other dischargers producing color, odor, taste, total suspended solids, or other conditions in such degree as to create a nuisance, render the waters injurious to public health, recreation, or to aquatic life and wildlife, or adversely affect the palatability of fish, aesthetic quality, or impair the waters for any designated uses.

Table iii. Total Maximum Daily Loads

Ecoregion	WLA	LA	MOS	TMDL
Ecoregion 65	0.0004 to 0.0018*	0.0004 to 0.0018*	implicit	0.0004 to 0.0018*
Ecoregion 74	0.0033 to 0.0140*	0.0033 to 0.0140*	implicit	0.0033 to 0.0140*
Ecoregion 75i	0.00019 to 0.00041*	0.00019 to 0.00041*	implicit	0.00019 to 0.00041*

*tons per acre per day at the effective discharge

EXECUTIVE SUMMARY

The Pearl River Basin is a predominantly rural area with approximately 46% of the basin area classified as forest. This TMDL addresses 32 water bodies located in the Pearl River Basin that are included in the Mississippi 2006 Section 303(d) List of Water Bodies as impaired due to sediment/siltation (MDEQ, 2006b). This TMDL is being completed for clean sediment. The *State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters* regulation does not include a numerical water quality standard for aquatic life protection due to sediment (MDEQ, 2003a). The narrative standard for the protection of aquatic life is sufficient for justification of TMDL development, but does not provide a quantifiable TMDL target. The target for this TMDL is based on reference sediment yields developed by the Channel and Watershed Processes Research Unit (CWPRU) at the National Sedimentation Laboratory (NSL).

The CWPRU developed reference sediment yields, or targets, for each level III ecoregion within Mississippi. These yields were derived from the empirical analysis of historical flow and suspended sediment concentrations for stable streams in each level III ecoregion. These targets were used by MDEQ in the development of the James Creek Sediment TMDL (MDEQ, 2003c) and many subsequent sediment TMDLs throughout the state. The methods used to develop the level III reference yields are described in detail in the reports titled “*Reference*” and “*Impacted*” *Rates of Suspended-Sediment Transport for Use in Developing Clean Sediment TMDLs: Mississippi and the Southeastern United States* (Simon, et al., 2002b) and *Actual and Reference Sediment Yields for the James Creek Watershed – Mississippi* (Simon, et al., 2002a).

The reference yields, or TMDL target, for this TMDL were derived from the empirical analysis of historical flow and suspended sediment concentrations for stable streams in the appropriate level III ecoregion for the Pearl River Basin, which are Southeastern Plains Ecoregion (65), the Mississippi Valley Loess Plains Ecoregion (74), and the Southern Coastal Plain (75).

According to 40 CFR §130.2 (i), TMDLs can be expressed in terms of mass per time, toxicity, or other appropriate measure. This TMDL is expressed as the tons of sediment that can be discharged from an acre of a subwatershed during a day (tons/acre/day) at the effective discharge and still attain the applicable water quality standard. This results in a range of acceptable reference yields in tons per acre per day at the effective discharge for each water body within the Pearl River Basin.

It is expected that all values within a range of acceptable yields will result in attainment of water quality standards. The TMDL target is expressed at the effective discharge. The effective discharge is the channel-forming flow or the flow that moves the most sediment. The effective discharge is obtained by combining flow frequency data with sediment transport relationships. The effective discharge occurs statistically once every one and a half years, not on a daily basis. However, because the effective discharge is the critical condition, compliance with the TMDL at the effective discharge will result in the attainment of the water quality standards at all times.

For many of the §303(d) listed streams in the Pearl River Basin sediment data were either not available or were insufficient to calibrate a water quality model for prediction of existing sediment loads. Therefore, this TMDL does not provide an existing load specific to each water body. A range of unstable values was assigned to the listed water bodies within the Pearl River Basin based on the level III ecoregion unstable stream values (Table 1). The unstable range is representative of the

existing loads that would be expected for unstable water bodies within the Pearl River Basin. The unstable yields are larger than the target yields, therefore, a reduction is recommended for the Pearl River Basin.

Table 1. Unstable Stream Sediment Yield Ranges for Level III Ecoregions within the Pearl River Basin

Level III Ecoregion	Unstable Streams Sediment Yield Range*
Ecoregion 65	0.002 to 0.054
Ecoregion 74	0.298 to 1.856
Ecoregion 75	0.000249 to 0.00256

*tons per acre per day at the effective discharge

1.0 INTRODUCTION

1.1 Background

The identification of water bodies not meeting their designated use and the development of total maximum daily loads (TMDLs) for those water bodies are required by Section 303(d) of the Clean Water Act (CWA) and the Environmental Protection Agency's (EPA) Water Quality Planning and Management Regulations (40 CFR part 130). The TMDL process is designed to restore and maintain the quality of those impaired water bodies through the establishment of pollutant specific allowable loads. The pollutant of concern for this TMDL is sediment from landuse runoff and in-channel sediment processes.

The water bodies included in this TMDL are located within the Pearl River Basin. The Pearl River Basin includes all or part of the following counties in central and southern Mississippi: Attala, Choctaw, Copiah, Hancock, Hinds, Jefferson Davis, Kemper, Lamar, Lawrence, Leake, Lincoln, Madison, Marion, Neshoba, Newton, Pearl River, Pike, Rankin, Scott, Simpson, Smith, Walthall, Winston. The Pearl River Basin includes approximately 4.98 million acres and contains many landuse types including forest, pastureland, and cropland areas. However, the dominant landuses within the Pearl River Basin is forest. The location of the Pearl River Basin and the §303(d) listed segments included in this TMDL are shown in Figures 1 through 3.

The 32 water bodies shown in Table i are impaired due to sediment. Nine are evaluated listings. The 23 water bodies shown as biologically impaired due to sediment were listed due to failure to meet minimum water quality criteria for biological use support based on biological sampling (MDEQ, 2003b). For these water bodies, a detailed assessment of the watershed and potential point sources, called stressor identification, was completed. The results of the stressor identification indicated that sediment was a probable primary stressor in these 23 watersheds.

1.2 Applicable Water Body Segment Use

The water use classification for all water bodies included in this TMDL, as established by the *State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters* regulation, is Fish and Wildlife Support (MDEQ, 2003a). Waters with this classification are intended for fishing and propagation of fish, aquatic life, and wildlife. Waters that meet the Fish and Wildlife Support criteria should also be suitable for secondary contact, which is defined as incidental contact with water including wading and occasional swimming.

1.3 Applicable Water Body Segment Standard

The *State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters* do not include a water quality standard applicable to aquatic life protection due to sediment (MDEQ, 2003a). However, a narrative standard for the protection of aquatic life was interpreted to determine an applicable target for this TMDL. The narrative standard is that waters shall be free from materials

Sediment TMDL for Designated Streams in the Pearl River Basin

attributable to municipal, industrial, agricultural, or other dischargers producing color, odor, taste, total suspended solids, or other conditions in such degree as to create a nuisance, render the waters injurious to public health, recreation, or to aquatic life and wildlife, or adversely affect the palatability of fish, aesthetic quality, or impair the waters for any designated uses.

Figure 1. Location of Pearl River Basin

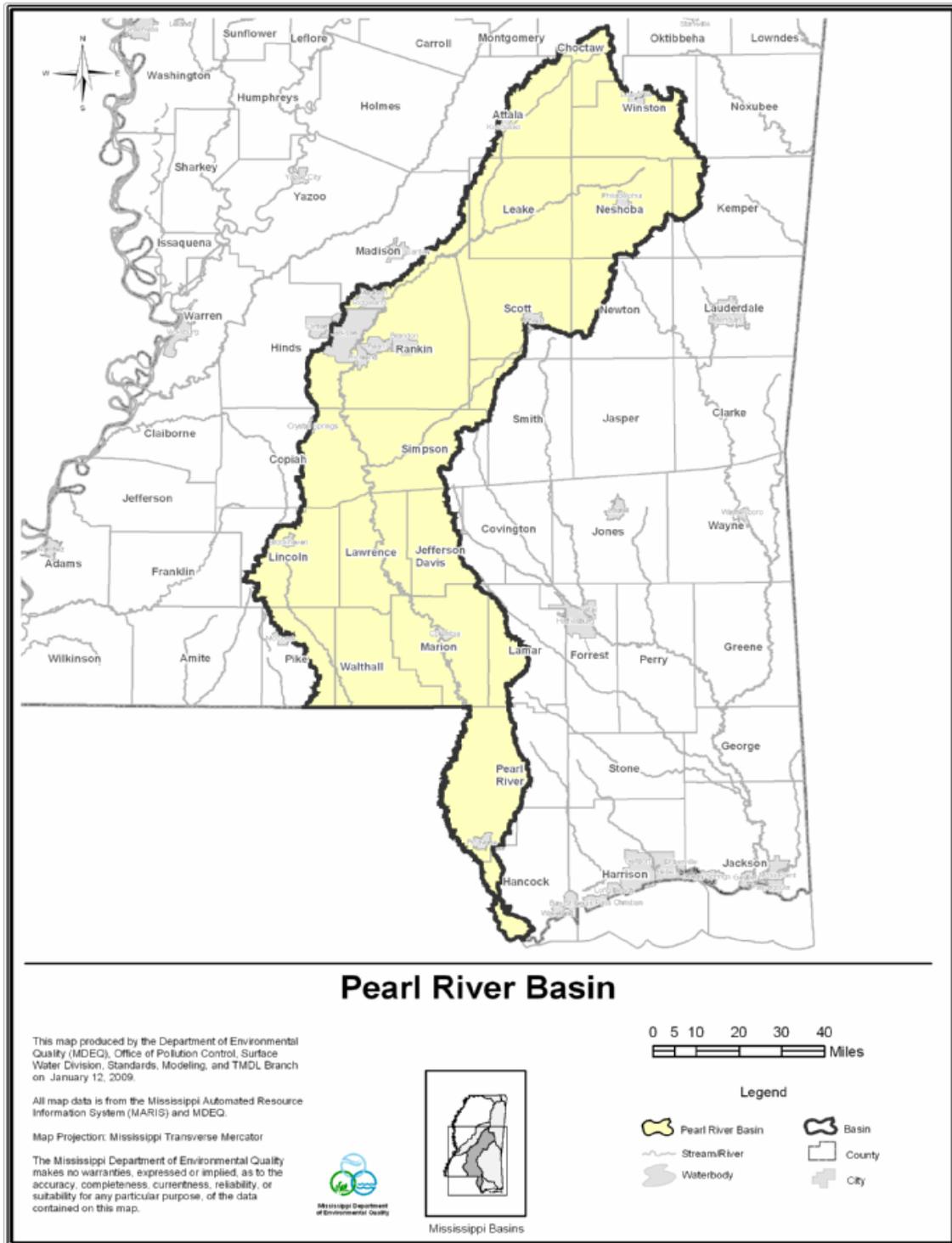
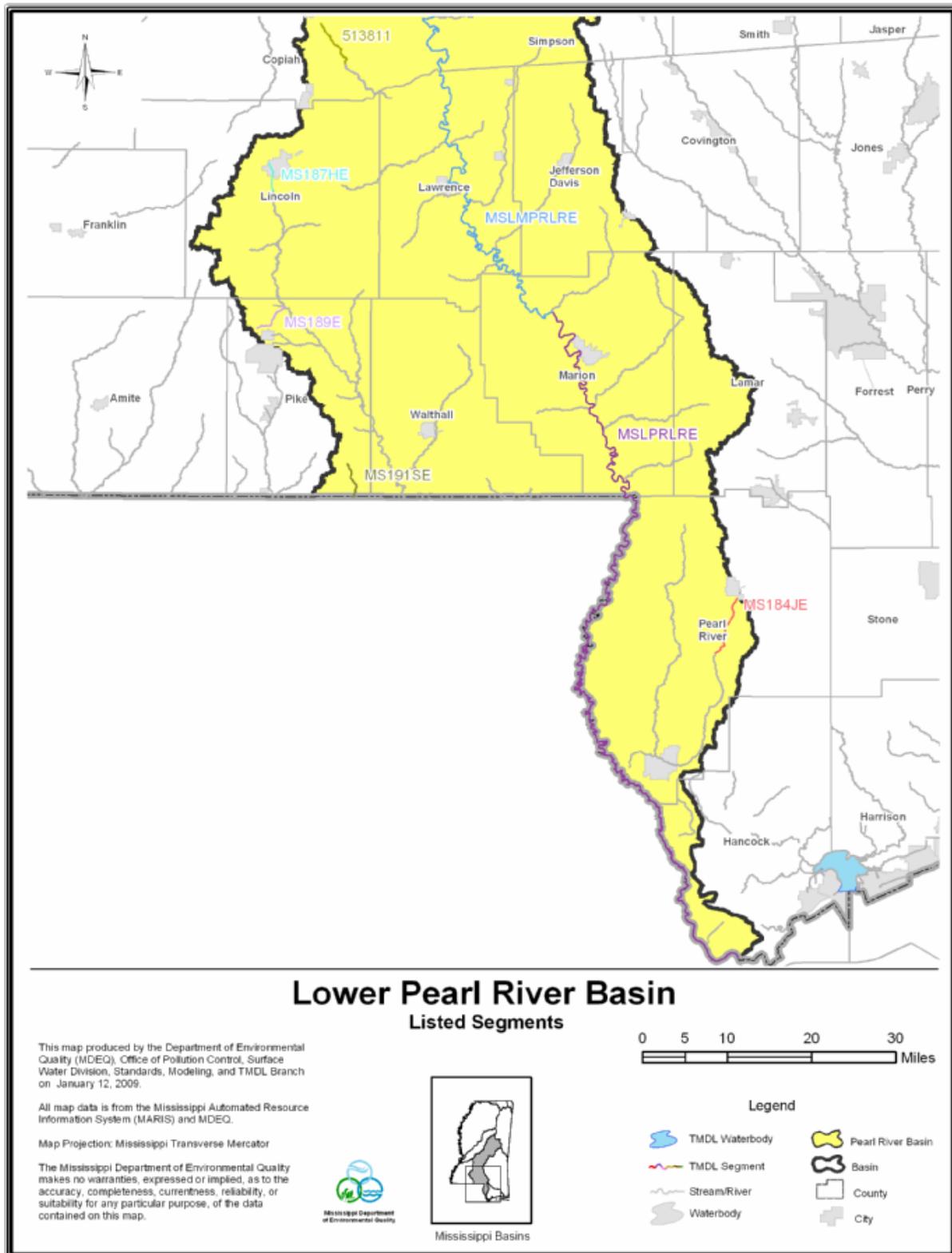


Figure 3. Location of Pearl River Basin §303(d) Listed Segments (Southern Portion)



2.0 TMDL ENDPOINT AND WATER QUALITY ASSESSMENT

2.1 Selection of a TMDL Endpoint and Critical Condition

One of the major components of a TMDL is the establishment of target endpoints, which are used to evaluate the attainment of acceptable water quality. Target endpoints, therefore, represent the water quality goals that are to be achieved by meeting the load and wasteload allocations specified in the TMDL. The endpoints allow for a comparison between observed conditions and conditions that are expected to restore designated uses.

For the water bodies included in this sediment TMDL there is an acceptable range of sediment loadings at the effective discharge of the water body. These ranges were developed from suspended sediment concentration (SSC) data measured at stable streams in the same ecoregion. The target range for the water bodies within the Pearl River Basin is based on the appropriate level III ecoregion for each water body segment. The target range for the water bodies is given in tons per acre per day at the effective discharge. The effective discharge is the discharge which moves the most sediment, or is the channel-forming flow. This discharge has been selected as the critical condition for this TMDL (Simon, et al., 2002b). If the sediment target applicable for sediment in the water body is maintained during critical conditions, then the health of the stream should improve.

3.0 SOURCE ASSESSMENT and LOAD ESTIMATION

An important part of the TMDL analysis is the identification of individual sources, source categories, or source subcategories of sedimentation in the watershed and the amount of pollutant loading contributed by each of these sources. Under the CWA, sources are broadly classified as either point or nonpoint sources. Under 40 CFR §122.2, a point source is defined as a discernable, confined, and discrete conveyance from which pollutants are or may be discharged to surface waters.

The National Pollutant Discharge Elimination System (NPDES) program regulates point source discharges. Point sources can be described by two broad categories: 1) NPDES regulated municipal and industrial wastewater treatment plants (WWTPs) and 2) NPDES regulated industrial activities, which include construction activities and municipal storm water discharges (Municipal Separate Storm Sewer Systems [MS4s]). For the purposes of this TMDL, all sources of sediment loading not regulated by NPDES permits are considered nonpoint sources.

3.1 Assessment of Point Sources

There are facilities in the Pearl River Basin with NPDES permits that are permitted for Total Suspended Solids (TSS). A list of facilities is not included because no changes are required in their permits due to this TMDL. This is considered appropriate since these sources provide negligible loadings of suspended solids to the receiving waters compared to wet weather sources (e.g., NPDES regulated construction activities, MS4s, and nonpoint sources). Also, the TSS component of a NPDES permitted facility is different from the pollutant addressed within this TMDL. The TSS component of the permitted discharges is generally composed more of organic material, and therefore, provides less direct impact on the biologic integrity of a stream (through settling and accumulation) than would stream sedimentation due to soil erosion during wet weather events. The pollutant of concern for this TMDL is sediment from landuse runoff and in-channel processes.

Sediment loadings from NPDES regulated construction activities and MS4s are considered point sources of sediment to surface waters. These discharges occur in response to storm events and are included in the WLA portion of this TMDL. As of March 2003, discharge of storm water from construction activities disturbing more than one acre must obtain an NPDES permit. The purpose of the NPDES permit is to eliminate or minimize the discharge of pollutants (sediment) from construction activities. Since construction activities at a site are of a temporary, relatively short term nature, the number of construction sites covered by the general permit varies. The target for these areas is the same range as the TMDL target for the watershed. The WLAs provided to the NPDES regulated construction activities and MS4s will be implemented as best management practices (BMPs) as specified in Mississippi's General Stormwater Permits for Small Construction, Construction, and Phase I & II MS4 permits. Properly designed and well-maintained BMPs are expected to provide attainment of water quality standards.

There are 11 MS4 permits within the Pearl River Basin. These MS4 permits are listed in Table 2.

Table 2. Pearl River Basin MS4 permits

AI ID	Agency Interest Name	City	County	Permit/ ID #
17834	Brandon, City of, MS4 Stormwater Management Program	Brandon	Rankin	MSRMS4026
17841	Flowood, City of, MS4 Stormwater Management Program	Flowood	Rankin	MSRMS4028
17828	Hinds County, MS4 Stormwater Management Program	Raymond	Hinds	MSRMS4019
17832	MDOT, MS4 Stormwater Management Program	Jackson	Hinds	MSRMS4024
17845	Madiison County Board of Supervisors, MS4 Stormwater Management Program	Canton	Madison	MSRMS4031
17802	Madison, City of, MS4 Stormwater Management Program	Madison	Madison	MSRMS4007
17833	Pearl, City of, MS4 Stormwater Management Program	Pearl	Rankin	MSRMS4025
17850	Rankin County, MS4 Stormwater Management Program	Brandon	Rankin	MSRMS4035
17843	Richland, City of, MS4 Stormwater Management Program	Richland	Rankin	MSRMS4029
17804	Ridgeland, City of, MS4 Stormwater Management Program	Ridgeland	Madison	MSRMS4009
16788	Jackson, City of, MS4 Stormwater Management Program	Jackson	Hinds	MSS049786

3.2 Assessment of Nonpoint Sources

Nonpoint loading of sediment in a water body results from the transport of the material into receiving waters by the processes of mass wasting, head cutting, gullyng, and sheet and rill erosion. Sources of sediment include:

- Agriculture
- Silviculture
- Rangeland
- Construction sites
- Roads
- Urban areas
- Mass wasting areas
- Gullies
- Surface mining
- In-channel and instream sources
- Historical landuse activities and channel alterations

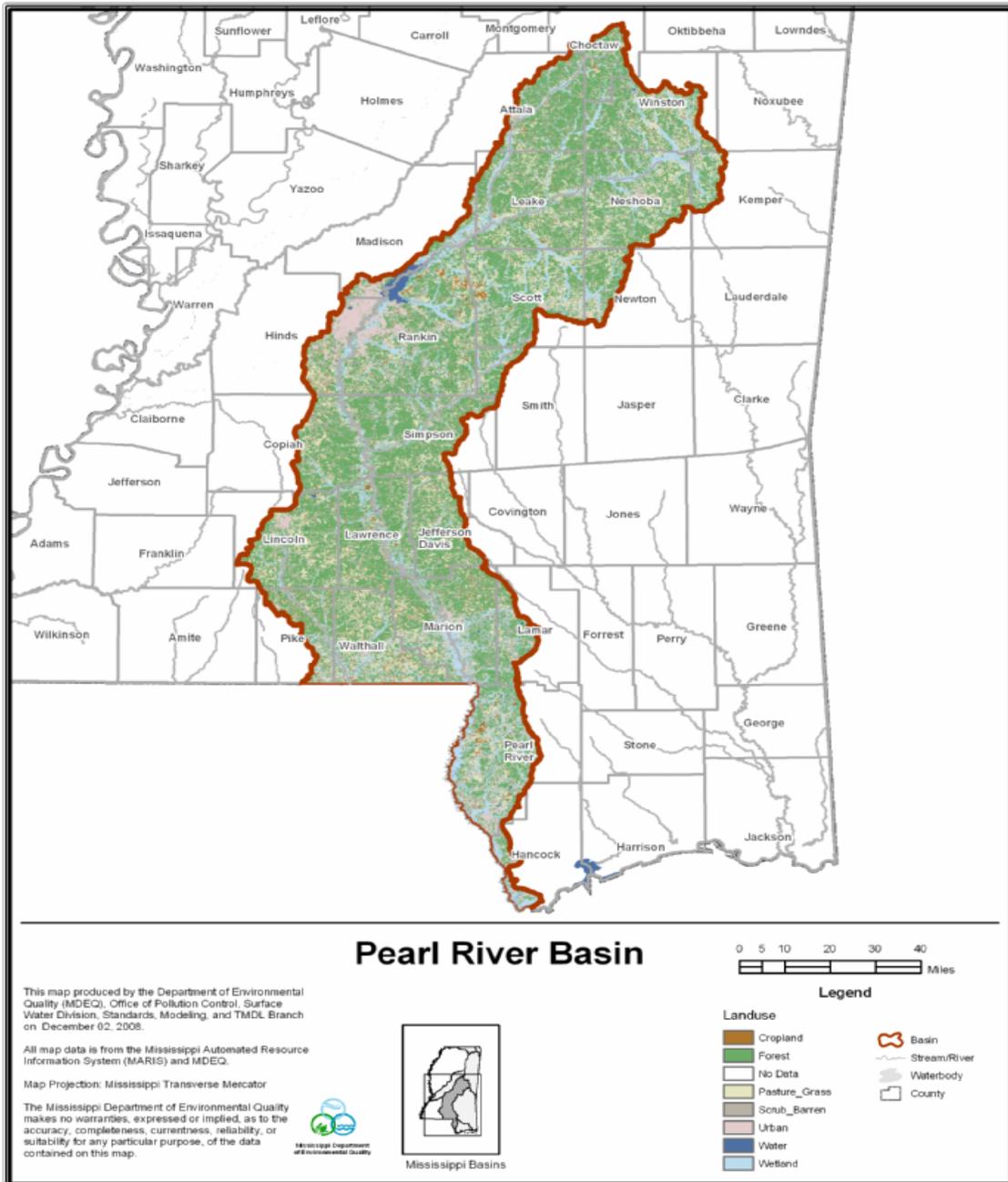
The drainage area of the Pearl River Basin contains approximately 4.98 million acres and includes many different landuse types including forest, pasture/grass, and cropland areas as shown in Table 3

and Figure 4. The dominant landuse within the watershed is forest. The landuse information given below is based on the National Land Cover Dataset (NLCD).

Table 3. Pearl River Basin Landuse Distribution (in acres)

Urban	Forest	Cropland	Pasture/Grass	Scrub/Barren	Wetland	Water	Total
342,007	2,280,806	119,362	808,605	612,687	753,549	66,298	4,983,314
6.9%	45.8%	2.4%	16.2%	12.3%	15.1%	1.3%	100.0%

Figure 4. Pearl River Basin Landuse Distribution



3.3 Existing Load Estimation

Due to lack of data for calibration it was determined that a modeling exercise to quantify the load from each source and estimate the total existing load would be ineffective. Instead an ecoregion approach was utilized to estimate existing load ranges. The CWPRU estimated the typical range for unstable streams within each level III ecoregion in the Pearl River Basin.

A range of unstable values was assigned to water bodies within the Pearl River Basin based on the level III ecoregion values (Table 3). The Pearl River Basin is located within level III ecoregions 65, 74, and level IV ecoregion 75i. Table 4 provides the water body segments included in this TMDL and the appropriate ecoregion for that segment. Table 5 provides the range of unstable values for each ecoregion in the Pearl River Basin in tons per acre per day at the effective discharge.

Table 4. §303(d) Listed Segments with Appropriate Ecoregion

Ecoregion 65	Ecoregion 74	Ecoregion 75i
MS184JE	MS189E	MSLPRLRE
MSLPRLRE	MS187HE	
MS191SE	513811	
MS232E	MSUMPLR1E	
MS165CE	MS161E	
MS167DE	MS159E	
MSSTRONGE	MS158E	
MS152E	MS155E	
MS153PE	MSUMPLR2E	
MS142E1		
MS143E		
MS149E		
MS137CE		
MS144E		
MSUPRLRE		
MS125PE		
MS121BE		
MS120E		
MS122E		
MS122E1		
MS123NE		
MS132E		

Table 5. Unstable Stream Sediment Yield Ranges for Level III Ecoregions within the Pearl River Basin

Level III Ecoregion	Unstable Streams Sediment Yield Range*
Ecoregion 65	0.002 to 0.054
Ecoregion 74	0.329 to 1.852
Ecoregion 75	0.000249 to 0.00256

*tons per acre per day at the effective discharge

4.0 DETERMINING THE TARGET SEDIMENT LOAD

The information and methodologies described in the following sections are based on research efforts conducted by the CWPRU of the National Sedimentation Laboratory in Oxford, Mississippi. The primary sources of the information presented in this section are:

- *Actual and Reference Sediment Yields for the James Creek Watershed – Mississippi* (Simon, et al., 2002a)
- *“Reference” and “Impacted” Rates of Suspended-Sediment Transport for Use in Developing Clean Sediment TMDLs: Mississippi and the Southeastern United States* (Simon, et al., 2002b)

4.1 Selecting a Reference Condition (Simon, et al., 2002a)

Sediment loads (transport rates) in streams vary by orders of magnitude over time and by location. Controls such as geology and channel-boundary materials, land use, channel stability, and the type and timing of precipitation events make prediction of sediment loads difficult and complex. Still, in order to determine the amount of sediment that impairs a given waterbody (TMDL), one must first be able to determine the sediment load that would be expected in an unimpaired stream of a given type and location. However, baseline conditions of flow, sediment concentrations, and transport rates for streams in the wide variety of physiographic provinces and under a wide variety of land uses are poorly understood.

There is no reason to assume that “natural” or background rates of sediment transport will be consistent from one region to another. Within the context of clean sediment TMDLs, it follows that there is no reason to assume that “target” values should be consistent on a nationwide basis. Similarly, there is no reason to assume that channels within a given region will have consistent rates of sediment transport. For example, unstable channel systems or those draining disturbed watersheds will produce and transport more sediment than stable channel systems in the same region. This reflects differences in the magnitude and perhaps type of erosion processes that dominate a subwatershed or stream reach.

To be useful for TMDL practitioners sediment transport relations must be placed within a conceptual and analytic framework such that they can be used to address sediment-related problems at sites where no such data exist. To accomplish this, sediment transport characteristics and relations need to be regionalized according to attributes of channels and drainage basins that are directly related to sediment production, transport, and potential impairment. In a general way, these attributes include among others, physiography, geology, climate and ecology, differentiated collectively as an ecoregion.

In order to identify those sediment transport conditions that represent impacted or impaired conditions, it is essential to first be able to define a non-disturbed, stable, or “reference” condition for the particular stream reach. In some schemes the

“reference” condition simply means “representative” of a given category of classified channel forms or morphologies and as such, may not be analogous with a “stable”, “undisturbed”, or “background” rate of sediment production and transport.

The Rosgen (1985) stream classification system is widely used to describe channel form. In this classification system, stream types D, F, and G are by definition, unstable (Rosgen, 1996). These stream reaches, therefore, would be expected to produce and transport enhanced amounts of sediment and represent “impacted”, if not “impaired” conditions. Thus, although it may be possible to define a “representative” reach of stream types D, F, and G, for the purpose of TMDL development, a “reference” condition transporting “natural” or “background” rates of sediment will be difficult to find.

As an alternative scheme for TMDL practitioners, the channel evolution framework set out by Simon and Hupp (1986) is proposed (Figure 5). In most alluvial channels, disruption of the dynamic equilibrium generally results in a certain degree of upstream channel degradation and downstream aggradation. If the predisturbed channel is considered as the initial stage (stage I) of channel evolution and the disrupted channel as an instantaneous condition (stage II), rapid channel degradation can be considered stage III. Degradation flattens channel gradients and consequently reduces the available stream power for given discharges with time. Concurrently, bank heights are increased and bank angles are often steepened by fluvial undercutting and by pore-pressure induced bank failures near the base of the bank. Thus, the degradation stage (stage III) is directly related to destabilization of the channel banks and to channel widening by mass-wasting processes (stage IV) once bank heights and angles exceed the critical conditions of the bank material (as determined by shear-strength characteristics).

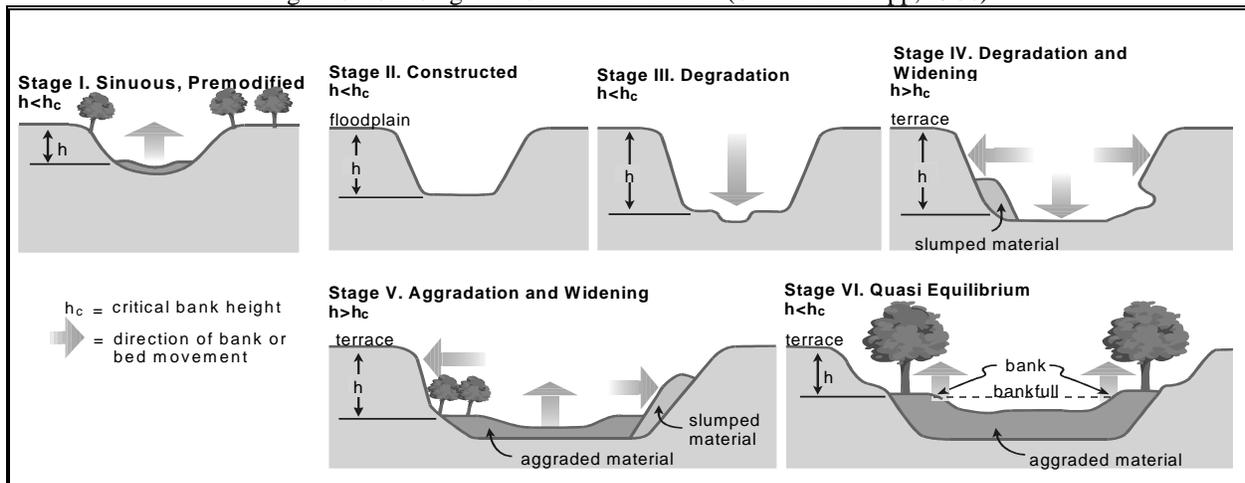
As degradation migrates further upstream, aggradation (stage V) becomes the dominant trend in previously degraded downstream sites because the flatter gradient and lower hydraulic radius at the degraded site cannot transport the heightened sediment loads originating from degrading reaches upstream. This secondary aggradation occurs at rates roughly 60% less than the associated degradation rate (Simon and Hupp, 1992). These reduced aggradation rates indicate that bed-level recovery will not be complete and that attainment of a new dynamic equilibrium will take place through (1) further channel widening, (2) the establishment of riparian vegetation that adds roughness elements and reduces the stream power for given discharges, and (3) further gradient reduction by meander extension and elongation.

The lack of complete bed-level recovery often results in a two-tiered channel configuration with the original floodplain surface becoming a terrace. Flood flows are, therefore, constrained within this enlarged channel below the terrace level. Without proliferation of riparian vegetation within the channel, this results in a given flow having greater erosive power than if an equivalent flow could dissipate energy by spreading across the floodplain. Where vegetation does re-establish, the

additional roughness limits the erosive power of flood events within the incised channel and constrains shear-stress values to near bankfull levels. Aggrading conditions (stage V) are also common in reaches downstream from the area of maximum disturbance immediately after the disturbance is imposed on the stream channel.

With stages of channel evolution tied to discrete channel processes and not strictly to specific channel shapes, they have been successfully used to describe systematic channel-stability processes over time and space in diverse environments subject to various disturbances such as stream response to: channelization in the Southeast US Coastal Plain; volcanic eruptions in the Cascade Mountains; and dams in Tuscany, Italy (Rinaldi and Simon, 1998). Because the stages of channel evolution represent shifts in dominant channel processes, they are systematically related to suspended-sediment and bed-material discharge (Simon, 1989; Kuhnle and Simon, 2000), fish-community structure, rates of channel widening (Simon and Hupp, 1992), and the density and distribution of woody riparian vegetation (Hupp, 1992).

Figure 5. Six Stages of Channel Evolution (Simon and Hupp, 1986)



An advantage of a process-based channel-evolution scheme for use in TMDL development is that Stages I and VI represent two true “reference” conditions. In some cases, channels are unlikely to recover to Stage I, pre-modified conditions. Stage VI, re-stabilized conditions are a more likely target under the present regional landuse and altered hydrologic regimes and can be used as a “reference” condition. However, in pristine areas where disturbances have not occurred or where they are far less severe, Stage I conditions can be used as a “reference” condition.

4.2 Analysis of Available Suspended-Sediment Data (Simon, et al., 2002a)

Analysis of suspended-sediment transport data involves establishing a relation between flow and sediment concentration or load. Instantaneous concentration data combined with either an instantaneous flow value or flow data representing the value obtained from the stage-discharge relation at 15-minute intervals are best. Mean daily values of both flow and sediment loads, which are readily available from the

USGS, tend to be biased towards lower flows, particularly in flashy basins. For establishing sediment transport rating relations, instantaneous concentration and 15-minute flow data were used from USGS and ARS gauging station records.

Because the “effective discharge” is that discharge or range of discharges that shape channels and perform the most geomorphic work (transport the most sediment) over the long term, it can serve as a useful indicator of regional suspended-sediment transport conditions for “reference” and impacted sites. The effective discharge is obtained by combining flow frequency data with sediment transport relationships. In many parts of the United States, the effective discharge is approximately equal to the peak flow that occurs about every 1.5 years ($Q_{1.5}$) and may be analogous to the bankfull discharge in stable streams.

The recurrence interval for the effective discharge was calculated for 10 streams in Mississippi. Calculating the effective discharge is a matter of integrating a flow-frequency curve with a sediment transport rating to obtain the discharge (range of discharges) that transports the most sediment. This was accomplished at 10 sites where the complete 15-minute flow record was easily obtainable. For the 10 streams analyzed in Mississippi, the $Q_{1.5}$ is on average, a good approximation. Therefore, the $Q_{1.5}$ was used as a measure of establishing the effective discharge at all sites.

The effective discharge ($Q_{1.5}$) was determined for all sites where the instantaneous sediment concentration data were available. This discharge was then applied to the sediment transport relation to obtain the sediment load at the effective discharge. To normalize the data for differences in basin size, the sediment load was divided by drainage area to obtain sediment yield (in tons/acre/day).

4.3 Target Sediment Yields

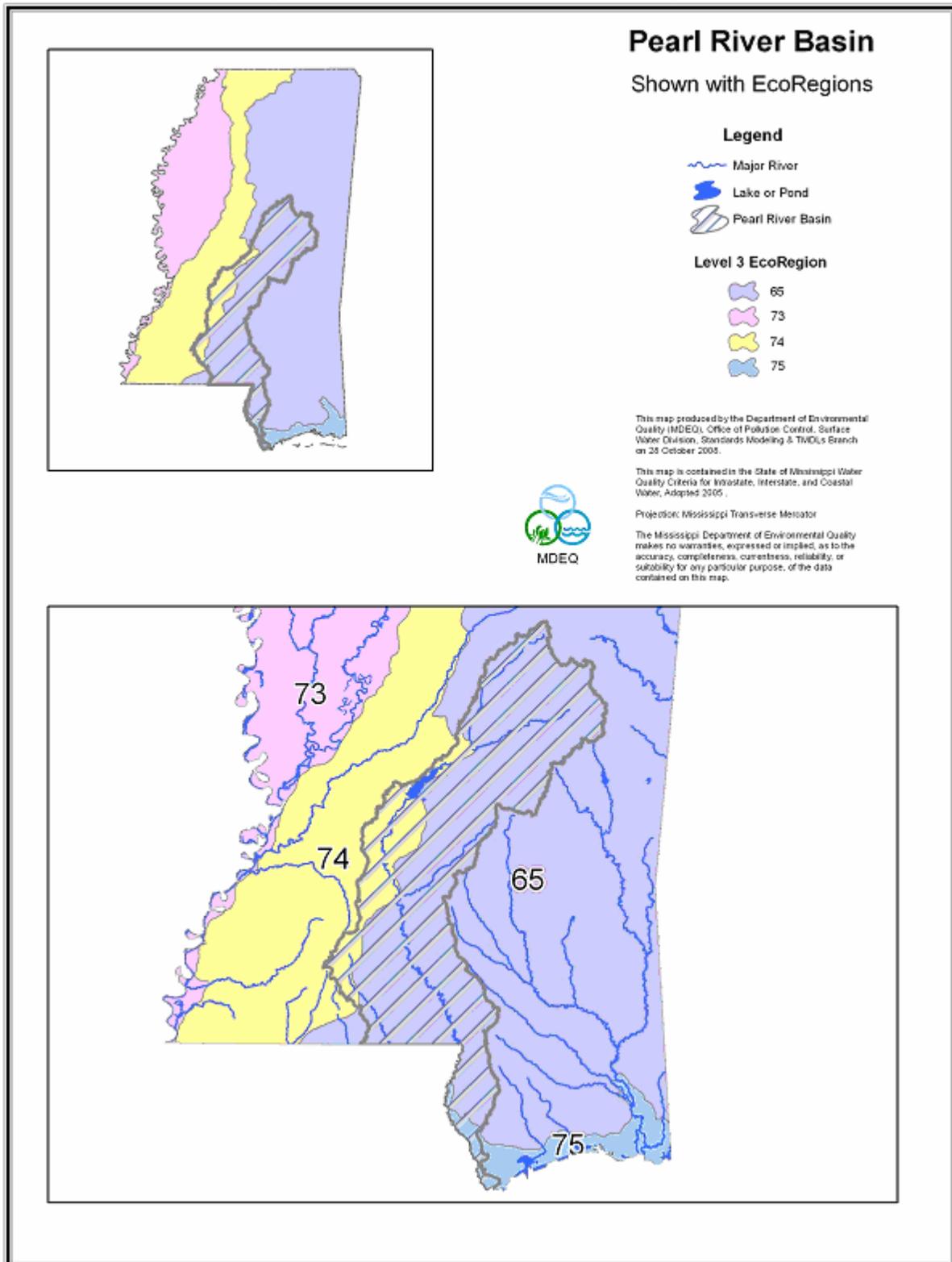
Target values for suspended-sediment are based on the concept that stable channel conditions can be represented by channel evolution Stages I and VI. Therefore, the effective discharge sediment yields for Stage I and VI in a given ecoregion represent background or natural transport rates (Simon, et al., 2002b). The targeted sediment yield for an ecoregion is based on the sediment yield values obtained for Stage I and VI sites within that ecoregion. A range of stable values was assigned water bodies within the Pearl River Basin based on the level III ecoregion values (Table 6). The Pearl River Basin is located within level III ecoregions 65, 74, and level IV ecoregion 75i as shown in Figure 6.

Table 6. Stable Stream Sediment Yield Ranges for Ecoregions within the Pearl River Basin

Ecoregion	Stable Streams Sediment Yield Range*
Ecoregion 65	0.0004 to 0.0018
Ecoregion 74	0.0033 to 0.0140
Ecoregion 75i	0.00019 to 0.00041

*tons per acre per day at the effective discharge

Figure 6. Pearl River Basin with Level III Ecoregions



5.0 ALLOCATION

The allocation for this TMDL involves a wasteload allocation (WLA) for permitted sources, a load allocation (LA) for unpermitted nonpoint sources, and an implicit margin of safety (MOS), which should result in attainment of water quality standards in the Pearl River Basin. According to 40 CFR §130.2 (i), TMDLs can be expressed in terms of mass per time, toxicity, or other appropriate measure. This TMDL is expressed as the tons of sediment that can be discharged from an acre of a subwatershed during a day (tons/acre/day) at the effective discharge and still attain the applicable water quality standard. It is appropriate to apply the same target yield to permitted (WLA) and unpermitted (LA) watershed areas. For load TMDLs the WLA and LA are summed to calculate the TMDL. Because this TMDL is expressed as a yield, as long as all activities, permitted or unpermitted, meet the same yield, the TMDL yield will be met, regardless of the relative load contribution. The methods used to develop these values are described in detail in the reports titled, “*Reference and Impacted Rates of Suspended-Sediment Transport for Use in Developing Clean Sediment TMDLs: Mississippi and the Southeastern United States* (Simon, et al., 2002b) and *Actual and Reference Sediment Yields for the James Creek Watershed – Mississippi* (Simon, et al., 2002a).

5.1 Wasteload Allocations

The contribution from wastewater treatment facilities was considered negligible in the development of this TMDL. The TSS component of any NPDES permitted facility is different from the pollutant addressed within this TMDL. The pollutant of concern for this TMDL is sediment from landuse runoff and in-channel processes, consistent with discharges associated with construction activities and MS4s.

Sediment loadings from NPDES regulated construction activities and MS4s are considered point sources of sediment to surface waters. These discharges occur in response to storm events and are included in the WLA of this TMDL as the same target yield as the TMDL in tons per acre per day at the effective discharge.

5.2 Load Allocations

The LA developed for this TMDL is an estimation of the acceptable contribution of all nonpoint sources in the watershed. Channel processes and upland sources both contribute to the sediment loading of the water body. Examples of potential nonpoint sources of sediment include agricultural activities, silviculture activities, surface mining activities, gullies, in-channel and instream sources, roads, and construction activities not regulated by NPDES permits.

Mississippi has a voluntary (non-regulated) BMP program for forestry. The program began in 1988 when MDEQ requested that the Mississippi Forestry Commission (MFC) coordinate the development of voluntary BMPs for forestry in Mississippi. The BMP guidelines were approved by MDEQ and EPA Region 4. These guidelines have been published in the handbook, *Mississippi’s BMPs: Best Management Practices for Forestry in Mississippi* (MFC, 2000). Forested areas that are subject to silviculture activities may exhibit elevated sediment contributions if voluntary BMPs for forestry in Mississippi are not implemented.

MFC recently conducted the 2003 BMP Implementation Survey in November 2002 through July 2003. A total of 258 sites having recent silviculture activity were randomly selected to evaluate the voluntary implementation of BMPs. These sites were also evaluated for the presence of a significant risk to water quality. The results of the survey indicated that 89% of the BMPs applicable to the survey sites were implemented in accordance with the BMP handbook (MFC, 2004).

BMPs, as outlined in Mississippi’s *BMPs: Best Management Practices for Forestry in Mississippi* (MFC, 2000), *Planning and Design Manual for the Control of Erosion, Sediment, and Stormwater* (MDEQ, et. al, 1994), and *Field Office Technical Guide* (NRCS, 2000) would be the most effective means of reducing the load from a majority of potential upland sources.

For the water bodies within the Pearl River Basin to attain the applicable narrative water quality standard for sediment, the allowable range of sediment loads is 0.0004 to 0.0018 tons per acre per day at the effective discharge for water bodies in ER65, 0.0033 to 0.0140 tons per acre per day at the effective discharge for water bodies in ER74, and 0.00019 to 0.00041 tons per acre per day at the effective discharge for water bodies in ER75i.

5.3 Incorporation of a Margin of Safety (MOS)

The two types of MOS development are to implicitly incorporate the MOS using conservative assumptions or to explicitly specify a portion of the total TMDL as the MOS. The MOS selected for this TMDL is implicit. The use of conservative procedures provides a sufficient implicit MOS. These conservative procedures include the use of a stable stream as the target and the use of the effective discharge flow, the flow that produces the most sediment transport.

5.4 Calculation of the TMDL

As stated above, the pollutant of concern for this TMDL is sediment from landuse runoff and in-channel processes. The LA includes the contributions from the channel and surface runoff from the watershed. The MOS for this TMDL is implicit and derived from the conservative assumptions incorporated into this methodology. This TMDL, expressed as an acceptable range of sediment yields, is the same for the WLA, LA, and TMDL. For load TMDLs the WLA and LA are summed to calculate the TMDL. Because this TMDL is expressed as a yield, as long as all activities, permitted or unpermitted, meet the same yield as shown in Table 7, the TMDL yield will be met, regardless of the relative load contribution.

Table 7. TMDL Yields

Ecoregion	WLA	LA	MOS	TMDL
Ecoregion 65	0.0004 to 0.0018*	0.0004 to 0.0018*	Implicit	0.0004 to 0.0018*
Ecoregion 74	0.0033 to 0.0140*	0.0033 to 0.0140*	Implicit	0.0033 to 0.0140*
Ecoregion 75i	0.00019 to 0.00041*	0.00019 to 0.00041*	Implicit	0.00019 to 0.00041*

*tons per acre per day at the effective discharge

5.5 Seasonality

The use of data collected throughout the year at multiple stations in each ecoregion to set the target addresses seasonal variation. Instantaneous flow and suspended-sediment data were used to develop the TMDL targets for each ecoregion. These data were collected throughout the year and would account for all seasons of the calendar year, changing atmospheric conditions (including rainy and dry seasons and high and low temperatures), and the periods representative of critical conditions.

6.0 CONCLUSION

The acceptable ranges of sediment yields for water bodies within the Pearl River Basin were estimated to be 0.0004 to 0.0018 tons per acre per day at the effective discharge for level III ecoregion 65, 0.0033 to 0.0140 tons per acre per day at the effective discharge for level III ecoregion 74, and 0.00019 to 0.00041 tons per acre per day at the effective discharge for level IV ecoregion 75i. The estimated existing range for these water bodies is 0.002 to 0.054 tons per acre per day at the effective discharge for level III ecoregion 65, 0.298 to 1.856 tons per acre per day at the effective discharge for level III ecoregion 74, and 0.000249 to 0.00256 tons per acre per day at the effective discharge for level IV ecoregion 75i. The estimated existing range is larger than the TMDL range. Therefore, it is recommended that water bodies within the Pearl River Basin be considered a priority for streambank and riparian buffer zone restoration and any sediment reduction BMPs, especially for the road crossings, agricultural activities, and construction activities. The implementation of these BMP activities should reduce the sediment load to water bodies within the Pearl River Basin. The reduction of the sediment load to water bodies within the Pearl River Basin to equal that of a relatively stable stream will allow the streams to approach stable conditions. This will provide improved habitat for the support of aquatic life in the water bodies and will result in the attainment of the applicable water quality standards.

6.1 Next Steps

MDEQ's Basin Management Approach and Nonpoint Source Program emphasize restoration of impaired waters with developed TMDLs. During the watershed prioritization process to be conducted by the Pearl River Basin Team, this TMDL will be considered as a basis for implementing possible restoration projects. The basin team is made up of state and federal resource agencies and stakeholder organizations and provides the opportunity for these entities to work with local stakeholders to achieve quantifiable improvements in water quality. Together, basin team members work to understand water quality conditions, determine causes and sources of problems, prioritize watersheds for potential water quality restoration and protection activities, and identify collaboration and leveraging opportunities. The Basin Management Approach and the Nonpoint Source Program work together to facilitate and support these activities.

The Nonpoint Source Program provides financial incentives to eligible parties to implement appropriate restoration and protection projects through the Clean Water Act's Section 319 Nonpoint Source (NPS) Grant Program. This program makes available around \$1.6M each grant year for restoration and protections efforts by providing a 60% cost share for eligible projects.

Mississippi Soil and Water Conservation Commission (MSWCC) is the lead agency responsible for abatement of agricultural NPS pollution through training, promotion, and installation of BMPs on agricultural lands. USDA Natural Resource Conservation Service (NRCS) provides technical assistance to MSWCC through its conservation districts located in each county. NRCS assists animal producers in developing nutrient management plans and grazing management plans. MDEQ, MSWCC, NRCS, and other governmental and nongovernmental organizations work closely together to reduce agricultural runoff through the Section 319 NPS Program.

Mississippi Forestry Commission (MFC), in cooperation with the Mississippi Forestry Association (MFA) and Mississippi State University (MSU), have taken a leadership role in the development and promotion of the forestry industry Best Management Practices (BMPs) in Mississippi. MDEQ is

designated as the lead agency for implementing an urban polluted runoff control program through its Stormwater Program. Through this program, MDEQ regulates most construction activities. Mississippi Department of Transportation (MDOT) is responsible for implementation of erosion and sediment control practices on highway construction.

Due to this TMDL, projects within this watershed will receive a higher score and ranking for funding through the basin team process and Nonpoint Source Program described above.

6.2 Public Participation

This TMDL will be published for a 30-day public notice. During this time, the public will be notified by publication in both a statewide and local 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. TMDL mailing list members may request to receive the TMDL reports through either, email or the postal service. Anyone wishing to become a member of the TMDL mailing list should contact Kay Whittington at (601)961-5729 or Kay_Whittington@deq.state.ms.us.

At the end of the 30-day period, MDEQ will determine the level of interest in the TMDL and make a decision on the necessity of holding a public meeting. All comments received during the public notice period and at any public meeting become a part of the record of this TMDL. All comments will be considered in the ultimate completion of this TMDL for submission of this TMDL to EPA Region 4 for final approval.

DEFINITIONS

Aggradation: The raising of the bed of a watercourse by the deposition of sediment.

Allocations: That portion of a receiving water's loading capacity that is attributed to one of its existing or future pollution sources (nonpoint or point) or to natural background sources.

Ambient Stations: A network of fixed monitoring stations established for systematic water quality sampling at regular intervals, and for uniform parametric coverage over a long-term period.

Anthropogenic: Pertains to the [environmental] influence of human activities.

Assimilative Capacity: The amount of contaminant load that can be discharged to a specific stream or river without violating the provisions of the *State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters and Water Quality* regulations. Assimilative capacity is the extent to which a body of water can receive wastes without significant deterioration of beneficial uses.

Background: Ambient pollutant concentrations due to natural sources, nearby sources other than the one currently under consideration, and unidentified anthropogenic sources.

Background Levels: Levels representing the chemical, physical, and biological conditions that would result from natural geomorphological processes such as weathering or dissolution.

Bank Full Stage: Stage of flow at which a stream fills its channel up to level of its bank. Recurrence interval averages 1.5 to 2 years.

Bedload Sediment: Portion of sediment load transported downstream by sliding, rolling, bouncing along the channel bottom. Generally consists of particles >1 mm.

Best Management Practices (BMPs): (1) The methods, measures, or practices selected by an agency to meet its nonpoint source control needs. BMPs include but are not limited to structural and nonstructural controls and operation and maintenance procedures. BMPs can be applied before, during, or after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters. (2) Methods have been determined to be the most effective, practical means of preventing or reducing pollution from nonpoint sources.

Calibration: Testing and tuning of a model to a set of field data. Also includes minimization of deviations between measured field conditions and output of a model by selecting appropriate model coefficients.

Channel: (1) A natural stream that conveys water; a ditch or channel excavated for the flow of water. (2) The water-filled groove through which runoff water flows. In a narrow valley the channel may include the entire valley floor, but ordinarily it occupies only a small fraction of the valley.

Channel Improvement: The improvement of the flow characteristics of a channel by clearing, excavation, realignment, lining, or other means in order to increase its capacity. Sometimes used to connote channel stabilization.

Channel Stabilization: Erosion prevention and stabilization of velocity distribution in a channel using jetties, drops, revetments, vegetation, and other measures.

Channelization: Straightening and deepening streams so that water will move faster, a marsh-drainage tactic that can interfere with waste assimilation capacity, disturb fish and wildlife habitats, and aggravate flooding.

Clean Sediment: Sediment that is not contaminated by chemical substances. Pollution caused by clean sediment refers to the quantity of sediment, as opposed to the presence of pollutant-contaminated sediment.

Critical Condition: The critical condition can be thought of as the “worst case” scenario of environmental conditions in the water body in which the loading expressed in the TMDL for the pollutant of concern will continue to meet water quality standards. Critical conditions are the combination of environmental factors (e.g., flow, temperature, etc.) that results in attaining and maintaining the water quality criterion and has an acceptably low frequency of occurrence.

Cross-Sectional Area: Wet area of a waterbody normal to the longitudinal component of the flow.

Daily Discharge: The discharge of a pollutant measured during a 24-hour period that reasonably represents the day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the average measurement of the pollutant over the day.

Designated Use: (1) Those uses specified in water quality standards for each water body or segment whether or not they are being attained. (2) Those water uses identified in state water quality standards which must be achieved and maintained as required under the Clean Water Act.

Discharge Monitoring Report: Report of effluent characteristics submitted by a NPDES permitted facility.

Dissolved Solids: (1) The total amount of dissolved materials, organic and inorganic, contained in water or wastes. Excessive dissolved solids can make water unsuitable for industrial uses, unpalatable for drinking, and even cathartic. Potable water supplies must have dissolved solid content from 20 to 1000 mg/l, but sources which have more than 500 mg/l are not recommended by the U.S. Public Health Service. (2) Disintegrated organic and inorganic material in water. Excessive amounts make water unfit to drink or use in industrial processes.

Diurnal: Recurring daily. Diurnal indicates variations following a distinctive pattern and recurring from day to day.

Dynamic Model: A mathematical formulation describing and simulating the physical behavior of a system or a process and its temporal variability.

Ecoregion: A physical region that is defined by its ecology, which includes meteorological factors, elevation, plant and animal speciation, landscape position, and soils.

Effective Discharge: The channel-forming discharge or discharge which moves the most sediment. This value is obtained by combining flow frequency data with sediment transport data.

Effluent: (1) Any solid, liquid, or gas which enters the environment as a by-product of a man-oriented process. The substances that flow out of a designated source. Effluent, effluence, and efflux have the same meaning. (2) Wastewater – treated or untreated – that flows out of a treatment plant, sewer, or industrial outfall. Generally refers to wastes discharged into surface waters.

Effluent Standards and Limitations: All State or Federal effluent standards and limitations on quantities, rates, and concentrations of chemical, physical, biological, and other constituents to which a waste or wastewater discharge may be subject under the Federal Act or the State law. This includes, but is not limited to, effluent limitations, standards of performance, toxic effluent standards and prohibitions, pretreatment standards, and schedules of compliance.

Flood Plain: (1) The lowland and relatively flat areas adjoining inland and coastal waters and other floodprone areas such as offshore islands, including at a minimum, the area subject to a one percent or greater chance of flooding in any given year. The base floodplain shall be used to designate the 100-year floodplain (one percent chance floodplain). The critical action floodplain is defined as the 500-year floodplain (0.2 percent chance floodplain). (2) The portion of a river valley that becomes covered with water when the river overflows its banks at flood stage. (3) The flat or nearly flat land along a river or stream or in a tidal area that is covered by water during a flood.

Fluvial Geomorphology: The study of landforms and processes associated with rivers.

Geomorphology: The study of the Earth's landscapes and landforms, the processes by which the landforms originated, their age, and the nature of the materials underlying them.

Gully Erosion: (1) Severe erosion in which trenches are cut to a depth greater than 30 centimeters (1 ft). Generally, ditches deep enough to cross with farm equipment are considered gullies. (2) The widening, deepening, and cutting back of small channels and waterways due to erosion.

Impaired Water body: Any water body that does not attain water quality standards due to an individual pollutant, multiple pollutants, pollution, or an unknown cause of impairment.

Surface Runoff: Precipitation, snow melt, or irrigation in excess of what can infiltrate the soil surface and be stored in small surface depressions; a major transporter or nonpoint source pollutants.

Load Allocation (LA): The portion of a receiving water's loading capacity attributed either to one of its existing or future nonpoint sources of pollution or to natural background sources. Load allocations are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading. Wherever possible, natural and nonpoint source loads should be distinguished.

Loading: The portion of a receiving water's loading capacity attributed either to one of its existing or future nonpoint sources of pollution or to natural background sources. Load allocations are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading. Wherever possible, natural and nonpoint source loads should be distinguished.

Mass Wasting: Downslope transport of soil and rocks due to gravitational stress.

NPDES Permit: An individual or general permit issued by the MDEQ Permit Board pursuant to regulations adopted by the Commission under Mississippi Code Annotated (as amended) § 49-17-17 and § 49-17-29 for discharges into State waters.

Narrative Criteria: Nonquantitative guidelines that describe the desired water quality goals.

Natural Waters: Flowing water within a physical system that has developed without human intervention, in which natural processes continue to take place.

Nonpoint Source: The pollution from sources which generally are not controlled by establishing effluent limitations under sections 301, 302, and 402. Nonpoint source pollutants are not traceable to a discrete identifiable origin, but generally result from land runoff, precipitation, drainage, or seepage. This water may contain pollutants that come from land use activities such as agriculture, construction, silviculture, surface mining, disposal of wastewater, hydrologic modifications, and urban development.

Numeric Target: A measurable value determined for the pollutant of concern which, if achieved, is expected to result in the attainment of water quality standards in the listed water body.

Phased Approach: Under the phased approach to TMDL development, load allocations and wasteload allocations are calculated using the best available data and information recognizing the need for additional monitoring data to accurately characterize sources and loadings. The phased approach is typically employed when nonpoint sources dominate. It provides for the implementation of load reduction strategies while collecting additional data.

Point Source: Pollution from a stationary location or fixed facility from which pollutants are discharged or emitted. Pollution from any single identifiable source, e.g., a pipe, ditch, ship, ore pit, or factory smokestack.

Pollutant: Includes, but not limited to, any element, substance, compound, or mixture, including disease-causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may be reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations, in such organisms or their offspring; except that the term pollutant or contaminant shall not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance under subparagraphs (A) through (F) of paragraph (14) and shall not include natural gas, liquefied natural gas, or synthetic gas of pipeline quality (or mixtures of natural gas and such synthetic gas).

Pollution: Generally, the presence of matter or energy whose nature, location, or quantity produces undesired environmental effects. Under the Clean Water Act, for example, the term is defined as man-made or man-induced alteration of the physical, biological, and radiological integrity of water. Other pollution related terms include: agricultural pollution, air pollution, indoor air pollution, industrial waste pollution, manmade air pollution, natural pollution, noise pollution, oil pollution, sewage pollution, soil pollution, thermal pollution, water pollution, and wood burning stove pollution.

Reference Sites: Water bodies that are representative of the characteristics of the region and subject to minimal human disturbance.

Scouring: The removal of earth or rock by the action of running water or of a glacier.

Sediment: (1) The unconsolidated inorganic and organic material that is suspended in and being transported by surface water, or has settled out and deposited into beds. (2) Soil, sand, and minerals washed from land into water, usually after rain. They pile up in reservoirs, rivers, and harbors, destroying fish and wildlife habitat, and clouding the water so that sunlight cannot reach aquatic plants. Careless farming, mining, and building activities will expose sediment materials, allowing them to wash off the land after rainfall.

Sediment Delivery: Contribution of transported sediment to a particular location or part of a landscape.

Sediment Production: Delivery of colluvium or bedrock from hillslope to stream channel. The production rate is evaluated as the sum of the rates of colluvial bank erosion and sediment transport across channel banks.

Sediment Yield: The quantity of sediment arriving at a specific location.

Sedimentation: Process of deposition of waterborne or windborne sediment or other material; also refers to the infilling of bottom substrate in a waterbody by sediment (siltation).

Sheet Erosion: Also Sheetwash. Erosion of the ground surface by unconcentrated (i.e. not in rills) overland flow.

Sheetwash: Also Sheet Erosion. Erosion of the ground surface by unconcentrated (i.e. not in rills) overland flow.

Stage: The height of a water surface above an established datum plane.

Stream Restoration: Various techniques used to replicate the hydrological, morphological, and ecological features that have been lost in a stream due to urbanization, farming, or other disturbance.

Surface Runoff: Precipitation, snow melt, or irrigation in excess of what can infiltrate the soil surface and be stored in small surface depressions; a major transporter or nonpoint source pollutants.

Suspended Solids: Organic and inorganic particles (sediment) suspended in and carried by a fluid (water). The suspension is governed by the upward components of turbulence, currents, or colloidal suspension. Suspended-sediment usually consists of particles <0.1 mm, although size may vary according to current hydrological conditions. Particles between 0.1 mm and 1 mm may move as suspended or be deposited (bedload).

Thalweg: Deepest part of a stream channel.

Topography: The physical features of a geographic surface area including relative elevations and the positions of natural and man-made features.

Total Maximum Daily Load or TMDL: (1) The total allowable pollutant load to a receiving water such that any additional loading will produce a violation of water quality standards. (2) The sum of the individual waste load allocations and load allocations. A margin of safety is included with the two types of allocations so that any additional loading, regardless of source, would not produce a violation of water quality standards.

Turbidity: (1) A measure of opacity of a substance; the degree to which light is scattered or absorbed by a fluid. (2) A cloudy condition in water due to suspended silt or organic matter.

Waste: Useless, unwanted, or discarded material resulting from (agricultural, commercial, community, and industrial) activities. Wastes include solids, liquids, and gases.

Wasteload Allocation (WLA): (1) The portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution. WLAs constitute a type of water quality based effluent limitation. (2) The portion of a receiving water's total maximum daily load that is allocated to one of its existing or future point sources of pollution. (3) The maximum load of pollutants each discharger of waste is allowed to release into a particular waterway. Discharge limits are usually required for each specific water quality criterion being, or expected to be, violated. The portion of a stream's total assimilative capacity assigned to an individual discharge.

Water Quality Criteria: Specific levels of water quality which, if reached, are expected to render a body of water suitable for its designated use. The criteria are based on specific levels of pollutants that would make the water harmful if used for drinking, swimming, farming, fish production, or industrial processes. Water quality criteria are comprised of numeric and narrative criteria. Numeric criteria are scientifically derived ambient concentrations developed by EPA or States for various pollutants of concern to protect human health and aquatic life. Narrative criteria are statements that describe the desired water quality goal.

Water Quality Standards: (1) Provisions of State or Federal law which consist of a designated use or uses for the water quality criteria for such waters based upon such uses. Water quality standards are to protect the public health or welfare, enhance the quality of water, and serve the purposes of the Clean Water Act. (2) A law or regulation that consists of the beneficial designated use or uses of a water body, the numeric and narrative water quality criteria that are necessary to protect the use or uses of that particular water body, and an antidegradation statement. (3) State-adopted and EPA-approved ambient standards for water bodies. The standards prescribe the use of the water body and establish the water quality criteria that must be met to protect designated uses.

Waters of the State: All waters within the jurisdiction of this State, including all streams, lakes, ponds, wetlands, impounding reservoirs, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, situated wholly or partly within or bordering upon the State, and such coastal waters as are within the jurisdiction of the State, except lakes, ponds, or other surface waters which are wholly landlocked and privately owned, and which are not regulated under the Federal Clean Water Act (33 U.S.C.1251 et seq.).

Watershed: (1) The land area that drains (contributes runoff) into a stream. (2) The land area that drains into a stream; the watershed for a major river may encompass a number of smaller watersheds that ultimately combine at a common delivery point.

ABBREVIATIONS

ARS.....	Agricultural Research Service
BMP	Best Management Practice
CWA	Clean Water Act
CWPRU	Channel and Watershed Processes Research Unit
EPA.....	Environmental Protection Agency
LA	Load Allocation
MARIS.....	Mississippi Automated Resource Information Service
MDEQ.....	Mississippi Department of Environmental Quality
MFC	Mississippi Forestry Commission
MOS.....	Margin of Safety
MS4.....	Municipal Separate Storm Sewer System
NPDES.....	National Pollution Discharge Elimination System
NRCS	Natural Resource Conservation Service
NSL.....	National Sedimentation Laboratory
SSC	Suspended Sediment Concentration
TMDL.....	Total Maximum Daily Load
TSS.....	Total Suspended Solids
USGS	United States Geological Survey
WLA	Wasteload Allocation
WWTP	Wastewater Treatment Plant

REFERENCES

- Hupp, C.R. 1992. Riparian Vegetation Recovery Patterns Following Stream Channelization: A Geomorphic Perspective. *Ecology*. 73(4): 1209-1226.
- Kuhnle, Roger and Andrew Simon. 2000. Evaluation of Sediment Transport Data for Clean Sediment TMDLs. *National Sedimentation Laboratory Report 17*. Oxford, MS. United States Department of Agriculture. Agricultural Research Service. National Sedimentation Laboratory. Channel and Watershed Processes Research Unit.
- Lee, C.C. 1998. *Environmental Engineering Dictionary*. Third Edition. Government Institutes, Inc. Rockville, MD.
- MDEQ, MSWCC, and USDA SCS. 1994. *Planning and Design Manual for the Control of Erosion, Sediment, and Stormwater*.
- MDEQ. 2008. *Stressor Identification for Bahala Creek*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Big Creek*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Campbell Creek*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Cane Creek*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Clabber Creek*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Coffee Bogue Creek*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Conehatta Creek*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Dabbs Creek*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Eutacutachee Creek*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Halbert Branch*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Hanging Moss Creek*. Office of Pollution Control. Jackson, MS.

- MDEQ. 2008. *Stressor Identification for Hughes Creek*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Juniper Creek*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Lobutchka Creek*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Pinishook Creek*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Rhodes Creek*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Richland Creek*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Shockaloo Creek*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Silver Creek*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Strong River*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Tallabogue Creek*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Tallahaga Creek*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2008. *Stressor Identification for Tuscolameta Creek*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2006b. *Mississippi List of Water Bodies, Pursuant to Section 303(d) of the Clean Water Act*. Office of Pollution Control. Jackson, MS.
- MDEQ. 2003a. *State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters*. Office of Pollution Control. Jackson, MS.

- MDEQ. 2003b. *Development and Application of the Mississippi Benthic Index of Stream Quality (M-BISQ)*. Prepared by Tetra Tech, Inc., Owings Mills, MD, for the Mississippi Department of Environmental Quality, Office of Pollution Control, Jackson, MS. (For further information on this document, contact Randy Reed at 601-961-5158).
- MDEQ. 2003c. *James Creek Total Maximum Daily Load for Biological Impairment due to Sediment*. Office of Pollution Control. Jackson, MS.
- MFC. 2000. *Mississippi's BMPs: Best Management Practices for Forestry in Mississippi*. Publication # 107.
- MFC. 2004. *2003 BMP Implementation Survey – November 2002 to July 2003*. Mississippi's Voluntary Silvicultural Best Management Practices Implementation Monitoring Program.
- NRCS. 2000. *Field Office Technical Guide Transmittal No. 61*.
- Rinaldi, M. and Simon, A. 1998. Adjustments of the Arno River, Central Italy. *Geomorphology*. (22):57-71
- Rosgen, D.L. 1985. A Classification of Natural Rivers. *Catena*. (22):169-199.
- Rosgen, D.L. 1996. *Applied River Morphology*. Wildland Hydrology. Pagosa Springs, CO.
- Simon, Andrew. 1989. A Model of Channel Response in Disturbed Alluvial Channels. *Earth Surface Processes and Landforms*. 14(1):11-26.
- Simon, Andrew and C.R. Hupp. 1986. Channel Evolution in Modified Tennessee Channels. Proceedings of the *Fourth Federal Interagency Sedimentation Conference*. March 1986. Las Vegas, NV. v. 2, Section 5, 5-71 to 5-82.
- Simon, Andrew and C.R. Hupp. 1992. Geomorphic and Vegetative Recovery Processes along Modified Stream Channels of West Tennessee. *U.S. Geological Survey Open-File Report*. 91-502.
- Simon, A., Bingner, R.L., Langendoen, E.L., and Alonso, C.V. 2002a. *Actual and Reference Sediment Yields for the James Creek Watershed--Mississippi*. Research Report No. 31, USDA-ARS National Sedimentation Laboratory, xvi+185 pp.
- Simon, Andrew, Roger A. Kuhnle, and Wendy Dickerson. 2002b. "Reference" and "Impacted" Rates of Suspended-Sediment Transport for Use in Developing Clean Sediment TMDLs: Mississippi and the Southeastern United States. *National Sedimentation Laboratory Report 25*. Oxford, MS. United States Department of Agriculture. Agricultural Research Service. National Sedimentation Laboratory. Channel and Watershed Processes Research Unit.

APPENDIX B

City of Jackson Total Maximum Daily Load Report Pear River Basin – Total Nitrogen and Phosphorus

Total Maximum Daily Load

Total Nitrogen and Total Phosphorus

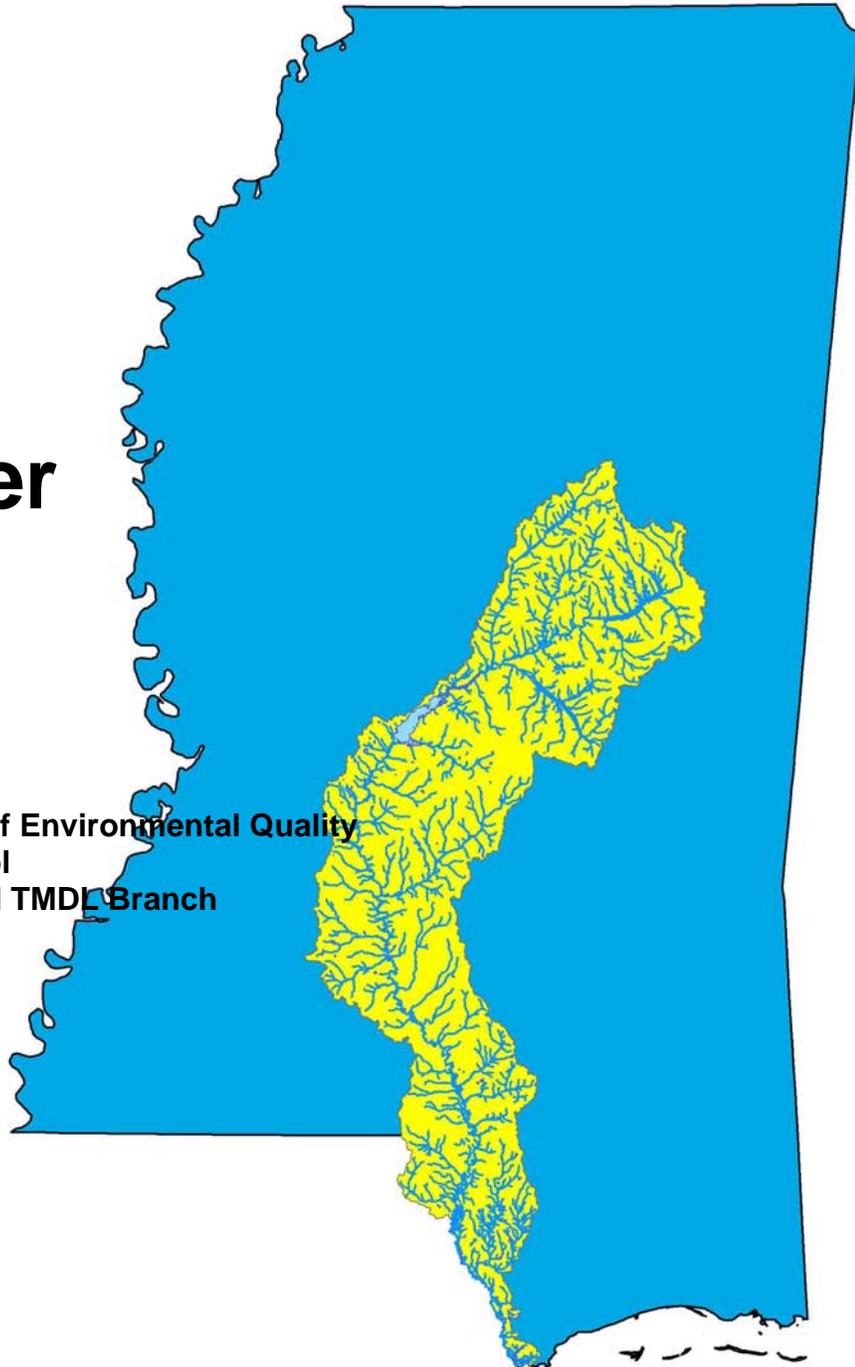
For the Pearl River

Pearl River Basin

Prepared By

Mississippi Department of Environmental Quality
Office of Pollution Control
Standards, Modeling, and TMDL Branch

MDEQ
PO Box 2261
Jackson, MS 39225
(601) 961-5171
www.deq.state.ms.us



Mississippi Department of
Environmental Quality

FOREWORD

This report has been prepared in accordance with the schedule contained within the federal consent decree dated December 22, 1998. The report contains one or more Total Maximum Daily Loads (TMDLs) for water body segments found on Mississippi's 1996 Section 303(d) List of Impaired Water bodies. Because of the accelerated schedule required by the consent decree, many of these TMDLs have been prepared out of sequence with the State's rotating basin approach. The implementation of the TMDLs contained herein will be prioritized within Mississippi's rotating basin approach.

The amount and quality of the data on which this report is based are limited. As additional information becomes available, the TMDLs may be updated. Such additional information may include water quality and quantity data, changes in pollutant loadings, or changes in landuse within the watershed. In some cases, additional water quality data may indicate that no impairment exists.

Conversion Factors

To convert from	To	Multiply by	To convert from	To	Multiply by
mile ²	acre	640	acre	ft ²	43560
km ²	acre	247.1	days	seconds	86400
m ³	ft ³	35.3	meters	feet	3.28
ft ³	gallons	7.48	ft ³	gallons	7.48
ft ³	liters	28.3	hectares	acres	2.47
cfs	gal/min	448.8	miles	meters	1609.3
cfs	MGD	0.646	tonnes	tons	1.1
m ³	gallons	264.2	µg/l * cfs	gm/day	2.45
m ³	liters	1000	µg/l * MGD	gm/day	3.79

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	µ	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

TABLE OF CONTENTS

TMDL INFORMATION	5
EXECUTIVE SUMMARY	7
INTRODUCTION	8
1.1 Background.....	8
1.2 Listing History	8
1.3 Applicable Water Body Segment Use	9
1.4 Applicable Water Body Segment Standard	9
1.5 Nutrient Target Development	9
1.6 Selection of a TMDL Endpoint.....	10
WATER BODY ASSESSMENT	11
2.1 Water Quality Data	11
2.2 Assessment of Point Sources	13
2.3 Assessment of Non-Point Sources	15
2.4 Estimated Existing Load for Total Nitrogen and Total Phosphorus.....	16
ALLOCATION.....	19
3.1 Wasteload Allocation.....	19
3.1.1 Wasteload Allocation Storm Water	21
3.2 Load Allocation	21
3.3 Incorporation of a Margin of Safety	21
3.4 Calculation of the TMDL.....	21
3.5 Seasonality and Critical Condition	22
CONCLUSION.....	23
4.1 Next Steps	23
4.2 Public Participation.....	24
REFERENCES	25

FIGURES

Figure 1. §303(d) Listed Segments of the Pearl River.....	8
Figure 2. Landuse in the Pearl River Watershed	16
Figure 3. Drainage Area and Flow in the Pearl River and South Independent Streams Basins ...	17

TABLES

Table 1. Listing Information	5
Table 2. Water Quality Standards	5
Table 3. Total Maximum Daily Load for the Pearl River Basin	5
Table 4. Point Source Loads	6
Table 5. 2008 Nutrient Data and AGPT Results.....	11
Table 6. 2006 Nutrient Data and AGPT Results.....	11
Table 7. Historical Data	12
Table 8. TN and TP Median Concentration in Wastewater Effluents	13
Table 9. NPDES Sources	14
Table 10. MS4 Permits	15
Table 11. Estimated Loads for the Pearl River.....	18
Table 12. Waste Load Allocation	20
Table 13. Calculation of the TMDL	21

TMDL INFORMATION

Table 1. Listing Information

Name	ID	County	HUC	Evaluated Cause
Pearl River	MSUPRLRE	Neshoba and Leake	03180001	Nutrients
Pearl River	MSUMPRLR1E	Hinds, Rankin, and Copiah	03180002	Nutrients
Pearl River	MSUMPRLR2E	Leake and Madison	03180002	Nutrients
Pearl River	MSLMPRLRE	Simpson, Lawrence, and Copiah	03180003	Nutrients
Pearl River	MSLPRLRE	Marion, Pearl River, and Hancock	03180004	Nutrients

Table 2. Water Quality Standards

Parameter	Beneficial use	Water Quality Criteria
Nutrients	Aquatic Life Support	Waters shall be free from materials attributable to municipal, industrial, agricultural, or other dischargers producing color, odor, taste, total suspended solids, or other conditions in such degree as to create a nuisance, render the waters injurious to public health, recreation, or to aquatic life and wildlife, or adversely affect the palatability of fish, aesthetic quality, or impair the waters for any designated uses.

Table 3. Total Maximum Daily Load for the Pearl River Basin

	WLA lbs/day	WLA sw lbs/day	LA lbs/day	MOS	TMDL lbs/day
Total Nitrogen	12,747.6	416.9	22571.1	Implicit	35,735.6*
Total Phosphorous	2,549.4	46.4	2509.3	Implicit	5,105.1*

*TMDL applies such that TN and TP targets will be met in each of the impaired segments

Table 4. Point Source Loads

Facility	Permit	Flow (MGD)	TN Load (lb/day)	TP Load (lb/day)
Bogalusa POTW	LA0046515	6	575.86	138.01
Carriere Regional Wastewater Treatment System	MS0061941	4	383.90	92.00
Columbia POTW, South	MS0044164	1.47	141.08	33.81
Georgia Pacific Corp., Monticello Mill	MS0002941	26.04	2064.57	161.25
Jackson POTW, Savanna Street	MS0024295	46	5221.10	1180.12
Jackson POTW, Trahon and Big Creek	MS0044059	4.5	510.76	115.45
Kosciusko POTW*	MS0027774	2.048	196.56	47.11
Morton POTW	MS0036234	2.97	337.10	76.19
Philadelphia POTW*	MS0021156	1.34	128.61	30.82
Picayune POTW (Airport Rd)	MS0042161	3.075	295.13	70.73
Picayune POTW (Neal Rd)	MS0061174	2.4	230.34	55.20
Poplarville POTW	MS0020494	1.1	124.85	28.22
Sanderson Farms Inc., Monticello	MS0055492	1.0	1118.33	132.70
Tuscolameta Watershed WLA**	---	---	1419.42	387.76
Total			12,747.6	2,549.4

*HCR Facility with a concentration based permit limit

**Nutrient load for all facilities included in the Tuscolameta Nutrient TMDL

EXECUTIVE SUMMARY

This TMDL is for the five segments of the Pearl River from the headwaters to the mouth at the Mississippi Sound, which were on the Mississippi 2008 Section 303(d) List of Impaired Water Bodies due to the evaluated cause of nutrients. Other evaluated causes of impairment will be addressed in separate TMDL reports. This TMDL will provide an estimate of the total nitrogen (TN) and total phosphorus (TP) allowable in this river.

Mississippi does not have water quality standards for allowable nutrient concentrations. MDEQ currently has a Nutrient Task Force (NTF) working on the development of criteria for nutrients. An annual concentration of 0.7 mg/l is an applicable target for TN and 0.1 mg/l for TP for water bodies located in the Ecoregion 65, which is the predominant ecoregion of the Pearl River Basin. MDEQ is presenting these preliminary target values for TMDL development which are subject to revision after the development of numeric nutrient criteria.

There are five river segments included in this TMDL, which are listed in Table 1 and shown in Figure 1. This TMDL focuses on the entirety of the Pearl River and major and direct point sources in the Pearl River Basin, which are listed in Table 4. This TMDL does not examine direct sources to the West Pearl River in Louisiana which diverges from the main stem of the Pearl River at Wakaiah Bluff in Pearl River County. This TMDL also does not examine nonpoint source loading from landuses that drain directly to the West Pearl River.

The limited nutrient information and estimated existing concentrations indicate reductions of nutrients can be accomplished with implementation of best management practices (BMPs) and reduction of TP from point sources.

INTRODUCTION

1.1 Background

The identification of water bodies not meeting their designated use and the development of total maximum daily loads (TMDLs) for those water bodies are required by Section 303(d) of the Clean Water Act and the Environmental Protection Agency's (EPA) Water Quality Planning and Management Regulations (40 CFR part 130). The TMDL process is designed to restore and maintain the quality of those impaired water bodies through the establishment of pollutant specific allowable loads. This TMDL has been developed for the 2008 §303(d) listed segments shown in Figure 1.

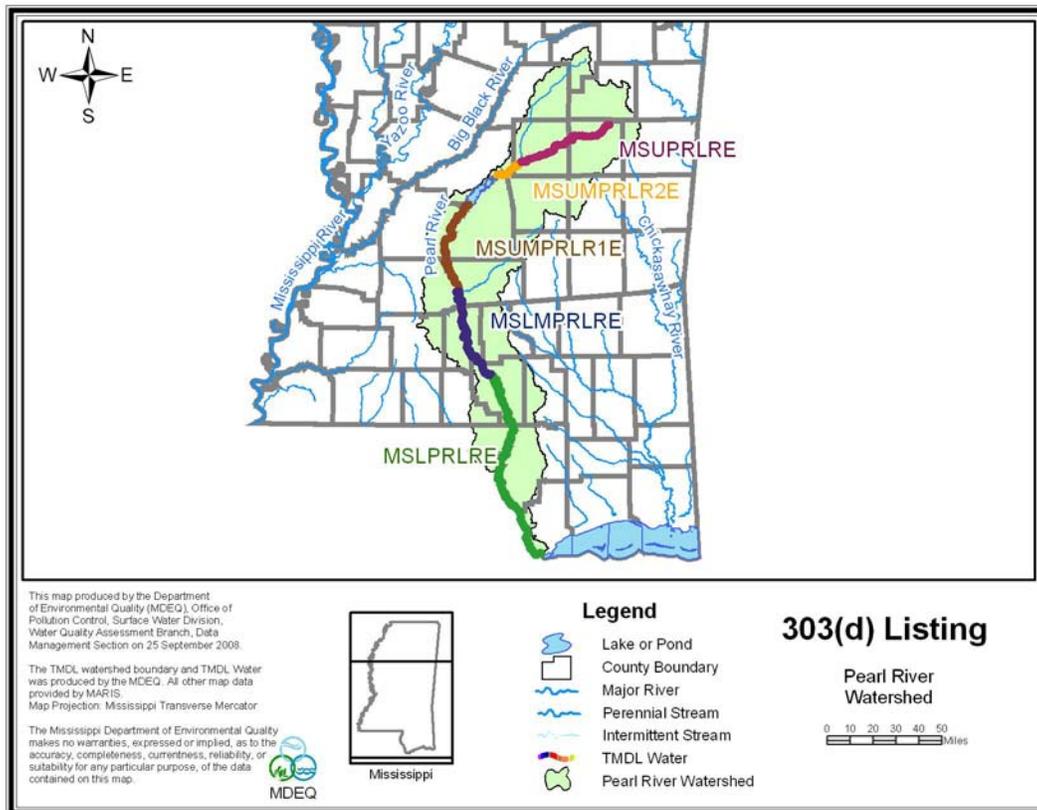


Figure 1. §303(d) Listed Segments of the Pearl River

1.2 Listing History

The segments were originally listed by evaluating the basin for water bodies that were potentially impaired due to activities within the watersheds. There are no state numeric criteria in Mississippi for nutrients. These numeric criteria are currently being developed by the Mississippi Nutrient Task Force in coordination with EPA Region 4. MDEQ proposed a work plan for numeric nutrient criteria development that has been mutually agreed upon with EPA Region 4 and is on schedule according to the approved timeline for development of numeric nutrient criteria (MDEQ, 2007).

1.3 Applicable Water Body Segment Use

The water use classifications are established by the State of Mississippi in the document *State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters* (MDEQ, 2007). The designated beneficial use for the Pearl River above the Ross Barnett Reservoir is Fish and Wildlife. From the Ross Barnett Reservoir to the City of Jackson water intake, the designated beneficial use is Public Water Supply. The majority of the Pearl River, from Byram Bridge to the mouth, has a designated beneficial use of Recreation.

1.4 Applicable Water Body Segment Standard

The water quality standard applicable to the use of the water body and the pollutant of concern is defined in the *State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters* (MDEQ, 2007).

Mississippi's current standards contain a narrative criteria that can be applied to nutrients which states "*Waters shall be free from materials attributable to municipal, industrial, agricultural, or other discharges producing color, odor, taste, total suspended or dissolved solids, sediment, turbidity, or other conditions in such degree as to create a nuisance, render the waters injurious to public health, recreation, or to aquatic life and wildlife, or adversely affect the palatability of fish, aesthetic quality, or impair the waters for any designated use* (MDEQ, 2007)." In the 1999 Protocol for Developing Nutrient TMDLs, EPA suggests several methods for the development of numeric criteria for nutrients (USEPA, 1999). In accordance with the 1999 Protocol, "*The target value for the chosen indicator can be based on: comparison to similar but unimpaired waters; user surveys; empirical data summarized in classification systems; literature values; or professional judgment.*" MDEQ believes the most economical and scientifically defensible method for use in Mississippi is a comparison between similar but unimpaired waters within the same region. This method is dependent on adequate data which are being collected in accordance with the current nutrient criteria development plan.

1.5 Nutrient Target Development

Nutrient data were collected quarterly at 99 discrete sampling stations state wide where biological data already existed. These stations were identified and used to represent a range of stream reaches according to biological health status, geographic location (selected to account for ecoregion, bioregion, basin and geologic variability) and streams that potentially receive non-point source pollution from urban, agricultural, and silviculture lands as well as point source pollution from NPDES permitted facilities.

Nutrient concentration data were not normally distributed; therefore, data were log transformed for statistical analyses. Data were evaluated for distinct patterns of various data groupings (stratification) according to natural variability. Only stations that were characterized as "least disturbed" through a defined process in the M-BISQ process (M-BISQ 2003) or stations that resulted in a biological impairment rating of "fully attaining" were used to evaluate natural variability of the data set. Each of these two groups was evaluated separately ("least disturbed sites" and "fully attaining sites). Some stations were used in both sets, in other words, they were considered "least disturbed" and "fully attaining". The number of stations considered "least disturbed" was 30 of 99, and the number of stations considered "fully attaining" was 53 of 99.

Several analysis techniques were used to evaluate nutrient data. Graphical analyses were used as the primary evaluation tool. Specific analyses used included; scatter plots, box plots, Pearson's correlation, and general descriptive statistics.

In general, natural nutrient variability was not apparent based on box plot analyses according to the 4 stratification scenarios. Bioregions were selected as the stratification scheme to use for TMDLs in the Pascagoula Basin. However, this was not appropriate for some water bodies in smaller bioregions. Therefore, MDEQ now uses ecoregions as a stratification scheme for the water bodies in the remainder of the state.

In order to use the data set to determine possible nutrient thresholds, nutrient concentrations were evaluated as to their correlation with biological metrics. That thorough evaluation was completed prior to the Pascagoula River Basin TMDLs. The methodology and approach were verified. The same methodology was applied to the subsequent basins and ecoregions.

For the preliminary target concentration for each ecoregion, the 90th percentile was derived from the mean nutrient value at each site found to be fully supporting of aquatic life support according to the M-BISQ scores.

1.6 Selection of a TMDL Endpoint

One of the major components of a TMDL is the establishment of instream numeric endpoints, which are used to evaluate the attainment of acceptable water quality. Instream numeric endpoints, therefore, represent the water quality goals that are to be achieved by meeting the load and wasteload allocations specified in the TMDL. The endpoints allow for a comparison between observed instream conditions and conditions that are expected to restore designated uses.

For this TMDL, MDEQ is presenting preliminary targets for TN and TP. An annual concentration 0.7 mg/l is an applicable target for TN and 0.1 mg/l for TP for water bodies located in ecoregion 65. MDEQ is presenting these preliminary target values for TMDL development. Due to the limited data set an applicable target for Large Rivers could not be developed. These targets are considered to be very conservative for larger water bodies. Therefore, the targets are subject to revision after the development of nutrient criteria, when the work of the NTF is complete.

WATER BODY ASSESSMENT

2.1 Water Quality Data

Nutrient data was collected on the Pearl River in the spring of 2008. Algal Growth Potential Tests (AGPT) were performed to determine the limiting nutrient in the Pearl River. The nitrogen, phosphorous, and AGPT results are presented in Table 5. A water quality study was conducted on the Pearl River in the summer of 2006 by USEPA Region 4 and DEQ. Nutrient and AGPT data were also gathered as a part of this study. The 2006 nutrient data and AGPT results are shown in Table 6. The AGPT results from the 2006 and the 2008 sampling show nitrogen is the limiting nutrient. Historically, there have been numerous water quality monitoring sites on the Pearl River that have collected nutrient data. A summary of this historical data is presented in Table 7.

Table 5. 2008 Nutrient Data and AGPT Results

Station Number	Station Location	Date	TN (mg/l)	TP (mg/l)	AGPT (mg/l)	Limiting Nutrient
A0450019	Pearl River at Pearlington	4/30/2008	0.95	0.10	6.3	Nitrogen
		5/28/2008	0.96	0.12		
A0490019	Pearl River at Rosemary Rd near Terry	4/22/2008	1.44	0.17	9.5	Nitrogen
		5/12/2008	1.45	0.25		
A0770166	Pearl River near Monticello	4/30/2008	1.58	0.16	9.2	Nitrogen
		5/27/2008	1.76	0.18		
A0910168	Pearl River near Columbia	4/30/2008	1.53	0.19	13	Nitrogen
		5/28/2008	1.18	0.15		
A1090004	Pearl River near Bogalusa	4/30/2008	1.11	0.12	3.2	Nitrogen
		5/28/2008	1.31	0.20		
A1210162	Pearl River at Florence Byrum Rd near Byram	4/25/2008	1.25	0.14	10	Nitrogen
		5/21/2008	1.14	0.15		
Site 2	Pearl River at Hwy 28 near Georgetown	4/30/2008	1.43	0.16	9.9	Nitrogen
		5/27/2008	1.55	0.15		

Table 6. 2006 Nutrient Data and AGPT Results

Station Number	Station Location	Date	TN (mg/l)	TP (mg/l)	AGPT (mg/l)	Limiting Nutrient
A0490016	Pearl River at Jackson at Impound Lot	8/23/2006	1.06	0.06		
		8/22/2006			3.5	Nitrogen
A0490017	Pearl River at Jackson WWTP above discharge	8/23/2006	0.58	0.05		
		8/25/2006			3.0	Nitrogen
A0490018	Pearl River at Jackson WWTP below discharge	8/23/2006	1.57	0.39		
		8/25/2006			20	Nitrogen
A0490019	Pearl River near Terry at Rosemary Rd	8/23/2006	2.43	0.14	NA	NA
A1210162	Pearl River at Florence Byrum Rd near Byram	8/23/2006	2.42	0.36		
		8/24/2006			38	Nitrogen
C0490033	Pearl River at Jackson at Water Works	8/23/2006	1.10	0.06	NA	NA

Table 7. Historical Data

Waterbody ID	Station Number	Station Location	Date Range	# of Samples	TN (mg/l)			TP (mg/l)		
					avg	max	min	avg	max	min
MSLMPRLRE	2488250	Near Wanilla @ Mill Rd. Bridge	12/16/1996 – 1/13/1997	2	0.97	1.09	0.85	0.12	0.14	0.10
MSLMPRLRE	2488500	At Monticello @ Hwy 84	4/22/1997 – 10/16/2001	19	1.41	2.17	0.35	0.16	.024	0.12
MSLPRRLRE	2488940	Near Foxworth @ Hwy 35	1/7/1991 - 9/12/1996	28	1.17	2.65	0.34	0.15	0.85	0.01
MSLPRRLRE	2489000	At Columbia @ Hwy 98	9/26/1978 – 3/21/1992	13	1.10	1.80	0.6	NA	NA	NA
MSLPRRLRE	2489500	Near Bogalusa, LA @ Hwy 26	12/11/1996 – 9/3/2004	54	0.91	1.66	0.32	0.12	0.71	0.01
MSLPRRLRE	2492668	At Pearlinton @ Hwy 90	1/8/1991 – 12/3/2001	117	0.71	3.60	0.12	0.15	4.86	0.00
MSLPRRLRE	PL095	Near Picayune Above Walkiah Bluff	8/23/1999	1	0.98	0.98	0.98	0.12	0.12	0.12
MSLPRRLRE	PL096	Near Picayune Above Walkiah Bluff	8/23/1999	1	0.86	0.86	0.86	0.30	0.30	0.30
MSLPRRLRE	PL490	At Pearlinton Above Hwy 90 Bridge	6/20/2003 – 11/3/2005	42	0.60	1.16	0.29	0.07	0.13	0.02
MSUMPRRL1E	2486500	At Byram @ Old Swinging Bridge	1/4/1988 – 12/5/2001	105	1.85	4.30	0.29	0.27	8.28	0.01
MSUMPRRL1E	PL309	Near Richland Below I20 Bridge	12/3/2001	1	0.79	0.79	0.79	0.10	0.10	0.10
MSUMPRRL1E	PL310	Near Richland Near Old Jackson Landfill	12/3/2001	1	1.11	1.11	1.11	0.11	0.11	0.11
MSUMPRRL1E	PL312	Near Richland Below I20 Bridge	12/3/2001	1	0.21	0.21	0.21	0.08	0.08	0.08

2.2 Assessment of Point Sources

An important part of the TMDL analysis is the identification of individual sources, source categories, or source subcategories of nutrients in the watershed and the amount of pollutant loading contributed by each of these sources. Under the CWA, sources are broadly classified as either point or nonpoint sources. Under 40 CFR §122.2, a point source is defined as a discernable, confined, and discrete conveyance from which pollutants are or may be discharged to surface waters. The National Pollutant Discharge Elimination System (NPDES) program regulates point source discharges. Point sources can be described by two broad categories: 1) NPDES regulated municipal and industrial wastewater treatment plants (WWTPs) and 2) NPDES regulated activities, which include construction activities and municipal storm water discharges (Municipal Separate Storm Sewer Systems [MS4s]). For the purposes of this TMDL, all sources of nutrient loading not regulated by NPDES permits are considered nonpoint sources.

This TMDL will focus on nutrient loads from major industrial and municipal WWTPs in the Pearl River Basin. The lower order streams in the basin that are potentially impaired by nutrient enrichment are the subject of separate TMDLs and are addressed in separate reports. The minor facilities are in other TMDLs or will not have an impact on water quality in the segments addressed by the TMDL based on professional judgment. Point source dominated freshwater systems are generally nitrogen limited. However, they may be made to be controlled by phosphorous by a TP reduction to point sources (Thomann and Mueller, 1987).

The wastewater from the facilities was characterized based upon the best available information. Kosciusko POTW and Philadelphia POTW are HCR facilities. Bogalusa POTW is located in Louisiana which is in USEPA Region 6. Literature values were used to estimate the mass loadings of TP and TN from municipal discharges (USEPA 1997). Estimated concentrations of TN and TP for different treatment types are given in Table 8 below (USEPA 1997). For the facilities that are not municipal discharges (Georgia Pacific Corp., Monticello Mill and Sanderson Farms Inc., Monticello) estimated existing nutrient concentrations were taken from the NPDES permit applications with the exception of the TN limit for Sanderson Farms which is a categorical limit. For Georgia Pacific estimated concentrations of 1.4 mg/l and 9.5 mg/l were used for TP and TN respectively. For Sanderson Farms estimated concentrations of 30 mg/l and 134 mg/l were used for TP and TN respectively.

Table 8. TN and TP Median Concentration in Wastewater Effluents

	Treatment Type			
	Primary	Trickling Filter	Activated Sludge	Stabilization Pond
No. of Plants Sampled	55	244	244	149
TP (mg/l)	6.6 ± 0.66	5.9 ± 0.28	5.8 ± 0.29	5.2 ± 0.45
TN (mg/l)	22.4 ± 1.30	16.4 ± 0.54	13.6 ± 0.62	11.5 ± 0.84

There are 16 major or direct facilities that are shown in Table 9 below.

Table 9. NPDES Sources

Facility Name	City	County	Permit	Discharge (MGD)
Bogalusa POTW	Bogalusa	Washington Parish	LA0046515	6
Carriere Regional Wastewater Treatment System	Picayune	Pearl River	MS0061941	4
Columbia POTW, South	Columbia	Marion	MS0044164	1.47
Georgia Pacific Corp., Monticello Mill	Monticello	Lawrence	MS0002941	26.04
Jackson POTW, Savanna Street	Jackson	Hinds	MS0024295	46
Jackson POTW, Trahon and Big Creek	Jackson	Hinds	MS0044059	4.5
Kosciusko POTW	Kosciusko	Attala	MS0027774	2.048
Morton POTW	Morton	Scott	MS0036234	2.97
Philadelphia POTW	Philadelphia	Neshoba	MS0021156	1.34
Picayune POTW (Airport Rd)	Picayune	Pearl River	MS0042161	3.075
Picayune POTW (Neal Rd)	Picayune	Pearl River	MS0061174	2.4
Poplarville POTW	Poplarville	Pearl River	MS0020494	1.1
Sanderson Farms Inc. Monticello*	Monticello	Lawrence	MS0055492	1
Tuscolameta Watershed WLA **				

*Permit only, no facility constructed

** Includes 3 major facilities (Central Industries, Forest POTW, Peco Farms) (MDEQ, 2009)

Nutrient loadings from NPDES regulated construction activities and MS4s are considered point sources to surface waters. These discharges occur in response to storm events and are included in the WLA_{sw} portion of this TMDL. As of March 2003, discharge of storm water from construction activities disturbing more than one acre must obtain an NPDES permit. The purpose of the NPDES permit is to eliminate or minimize the discharge of pollutants from construction activities. Since construction activities at a site are of a temporary, relatively short term nature, the number of construction sites covered by the general permit varies. The target for these areas is the same range as the TMDL target for the watershed. The WLAs provided to the NPDES regulated construction activities and MS4s will be implemented as best management practices (BMPs) as specified in Mississippi's General Storm Water Permits for Small Construction, Construction, and Phase I & II MS4 permits. Properly designed and well-maintained BMPs are expected to provide attainment of water quality standards.

There are 11 MS4 permits within the Pearl River Basin. These MS4 permits are listed in Table 10.

Table 10. MS4 Permits

Permit ID #	MS4 Name
MSRMS4026	City of Brandon, MS4 Storm Water Management Program
MSRMS4028	City of Flowood, MS4 Storm Water Management Program
MSRMS4019	Hinds County, MS4 Storm Water Management Program
MSRMS4024	MDOT, MS4 Storm Water Management Program
MSRMS4031	Madison County, MS4 Storm Water Management Program
MSRMS4007	City of Madison, MS4 Storm Water Management Program
MSRMS4025	City of Pearl, MS4 Storm Water Management Program
MSRMS4035	Rankin County, MS4 Storm Water Management Program
MSRMS4029	City of Richland, MS4 Storm Water Management Program
MSRMS4009	City of Ridgeland, MS4 Storm Water Management Program
MSS049786	City of Jackson, MS4 Storm Water Management Program

2.3 Assessment of Non-Point Sources

Non-point loading of nutrients and organic material in a water body results from the transport of the pollutants into receiving waters by overland surface runoff, groundwater infiltration, and atmospheric deposition. The two primary nutrients of concern are nitrogen and phosphorus. Total nitrogen is a combination of many forms of nitrogen found in the environment. Inorganic nitrogen can be transported in particulate and dissolved phases in surface runoff. Dissolved inorganic nitrogen can be transported in groundwater and may enter a water body from groundwater infiltration. Finally, atmospheric gaseous nitrogen may enter a water body from atmospheric deposition.

Unlike nitrogen, phosphorus is primarily transported in surface runoff when it has been sorbed by eroding sediment. Phosphorus may also be associated with fine-grained particulate matter in the atmosphere and can enter streams as a result of dry fallout and rainfall (USEPA, 1999). However, phosphorus is typically not readily available from the atmosphere or the natural water supply (Davis and Cornwell, 1988). As a result, phosphorus is typically the limiting nutrient in most non-point source dominated rivers and streams, with the exception of watersheds which are dominated by agriculture and have high concentrations of phosphorus contained in the surface runoff due to fertilizers and animal excrement or watersheds with naturally occurring soils which are rich in phosphorus (Thomann and Mueller, 1987).

Watersheds with a large number of failing septic tanks may also deliver significant loadings of phosphorus to a water body. All domestic wastewater contains phosphorus which comes from humans and the use of phosphate containing detergents. Table 9 presents the estimated loads from various land use types in the Pearl River Basin based on information from USDA ARS Sedimentation Laboratory (Shields, et. al., 2008).

The Pearl River Basin contains mainly scrub/barren but also has different landuse types, including urban, water, forest, pasture, cropland, and wetlands. The landuse information is based on the National Land Cover Dataset (NLCD). The landuse distribution for the Pearl River Basin without the West Pearl River landuse is shown in Table 11 and Figure 2. By multiplying the

landuse category size by the estimated nutrient load, the watershed specific estimate can be calculated. The TMDL target concentration and load is also presented in Table 11, along with the recommended percent reduction.

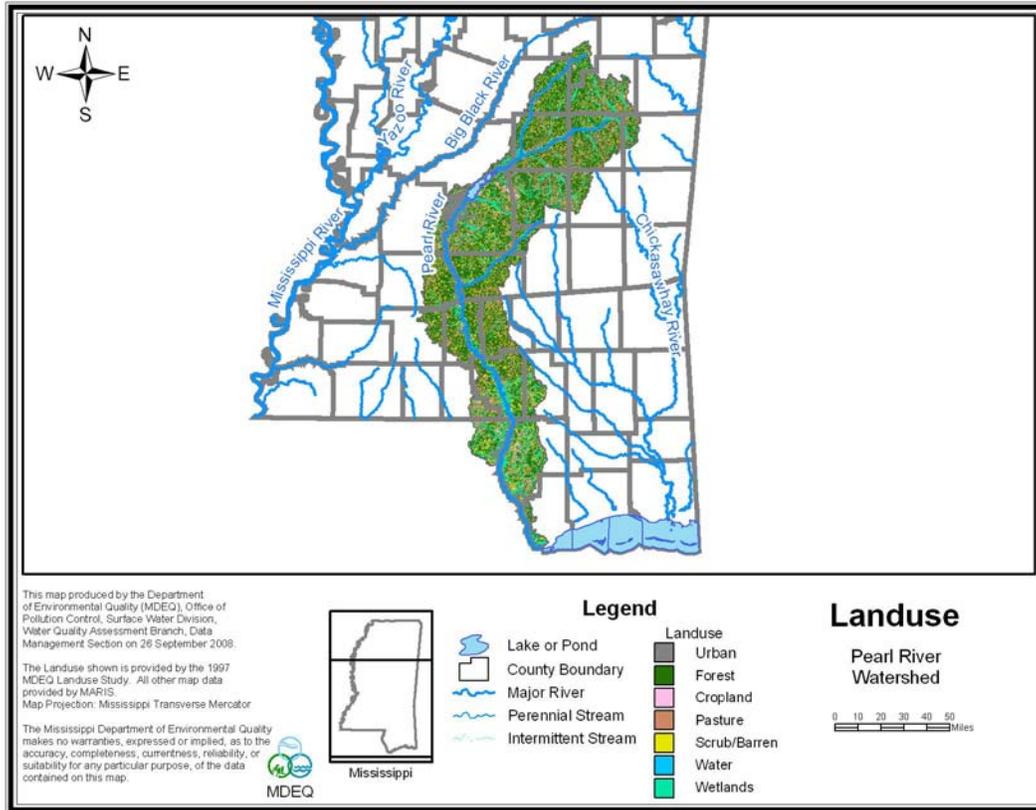
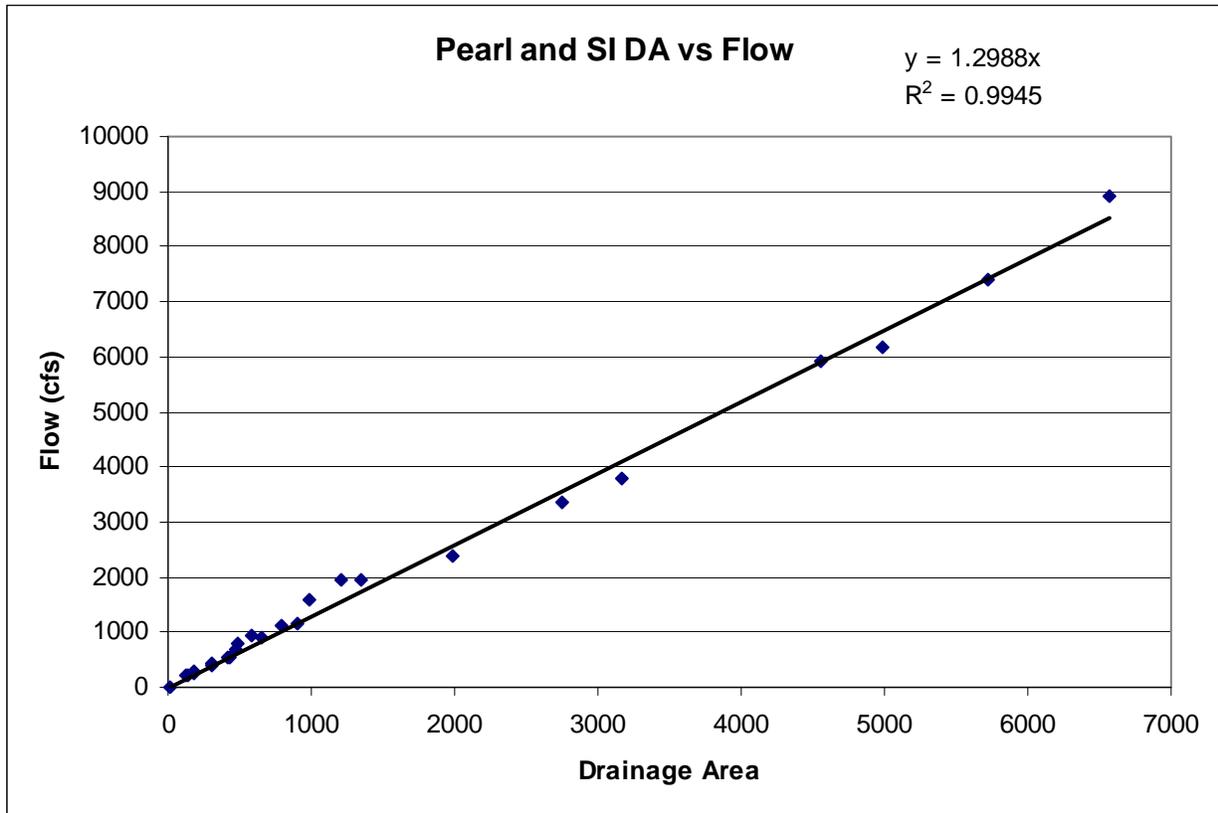


Figure 2. Landuse in the Pearl River Watershed

2.4 Estimated Existing Load for Total Nitrogen and Total Phosphorus

The average annual flow in the basin was calculated by utilizing the flow vs. area graph shown in Figure 3 below. All available gages in the Pearl River and South Independent Streams Basins were compared to the watershed size. A very strong correlation between flow and watershed size was developed for the two basins. The equation for the line that best fits the data was then used to estimate the annual average flow for the basin. The TMDL target TN and TP loads were then calculated, using Equation 1 and the results are shown in Table 11.

Figure 3. Drainage Area and Flow in the Pearl River and South Independent Streams Basins



Nutrient Load (lb/day) = Flow (cfs) * 5.394 (conversion factor) * Nutrient Concentration (mg/L)
(Equation 1)

Table 11. Estimated Loads for the Pearl River

			Water	Urban	Scrub/Barren	Forest	Pasture/Grass	Cropland	Wetland	Total		
Acres			66,080.8	310,865.7	2,035,682.7	638,436.7	726,579.7	106,230.9	779,811.5	4,663,688.1		
Land Use	TN kg/mile²	Percent	1.42%	6.67%	43.65%	13.69%	15.58%	2.28%	16.72%	100.00%		
Forest	111.3	Miles ² in watershed	103.3	485.7	3180.8	997.6	1135.3	166.0	1218.5	7287.0		
Pasture	777.2	Flow in cfs based on area	9464.4	cfs								
Cropland	5,179.9											
Urban	296.4	TN Load kg/mi ² annual avg	257.4	296.4	111.3	111.3	777.2	5,179.9	265.2			
Water	257.4	TP Load kg/mi ² annual avg	257.4	3.1	62.1	62.1	777.2	2,589.9	265.2			
Wetland	265.2											
Scrub/Barren	111.3	TN Load kg/day	72.8	394.4	969.9	304.3	2417.4	2,355.6	885.3	7,399.7	kg/day	
		TP Load kg/day	72.8	4.2	541.2	169.7	2417.4	1,177.8	885.3	5,268.3	kg/day	
Land Use	TP kg/mile²											
Forest	62.1	TN estimated load per day	16,313.49	lbs/day								
Pasture	777.2	TP estimated load per day	11,614.60	lbs/day								
Cropland	2,589.9											
Urban	3.1	TN target concentration	0.7	mg/l								
Water	257.4	TP target concentration	0.1	mg/l								
Wetland	265.2											
Scrub/Barren	62.1	TN target load per day	35,735.58	lbs/day								
		TP target load per day	5,105.08	lbs/day								
		TN reduction needed	0.0%									
		TP reduction needed	56.0%									

The land use calculations are based on 2004 data. The nutrient estimates are based on USDA ARS. The TMDL targets are based on EPA guidance for calculation of targets when considering all available data.

ALLOCATION

3.1 Wasteload Allocation

There are 16 major or direct discharge NPDES point sources. Two of the facilities, Kosciusko POTW and Philadelphia POTW, are HCR facilities. The TN and TP limits for these two facilities will be based on concentration. The City of Jackson POTW, Savannah Street facility, currently has seasonal flow limits of 46 MGD in the summer (May – October) and 120 MGD in the winter (November – April). The average flow of this facility, taken from their NPDES permit application based on 777 samples, is 48.14 MGD. The TP and TN loads for this facility were calculated based on the summer flow of 46 MGD and are to be applied as a 30-day average load in the permit. Bogalusa POTW is located in Louisiana which is in USEPA Region 6. The WLA for 13 of the point sources is shown in Table 12. Three of the facilities are included in a nutrient TMDL for Tuscolameta Creek. The WLA for Tuscolameta Creek is included in Table 12 as a part of the Pearl River WLA (MDEQ, 2009). Future permits will be considered in accordance with Mississippi's *Wastewater Regulations for National Pollutant Discharge Elimination System (NPDES) Permits, Underground Injection Control (UIC) Permits, State Permits, Water Quality Based Effluent Limitations and Water Quality Certification*(1994).

The AGPT results indicate that the river is nitrogen limited and needs to be driven back to being phosphorous limited. While this TMDL does not recommend a reduction to point source loading of TN, it does recommend quarterly monitoring of TN and applying the TN WLA load at these facilities. These limits are shown in Table 12. The estimated existing point source contribution of TN is 12,747.6 lbs and 36% of the TMDL target load.

This TMDL recommends an overall 56% reduction of TP from the 16 major facilities in the Pearl River Watershed based on the analysis given in Table 10. The estimated existing point source contribution is greater than the TP TMDL target load. Given the recommended TMDL percent reductions of 56% for TP, the WLA portion of the TMDL is 2,549.4 lbs. These limits are shown in Table 12.

Table 12. Waste Load Allocation for Point Source Contributions

Facility	City	County	Permit #	Discharge (MGD)	TP (mg/l)	TN (mg/l)	TP (lbs/day)	TN (lbs/day)
Bogalusa POTW	Bogalusa	Washinton Parish	LA0046515	6	2.76	11.5	138.01	575.86
Carriere Regional Wastewater Treatment System	Picayune	Pearl River	MS0061941	4	2.76	11.5	92.00	383.90
Columbia POTW, South	Columbia	Marion	MS0044164	1.47	2.76	11.5	33.81	141.08
Georgia Pacific Corp., Monticello Mill	Monticello	Lawrence	MS0002941	26.04	0.83	9.5	161.25	2,064.57
Jackson POTW, Savanna Street	Jackson	Hinds	MS0024295	46	3.07	13.6	1,180.12	5,221.10
Jackson POTW, Trahon and Big Creek	Jackson	Hinds	MS0044059	4.5	3.07	13.6	115.45	510.76
Kosciusko POTW*	Kosciusko	Attala	MS0027774	2.048	2.76	11.5	47.11	196.56
Morton POTW	Morton	Scott	MS0036234	2.97	3.07	13.6	76.19	337.10
Philadelphia POTW*	Philadelphia	Neshoba	MS0021156	1.34	2.76	11.5	30.82	128.61
Picayune POTW (Airport Rd)	Picayune	Pearl River	MS0042161	3.075	2.76	11.5	70.73	295.13
Picayune POTW (Neal Rd)	Picayune	Pearl River	MS0061174	2.4	2.76	11.5	55.20	230.34
Poplarville POTW	Poplarville	Pearl River	MS0020494	1.1	3.07	11.5	28.22	124.85
Sanderson Farms Inc. Monticello	Monticello	Lawrence	MS0055492	1	15.9	134	132.70	1,118.33
Tuscolameta Watershed WLA **	---	---	---	---	---	---	387.76	1419.42
Total							2,549.4	12,747.6

*HCR Facility with a concentration based permit limit

**WLA from Tuscolameta Creek Nutrient TMDL

3.1.1 Wasteload Allocation Storm Water

MDEQ has established a method to estimate the storm water waste load allocation (WLASw). The WLAsw is calculated according to equation 2 below. The intent of the storm water NPDES permit is not to treat the water after collection, but to reduce the exposure of storm water runoff to pollutants by implementing various controls. Storm water NPDES permits require the establishment of controls or BMPs to reduce the pollutants entering the environment.

$$\text{Waste Load Allocation Storm Water (WLAsw)} = \text{LA} * \% \text{ Urban Area in MS4 within watershed} * 70\%$$

(Equation 2)

3.2 Load Allocation

Based on the measured instream concentrations of TN from monitoring performed in 2006 and 2008, this TMDL recommends a nonpoint source reduction of TN. There is insufficient data to calculate a percent reduction for TN. This TMDL also recommends a 56% reduction to nonpoint source loads of TP based on the analysis given in Table 10. Best management practices should be encouraged in the watersheds to reduce potential TN and TP loads from non-point sources. For land disturbing activities related to silviculture, construction, and agriculture, it is recommended that practices, as outlined in “Mississippi’s BMPs: Best Management Practices for Forestry in Mississippi” (MFC, 2000), “Planning and Design Manual for the Control of Erosion, Sediment, and Stormwater” (MDEQ, et. al, 1994), and “Field Office Technical Guide” (NRCS, 2000), be followed, respectively.

3.3 Incorporation of a Margin of Safety

The margin of safety is a required component of a TMDL and accounts for the uncertainty about the relationship between pollutant loads and the quality of the receiving water body. The two types of MOS development are to implicitly incorporate the MOS using conservative model assumptions or to explicitly specify a portion of the total TMDL as the MOS. The MOS selected for this model is implicit.

3.4 Calculation of the TMDL

A predictive model was not used to calculate the TMDL. Equation 1 was used to calculate the TMDL for TP and TN. The target concentration was used with the average flow for the watershed to determine the TMDL.

The nutrient TMDL loads were then compared to the estimated existing loads previously calculated. Best management practices are encouraged in this watershed to reduce the nonpoint nutrient loads.

Table 13. Calculation of the TMDL

	Flow (cfs)	Concentration (mg/l)	TMDL (lbs/day)	% Reduction
TP	9,464.4	0.1	5,105.1*	56%
TN	9,464.4	0.7	35,735.6*	0%

*TMDL applies such that TN and TP targets will be met in each of the impaired segments

3.5 Seasonality and Critical Condition

This TMDL accounts for seasonal variability by requiring allocations that ensure year-round protection of water quality standards, including during critical conditions.

CONCLUSION

Nutrients were addressed through an estimate of a preliminary total phosphorous concentration target and a preliminary total nitrogen concentration target. Based on the estimated existing and estimated target total phosphorous concentrations, this TMDL recommends a 56% reduction of the phosphorous loads from both point and nonpoint sources entering these water bodies to meet the preliminary target of 0.1 mg/l. NPDES permit limits for TP are recommended in Table 11. This TMDL recommends a reduction to nonpoint sources of TN but does not recommend a reduction to point sources of TN although it does set a TN WLA. The implementation of BMP activities should reduce the nutrient load entering the Pearl River. This will provide improved water quality for the support of aquatic life in the water bodies, and will result in the attainment of the applicable water quality standards.

4.1 Next Steps

MDEQ's Basin Management Approach and Nonpoint Source Program emphasize restoration of impaired waters with developed TMDLs. During the watershed prioritization process to be conducted by the Pearl River Basin Team, this TMDL will be considered as a basis for implementing possible restoration projects. The basin team is made up of state and federal resource agencies and stakeholder organizations and provides the opportunity for these entities to work with local stakeholders to achieve quantifiable improvements in water quality. Together, basin team members work to understand water quality conditions, determine causes and sources of problems, prioritize watersheds for potential water quality restoration and protection activities, and identify collaboration and leveraging opportunities. The Basin Management Approach and the Nonpoint Source Program work together to facilitate and support these activities.

The Nonpoint Source Program provides financial incentives to eligible parties to implement appropriate restoration and protection projects through the Clean Water Act's Section 319 Nonpoint Source (NPS) Grant Program. This program makes available around \$1.6M each grant year for restoration and protections efforts by providing a 60% cost share for eligible projects.

Mississippi Soil and Water Conservation Commission (MSWCC) is the lead agency responsible for abatement of agricultural NPS pollution through training, promotion, and installation of BMPs on agricultural lands. USDA Natural Resource Conservation Service (NRCS) provides technical assistance to MSWCC through its conservation districts located in each county. NRCS assists animal producers in developing nutrient management plans and grazing management plans. MDEQ, MSWCC, NRCS, and other governmental and nongovernmental organizations work closely together to reduce agricultural runoff through the Section 319 NPS Program.

Mississippi Forestry Commission (MFC), in cooperation with the Mississippi Forestry Association (MFA) and Mississippi State University (MSU), have taken a leadership role in the development and promotion of the forestry industry Best Management Practices (BMPs) in Mississippi. MDEQ is designated as the lead agency for implementing an urban polluted runoff control program through its Storm Water Program. Through this program, MDEQ regulates most construction activities. Mississippi Department of Transportation (MDOT) is responsible for implementation of erosion and sediment control practices on highway construction.

Due to this TMDL, projects within this watershed will receive a higher score and ranking for funding through the basin team process and Nonpoint Source Program described above.

4.2 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 statewide newspaper. The public will be given an opportunity to review the TMDLs 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 Kay Whittington at Kay_Whittington@deq.state.ms.us.

All comments should be directed to Kay_Whittington@deq.state.ms.us or Kay Whittington, MDEQ, PO Box 2261, Jackson, MS 39225. 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

- Davis and Cornwell. 1988. *Introduction to Environmental Engineering*. McGraw-Hill.
- MDEQ. 2009. *Total Maximum Daily Load for Nutrients and Organic Enrichment/Low Dissolved Oxygen for Tuscolameta, Tallabogue, and Shockaloo Creeks*. Office of Pollution Control.
- MDEQ. 2007. *Mississippi's Plan for Nutrient Criteria Development*. Office of Pollution Control.
- MDEQ. 2007. *State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters*. Office of Pollution Control.
- MDEQ. 1994. *Wastewater Regulations for National Pollutant Discharge Elimination System (NPDES) Permits, Underground Injection Control (UIC) Permits, State Permits, Water Quality Based Effluent Limitations and Water Quality Certification*. Office of Pollution Control.
- Metcalf and Eddy, Inc. 1991. *Wastewater Engineering: Treatment, Disposal, and Reuse 3rd ed.* New York: McGraw-Hill.
- MFC. 2000. *Mississippi's BMPs: Best Management Practices for Forestry in Mississippi*. Publication # 107.
- NRCS. 2000. *Field Office Technical Guide Transmittal No. 61*.
- Shields, F.D. Jr., Cooper, C.M., Testa, S. III, Ursic, M.E., 2008. *Nutrient Transport in the Yazoo River Basin, Mississippi*. USDA ARS National Sedimentation Laboratory, Oxford, Mississippi.
- Telis, Pamela A. 1992. *Techniques for Estimating 7-Day, 10-Year Low Flow Characteristics for Ungaged Sites on Water bodies in Mississippi*. U.S. Geological Survey, Water Resources Investigations Report 91-4130.
- Thomann and Mueller. 1987. *Principles of Surface Water Quality Modeling and Control*. New York: Harper Collins.
- USEPA. 1997. *Technical Guidance Manual for Developing Total Maximum Daily Loads, Book 2: Streams and Rivers, Part 1: Biochemical Oxygen Demand/Dissolved Oxygen and Nutrients/Eutrophication*. United States Environmental Protection Agency, Office of Water, Washington, D.C. EPA 823-B-97-002.
- USEPA. 1999. *Protocol for Developing Nutrient TMDLs*. EPA 841-B-99-007. Office of Water (4503F), United States Environmental Protection Agency, Washington D.C. 135 pp.
- USEPA. 2000. *Nutrient Criteria Technical Guidance Manual Rivers and Streams*. United States Environmental Protection Agency, Office of Water, Washington, D.C. EPA-822-B-00-002.

APPENDIX C

City of Jackson
Total Maximum Daily Load Report
Hanging Moss Creek – Nutrients, Organic
Enrichment and Low Dissolved Oxygen

Total Maximum Daily Load Nutrients and Organic Enrichment / Low DO For Hanging Moss Creek



Pearl River Basin Hinds County, Mississippi

Prepared By

Mississippi Department of Environmental Quality
Office of Pollution Control
Standards, Modeling, and TMDL Branch

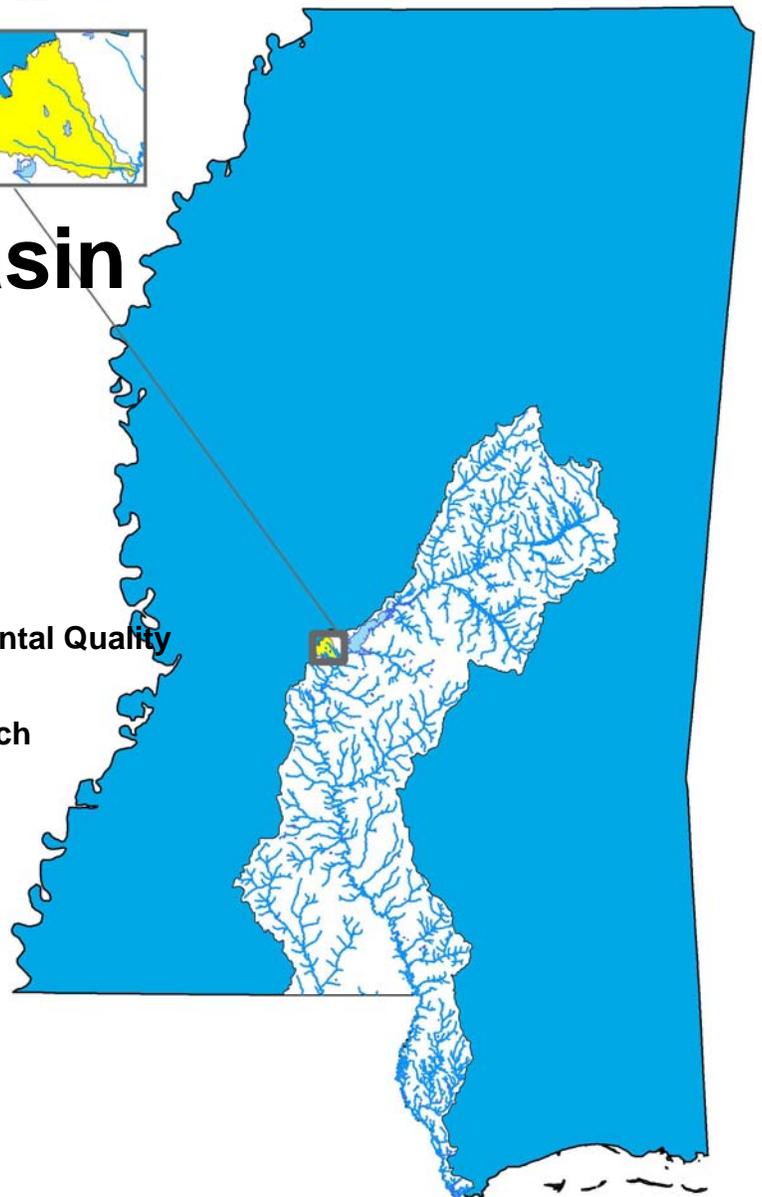
MDEQ

PO Box 2261

Jackson, MS 39225-2261

(601) 961-5171

www.deq.state.ms.us



Mississippi Department of
Environmental Quality

FOREWORD

This report has been prepared in accordance with the schedule contained within the federal consent decree dated December 22, 1998. The report contains one or more Total Maximum Daily Loads (TMDLs) for water body segments found on Mississippi's 1996 Section 303(d) List of Impaired Water bodies. Because of the accelerated schedule required by the consent decree, many of these TMDLs have been prepared out of sequence with the State's rotating basin approach. The implementation of the TMDLs contained herein will be prioritized within Mississippi's rotating basin approach.

The amount and quality of the data on which this report is based are limited. As additional information becomes available, the TMDLs may be updated. Such additional information may include water quality and quantity data, changes in pollutant loadings, or changes in landuse within the watershed. In some cases, additional water quality data may indicate that no impairment exists.

Conversion Factors

To convert from	To	Multiply by	To convert from	To	Multiply by
mile ²	acre	640	acre	ft ²	43560
km ²	acre	247.1	days	seconds	86400
m ³	ft ³	35.3	meters	feet	3.28
ft ³	gallons	7.48	ft ³	gallons	7.48
ft ³	liters	28.3	hectares	acres	2.47
cfs	gal/min	448.8	miles	meters	1609.3
cfs	MGD	0.646	tonnes	tons	1.1
m ³	gallons	264.2	µg/l * cfs	gm/day	2.45
m ³	liters	1000	µg/l * MGD	gm/day	3.79

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	µ	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

TABLE OF CONTENTS

TMDL INFORMATION PAGE.....	5
EXECUTIVE SUMMARY	6
INTRODUCTION	7
1.1 Background.....	7
1.2 Listing History	7
1.3 Applicable Water Body Segment Use	8
1.4 Applicable Water Body Segment Standards.....	8
1.5 Nutrient Target Development	8
WATER BODY ASSESSMENT	10
2.1 Water Quality Data	10
2.2 Assessment of Point Sources	10
2.3 Assessment of Non-Point Sources	10
2.4 Estimated Existing Load for Total Nitrogen and Total Phosphorus.....	11
ALLOCATION.....	14
3.1 Wasteload Allocation.....	14
3.1.1 Wasteload Allocation Stormwater	14
3.2 Load Allocation	14
3.3 Incorporation of a Margin of Safety	14
3.4 Calculation of the TMDL.....	14
3.5 Seasonality and Critical Condition	15
CONCLUSION.....	16
4.1 Next Steps	16
4.2 Public Participation.....	17
REFERENCES	18

FIGURES

Figure 1. Hanging Moss Creek	6
Figure 2. Hanging Moss Creek §303(d) Listed Segment	7
Figure 3. Hanging Moss Creek Watershed Landuse	11
Figure 4. Pearl and South Independent Drainage Area to Flow Comparison.....	12

TABLES

Table 1. Listing Information	5
Table 2. Water Quality Standards.....	5
Table 3. Total Maximum Daily Load for Hanging Moss Creek.....	5
Table 4. TMDL Calculations and Watershed Sizes.....	13
Table 5. TMDL Loads	15

TMDL INFORMATION PAGE

Table 1. Listing Information

Name	ID	County	HUC	Evaluated Cause
Hanging Moss Creek	MS155E	Madison, Hinds	03180002	Biological Impairment due to Nutrients and Organic Enrichment / Low DO
At Jackson from Headwaters to Pelahatchie Creek				

Table 2. Water Quality Standards

Parameter	Beneficial use	Water Quality Criteria
Nutrients	Aquatic Life Support	Waters shall be free from materials attributable to municipal, industrial, agricultural, or other dischargers producing color, odor, taste, total suspended or dissolved solids, sediment, turbidity, or other conditions, in such degree as to create a nuisance, render the waters injurious to public health, recreation, or to aquatic life and wildlife, or adversely affect the palatability of fish, aesthetic quality, or impair the waters for any designated uses.
Dissolved Oxygen	Aquatic Life Support	DO concentrations shall be maintained at a daily average of not less than 5.0 mg/l with an instantaneous minimum of not less than 4.0 mg/l. Natural conditions are defined as background water quality conditions due only to non-anthropogenic sources. The criteria herein apply specifically with regard to substances attributed to sources (discharges, nonpoint sources, or instream activities) as opposed to natural phenomena. Waters may naturally have characteristics outside the limits established by these criteria. Therefore, naturally occurring conditions that fail to meet criteria should not be interpreted as violations of these criteria.

Table 3. Total Maximum Daily Load for Hanging Moss Creek

	WLA lbs/day	WLA _{sw} lbs/day	LA lbs/day	MOS	TMDL lbs/day
Total Nitrogen	0	43.91	91.49	Implicit	135.4
Total Phosphorous	0	6.27	13.13	Implicit	19.4
TBOD _u	0	125.45*	261.45*	Implicit	386.9*

*Based on a background concentration of 2 mg/l at the annual average flow, loads will be lower for flows less than the annual average

EXECUTIVE SUMMARY

This TMDL has been developed for Hanging Moss Creek which was placed on the Mississippi 2008 Section 303(d) List of Impaired Water Bodies. Hanging Moss Creek was listed due to biological impairment. A stressor identification report indicated that organic enrichment/low dissolved oxygen, nutrients, and sediment were the primary probable stressors for the stream. Sediment will be addressed in a separate TMDL report. This TMDL will provide an estimate of the total biochemical oxygen demand (TBODu), total nitrogen (TN), and total phosphorus (TP).

Mississippi does not have water quality standards for allowable nutrient concentrations. MDEQ currently has a Nutrient Task Force (NTF) working on the development of criteria for nutrients. An annual concentration of 0.7 mg/l is an applicable target for TN and 0.10 mg/l for TP for water bodies located in ecoregion 65. MDEQ is presenting these preliminary target values for TMDL development which are subject to revision after the development of numeric nutrient criteria.

The Hanging Moss Creek Watershed is located in HUC 03180002. The listed portion of Hanging Moss Creek is in Jackson from the headwaters to the Pearl River. The location of the watershed for the listed segment is shown in Figure 1.

The nonpoint source loading of nutrients to Hanging Moss Creek was estimated based on nutrient loading from landuses in the watershed. An evaluation of the Hanging Moss Creek Watershed indicated that the estimated existing nonpoint source loading of phosphorous is above the preliminary target. The preliminary nutrient targets and the estimated existing ecoregion concentrations indicate reductions of phosphorus can be accomplished with installation of best management practices.

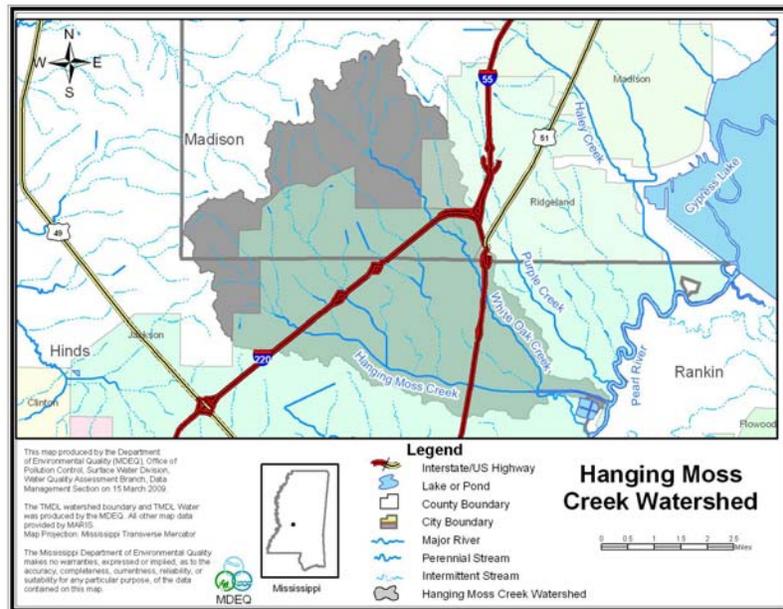


Figure 1. Hanging Moss Creek

INTRODUCTION

1.1 Background

The identification of water bodies not meeting their designated use and the development of total maximum daily loads (TMDLs) for those water bodies are required by Section 303(d) of the Clean Water Act and the Environmental Protection Agency's (EPA) Water Quality Planning and Management Regulations (40 CFR part 130). The TMDL process is designed to restore and maintain the quality of those impaired water bodies through the establishment of pollutant specific allowable loads. This TMDL has been developed for the 2008 §303(d) listed segment shown in Figure 2.

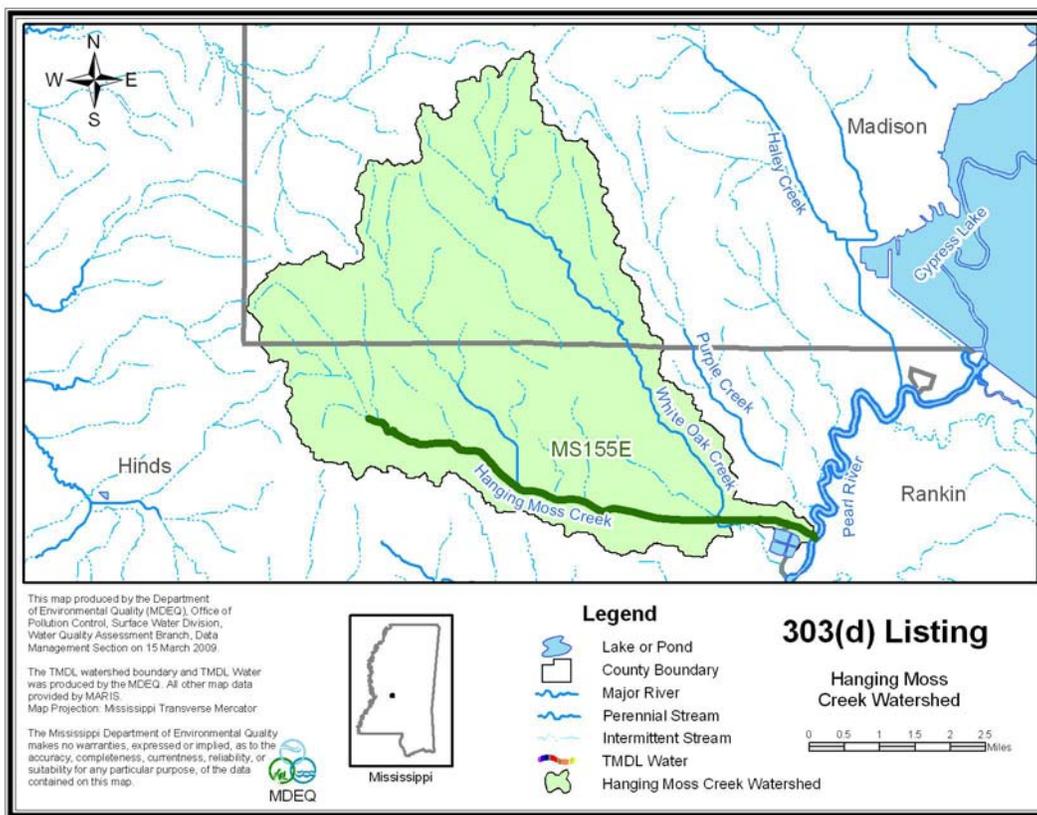


Figure 2. Hanging Moss Creek §303(d) Listed Segment

1.2 Listing History

The impaired segment was originally listed for the evaluated causes of pesticides, nutrients, and siltation. Hanging Moss Creek was monitored and found to be biologically impaired using the Mississippi Benthic Index of Stream Quality (M-BISQ). In 2008, a stressor identification report was completed by MDEQ detailing the probable primary causes of impairment as sediment / siltation and organic enrichment / low DO and nutrients (MDEQ, 2008). This TMDL addresses organic enrichment / low DO and nutrients.

There are no state criteria in Mississippi for nutrients. These criteria are currently being developed by the Mississippi Nutrient Task Force in coordination with EPA Region 4. MDEQ proposed a work plan for nutrient criteria development that has been mutually agreed upon with EPA Region 4 and is on schedule according to the approved timeline for development of nutrient criteria (MDEQ, 2007).

1.3 Applicable Water Body Segment Use

The water use classifications are established by the State of Mississippi in the document *State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters* (MDEQ, 2007). The designated beneficial use for the listed segments is Fish and Wildlife.

1.4 Applicable Water Body Segment Standards

The water quality standard applicable to the use of the water body and the pollutant of concern is defined in the *State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters* (MDEQ, 2007). Mississippi's current standards contain a narrative criteria that can be applied to nutrients which states “*Waters shall be free from materials attributable to municipal, industrial, agricultural, or other discharges producing color, odor, taste, total suspended or dissolved solids, sediment, turbidity, or other conditions in such degree as to create a nuisance, render the waters injurious to public health, recreation, or to aquatic life and wildlife, or adversely affect the palatability of fish, aesthetic quality, or impair the waters for any designated use* (MDEQ, 2007).”

The standard for dissolved oxygen states, “DO concentrations shall be maintained at a daily average of not less than 5.0 mg/l with an instantaneous minimum of not less than 4.0 mg/l.”

1.5 Nutrient Target Development

Nutrient data were collected quarterly at 99 discrete sampling stations state wide where biological data already existed. These stations were identified and used to represent a range of stream reaches according to biological health status, geographic location (selected to account for ecoregion, bioregion, basin and geologic variability) and streams that potentially receive non-point source pollution from urban, agricultural, and silviculture lands as well as point source pollution from NPDES permitted facilities.

Nutrient concentration data were not normally distributed; therefore, data were log transformed for statistical analyses. Data were evaluated for distinct patterns of various data groupings (stratification) according to natural variability. Only stations that were characterized as “least disturbed” through a defined process in the M-BISQ process (M-BISQ 2003) or stations that resulted in a biological impairment rating of “fully attaining” were used to evaluate natural variability of the data set. Each of these two groups was evaluated separately (“least disturbed sites” and “fully attaining sites). Some stations were used in both sets, in other words, they were considered “least disturbed” and “fully attaining”. The number of stations considered “least disturbed” was 30 of 99, and the number of stations considered “fully attaining” was 53 of 99.

Several analysis techniques were used to evaluate nutrient data. Graphical analyses were used as the primary evaluation tool. Specific analyses used included; scatter plots, box plots, Pearson's correlation, and general descriptive statistics.

In general, natural nutrient variability was not apparent based on box plot analyses according to the 4 stratification scenarios. Bioregions were selected as the stratification scheme to use for TMDLs in the Pascagoula Basin. However, this was not appropriate for some water bodies in smaller bioregions. Therefore, MDEQ now uses ecoregions as a stratification scheme for the water bodies in the remainder of the state.

In order to use the data set to determine possible nutrient thresholds, nutrient concentrations were evaluated as to their correlation with biological metrics. That thorough evaluation was completed prior to the Pascagoula River Basin TMDLs. The methodology and approach were verified. The same methodology was applied to the subsequent ecoregions.

For the preliminary target concentration range for each ecoregion, the 75th and 90th percentiles were derived from the mean nutrient value at each site found to be fully supporting of aquatic life support according to the M-BISQ scores. For the estimate of the existing concentrations the 50th percentile (median) was derived from the mean nutrient value at each site of sites that were not attaining and had nutrient concentrations greater than the target. For this report, only the 90th percentile was used.

WATER BODY ASSESSMENT

2.1 Water Quality Data

The impaired segment was monitored and found to be biologically impaired. Based upon the completed stressor identification report, the strength of evidence analysis showed organic enrichment / low DO and nutrients to be one of the primary probable causes of impairment. Some biological metrics suggest potential depressed DO / organic enrichment and altered food sources (nutrient enrichment). Physical/chemical data from M-BISQ indicate DO and DO % saturation measurement comparable to Least Disturbed (LD)/Site Specific Comparators (SSC). However, data from a site visit in 2008 indicate very low DO and DO % saturation measurements. Nutrients, COD, and TOC were elevated over the LD/SSC during the M-BISQ. No historical data are available (MDEQ, 2008).

2.2 Assessment of Point Sources

There are no NPDES permitted point sources in the watershed. Mississippi's one Phase 1 MS4, the city of Jackson is in the watershed. Therefore, MDEQ has established a method to estimate the stormwater waste load allocation (WLA_{sw}). The $WLA_{sw} = LA * \% \text{ Urban Area in MS4 in watershed} * 70\%$. The intent of the stormwater NPDES permit is not to treat the water after collection, but to reduce the exposure of stormwater runoff to pollutants by implementing various controls. Stormwater NPDES permits require the establishment of controls or BMPs to reduce the pollutants entering the environment. (GA, 2009)

2.3 Assessment of Non-Point Sources

Non-point loading of nutrients and organic material in a water body results from the transport of the pollutants into receiving waters by overland surface runoff, groundwater infiltration, and atmospheric deposition. The two primary nutrients of concern are nitrogen and phosphorus. Total nitrogen is a combination of many forms of nitrogen found in the environment. Inorganic nitrogen can be transported in particulate and dissolved phases in surface runoff. Dissolved inorganic nitrogen can be transported in groundwater and may enter a water body from groundwater infiltration. Finally, atmospheric gaseous nitrogen may enter a water body from atmospheric deposition.

Unlike nitrogen, phosphorus is primarily transported in surface runoff when it has been sorbed by eroding sediment. Phosphorus may also be associated with fine-grained particulate matter in the atmosphere and can enter streams as a result of dry fallout and rainfall (USEPA, 1999). However, phosphorus is typically not readily available from the atmosphere or the natural water supply (Davis and Cornwell, 1988). As a result, phosphorus is typically the limiting nutrient in most non-point source dominated rivers and streams, with the exception of watersheds which are dominated by agriculture and have high concentrations of phosphorus contained in the surface runoff due to fertilizers and animal excrement or watersheds with naturally occurring soils which are rich in phosphorus (Thomann and Mueller, 1987).

Watersheds with a large number of failing septic tanks may also deliver significant loadings of phosphorus to a water body. All domestic wastewater contains phosphorus which comes from humans and the use of phosphate containing detergents. Table 4 presents the estimated loads

Nutrients and Organic Enrichment / Low DO TMDL for Hanging Moss Creek from various land use types in the Pearl Basin based on information from USDA ARS Sedimentation Laboratory (Shields, et. al., 2008).

The watershed contains mainly urban area but also has different landuse types, including forest, water, and wetlands. The land use information for the watershed is based on the National Land Cover Database (NLCD). Forest is the dominant landuse within this watershed. The landuse distribution for the Hanging Moss Creek Watershed is shown in Table 4 and Figure 3. By multiplying the landuse category size by the estimated nutrient load, the watershed specific estimate can be calculated. Table 4 presents the estimated loads, the target loads, and the reductions needed to meet the TMDLs.

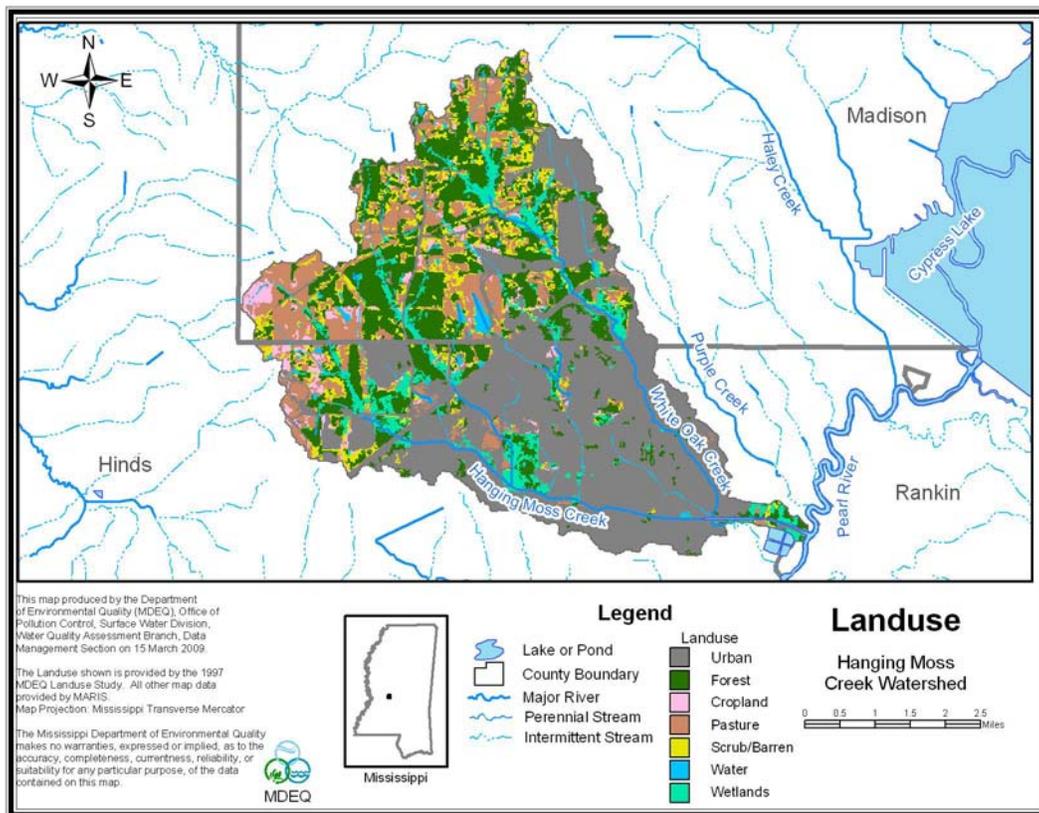
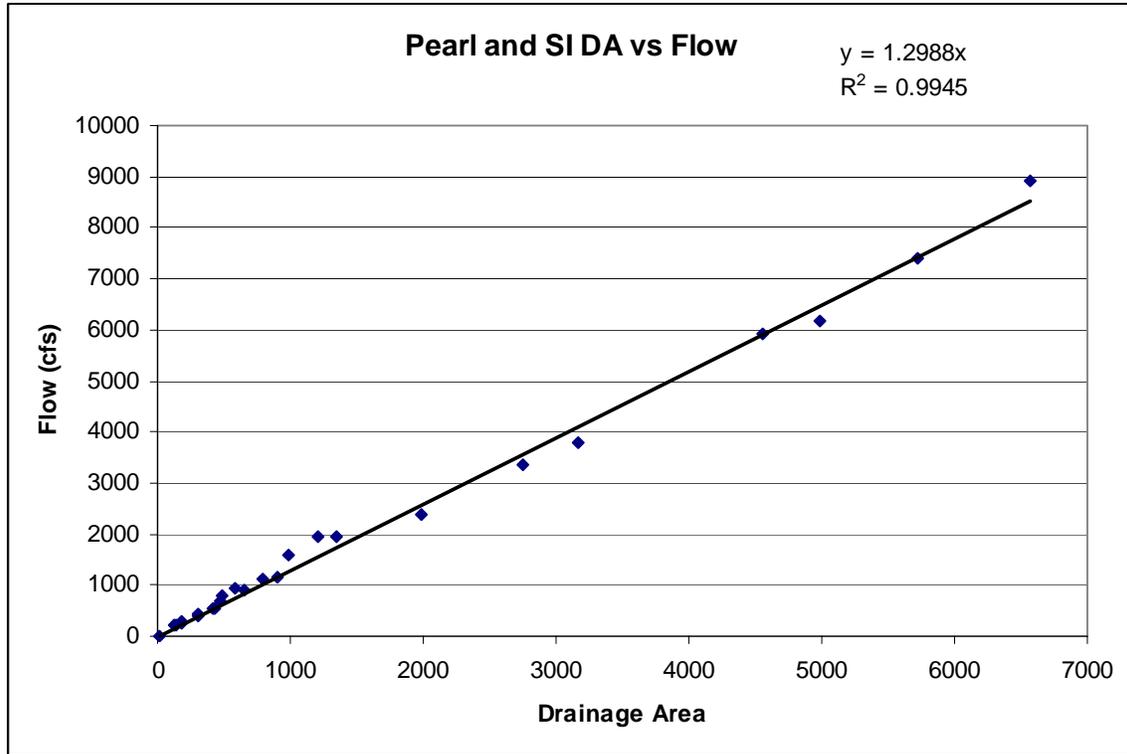


Figure 3. Hanging Moss Creek Watershed Landuse

2.4 Estimated Existing Load for Total Nitrogen and Total Phosphorus

The average annual flow in the watershed was calculated by utilizing the flow vs. watershed area graph shown in Figure 4 below. All available gages were compared to the watershed size. A very strong correlation between flow and watershed size was developed for the Pearl and South Independent Streams Basins. The equation for the line that best fits the data was then used to estimate the annual average flow for the Hanging Moss Creek watershed. The TMDL target TN and TP loads were then calculated, using Equation 1 and the results are shown in Table 4.

Figure 4. Pearl and South Independent Drainage Area to Flow Comparison



Nutrient Load (lb/day) = Flow (cfs) * 5.394 (conversion factor) * Nutrient Concentration (mg/L)
(Equation 1)

Waste Load Allocation stormwater (WLASw) = LA * % Urban Area in MS4 within watershed * 70%
(Equation 2)

Table 4. TMDL Calculations and Watershed Sizes

Water body	Hanging Moss Creek		Water	Urban	Scrub/Barren	Forest	Pasture/Grass	Cropland	Wetland	Total
		Acres	168.1	8186.4	1365.7	3907.0	2349.2	421.7	1275.7	17674
Land Use	TN kg/mile²	Percent	0.95%	46.32%	7.73%	22.11%	13.29%	2.39%	7.22%	100.00%
Forest	111.3	Miles ² in watershed	0.3	12.8	2.1	6.1	3.7	0.7	2.0	27.6
Pasture	777.2	Flow in cfs based on area	35.9	cfs						
Cropland	5179.9									
Urban	296.4	TN Load kg/mi ² annual avg	257.4	296.4	111.3	111.3	777.2	5179.9	265.2	
Water	257.4	TP Load kg/mi ² annual avg	257.4	3.1	62.1	62.1	777.2	2589.9	265.2	
Wetland	265.2									
aquaculture	111.3	TN Load kg/dav	0.2	10.4	0.7	1.9	7.8	9.3	1.4	31.7 kg/dav
		TP Load kg/dav	0.2	0.1	0.4	1.0	7.8	4.7	1.4	15.6 kg/dav
Land Use	TP kg/mile²									
Forest	62.1	TN target concentration	0.7	mg/l						
Pasture	777.2	TP target concentration	0.1	mg/l						
Cropland	2589.9									
Urban	3.1	TN estimated concentration	0.36	mg/l						
Water	257.4	TP estimated concentration	0.18	mg/l						
Wetland	265.2									
aquaculture	62.1	TN target load	135.43	lbs/dav		WLASw TN	.4632*.7*135.43	43.91		
		TP target load	19.35	lbs/dav		WLASw TP	.4632*.7*19.35	6.27		
		TBODu target load	386.93	lbs/dav		WLASw TBODu	.4632*.7*386.93	125.45		
		TN estimated load per dav	69.88	lbs/dav						
		TP estimated load per dav	34.47	lbs/dav						
		TN reduction needed	NA							
		TP reduction needed	43.87%							

The land use calculations are based on 2004 data. The nutrient estimates are based on USDA ARS. The TMDL targets are based on EPA guidance for calculation of targets when considering all available data.

ALLOCATION

3.1 Wasteload Allocation

There are no point sources in the watershed. The area is completely within the Jackson Metropolitan area and within the MS4 area for the city of Jackson. There will be no future point sources from NPDES permits within this watershed. There may be future stormwater related WLAs within this watershed.

3.1.1 Wasteload Allocation Stormwater

There is a phase 1 MS4 in this TMDL watershed. MDEQ has established a method to estimate the stormwater waste load allocation (WLA_{sw}). The $WLA_{sw} = LA * \% \text{ Urban Area in MS4 in watershed } * 70\%$. The intent of the stormwater NPDES permit is not to treat the water after collection, but to reduce the exposure of stormwater runoff to pollutants by implementing various controls. Stormwater NPDES permits require the establishment of controls or BMPs to reduce the pollutants entering the environment. (GA, 2009)

3.2 Load Allocation

Best management practices (BMPs) should be encouraged in the watersheds to reduce potential TBOD_u, TN, and TP loads from non-point sources. The LA for TBOD_u, TN, and TP was calculated by subtracting the WLA from the TMDL. For land disturbing activities related to silviculture, construction, and agriculture, it is recommended that practices, as outlined in “Mississippi’s BMPs: Best Management Practices for Forestry in Mississippi” (MFC, 2000), “Planning and Design Manual for the Control of Erosion, Sediment, and Stormwater” (MDEQ, et. al, 1994), and “Field Office Technical Guide” (NRCS, 2000), be followed, respectively.

3.3 Incorporation of a Margin of Safety

The margin of safety is a required component of a TMDL and accounts for the uncertainty about the relationship between pollutant loads and the quality of the receiving water body. The two types of MOS development are to implicitly incorporate the MOS using conservative model assumptions or to explicitly specify a portion of the total TMDL as the MOS. The MOS selected for this model is implicit.

3.4 Calculation of the TMDL

Equation 1 was used to calculate the TMDL for TP and TN. The target concentration was used with the average flow for the watershed to determine the nutrient TMDLs. The TBOD_u portion of the TMDL was calculated by setting the background TBOD_u concentration to 2.0 mg/l and using Equation 1 to find the load. Therefore, the TBOD_u LA is based on a background concentration of 2 mg/l at the annual average flow. However, the TBOD_u LA loads will be lower for flows less than the annual average. The allocations in the TMDL are established to attain the applicable water quality standards. The LA was further reduced by calculating the

WLA_{sw}. The sum of the WLA, WLA_{sw}, LA, and MOS equal the TMDL.

Table 5. TMDL Loads

	WLA lbs/day	WLA_{sw} lbs/day	LA lbs/day	MOS	TMDL lbs/day
Total Nitrogen	0	43.91	91.49	Implicit	135.4
Total Phosphorous	0	6.27	13.13	Implicit	19.4
TBOD _u	0	125.45*	261.45*	Implicit	386.9*

The nutrient TMDL loads were then compared to the estimated existing loads previously calculated. A 43.9% reduction in TP loading is recommended. Best management practices are encouraged in this watershed to reduce the nonpoint nutrient loads.

3.5 Seasonality and Critical Condition

This TMDL accounts for seasonal variability by requiring allocations that ensure year-round protection of water quality standards, including during critical conditions.

CONCLUSION

Nutrients were addressed through an estimate of a preliminary total phosphorous concentration target and a preliminary total nitrogen concentration target. Based on the estimated existing and target total phosphorous concentrations, this TMDL recommends a 43.9% reduction of the nonpoint phosphorous loads entering these water bodies to meet the preliminary target of 0.10 mg/l. The implementation of BMP activities should reduce the nutrient load entering the creek. This will provide improved water quality for organic enrichment and the support of aquatic life in the water bodies, and will result in the attainment of the applicable water quality standards.

4.1 Next Steps

MDEQ's Basin Management Approach and Nonpoint Source Program emphasize restoration of impaired waters with developed TMDLs. During the watershed prioritization process to be conducted by the Pearl River Basin Team, this TMDL will be considered as a basis for implementing possible restoration projects. The basin team is made up of state and federal resource agencies and stakeholder organizations and provides the opportunity for these entities to work with local stakeholders to achieve quantifiable improvements in water quality. Together, basin team members work to understand water quality conditions, determine causes and sources of problems, prioritize watersheds for potential water quality restoration and protection activities, and identify collaboration and leveraging opportunities. The Basin Management Approach and the Nonpoint Source Program work together to facilitate and support these activities.

The Nonpoint Source Program provides financial incentives to eligible parties to implement appropriate restoration and protection projects through the Clean Water Act's Section 319 Nonpoint Source (NPS) Grant Program. This program makes available around \$1.6M each grant year for restoration and protections efforts by providing a 60% cost share for eligible projects.

Mississippi Soil and Water Conservation Commission (MSWCC) is the lead agency responsible for abatement of agricultural NPS pollution through training, promotion, and installation of BMPs on agricultural lands. USDA Natural Resource Conservation Service (NRCS) provides technical assistance to MSWCC through its conservation districts located in each county. NRCS assists animal producers in developing nutrient management plans and grazing management plans. MDEQ, MSWCC, NRCS, and other governmental and nongovernmental organizations work closely together to reduce agricultural runoff through the Section 319 NPS Program.

Mississippi Forestry Commission (MFC), in cooperation with the Mississippi Forestry Association (MFA) and Mississippi State University (MSU), have taken a leadership role in the development and promotion of the forestry industry Best Management Practices (BMPs) in Mississippi. MDEQ is designated as the lead agency for implementing an urban polluted runoff control program through its Stormwater Program. Through this program, MDEQ regulates most construction activities. Mississippi Department of Transportation (MDOT) is responsible for implementation of erosion and sediment control practices on highway construction.

Due to this TMDL, projects within this watershed will receive a higher score and ranking for funding through the basin team process and Nonpoint Source Program described above.

4.2 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 statewide newspaper. The public will be given an opportunity to review the TMDLs 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 Kay Whittington at Kay_Whittington@deq.state.ms.us.

All comments should be directed to Kay_Whittington@deq.state.ms.us or Kay Whittington, MDEQ, PO Box 2261, Jackson, MS 39225. 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

- Davis and Cornwell. 1988. *Introduction to Environmental Engineering*. McGraw-Hill.
- GA EPD, 2009. *Georgia Environmental Protection Division TMDL-MS4 Coordination*. March, 2009. Atlanta GA.
- MDEQ. 2003. *Development and Application of the Mississippi Benthic Index of Stream Quality (M-BISQ)*. June 30, 2003. Prepared by Tetra Tech, Inc., Owings Mills, MD, for the Mississippi Department of Environmental Quality, Office of Pollution Control, Jackson, MS.
- MDEQ. 2007. *Mississippi's Plan for Nutrient Criteria Development*. Office of Pollution Control.
- MDEQ. 2007. *State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters*. Office of Pollution Control.
- MDEQ. 2008. *Stressor Identification Report for Hanging Moss Creek*. Office of Pollution Control.
- MDEQ. 1994. *Wastewater Regulations for National Pollutant Discharge Elimination System (NPDES) Permits, Underground Injection Control (UIC) Permits, State Permits, Water Quality Based Effluent Limitations and Water Quality Certification*. Office of Pollution Control.
- Metcalf and Eddy, Inc. 1991. *Wastewater Engineering: Treatment, Disposal, and Reuse 3rd ed.* New York: McGraw-Hill.
- MFC. 2000. *Mississippi's BMPs: Best Management Practices for Forestry in Mississippi*. Publication # 107.
- NRCS. 2000. *Field Office Technical Guide Transmittal No. 61*.
- Shields, F.D. Jr., Cooper, C.M., Testa, S. III, Ursic, M.E., 2008. *Nutrient Transport in the Pearl River Basin, Mississippi*. USDA ARS National Sedimentation Laboratory, Oxford, Mississippi.
- Telis, Pamela A. 1992. *Techniques for Estimating 7-Day, 10-Year Low Flow Characteristics for Ungaged Sites on Water bodies in Mississippi*. U.S. Geological Survey, Water Resources Investigations Report 91-4130.
- Thomann and Mueller. 1987. *Principles of Surface Water Quality Modeling and Control*. New York: Harper Collins.
- USEPA. 1997. *Technical Guidance Manual for Developing Total Maximum Daily Loads, Book 2: Streams and Rivers, Part 1: Biochemical Oxygen Demand/Dissolved Oxygen and Nutrients/Eutrophication*. United States Environmental Protection Agency, Office of Water, Washington, D.C. EPA 823-B-97-002.
- USEPA. 1999. *Protocol for Developing Nutrient TMDLs*. EPA 841-B-99-007. Office of Water (4503F), United States Environmental Protection Agency, Washington D.C. 135 pp.
- USEPA. 2000. *Nutrient Criteria Technical Guidance Manual Rivers and Streams*. United States Environmental Protection Agency, Office of Water, Washington, D.C. EPA-822-B-00-002.
- USEPA. 2000. *Stressor Identification Guidance Document*. EPA/822/B-00/025. Office of Water, Washington, DC.

APPENDIX D

City of Jackson
IDDE Incident Tracking Forms

Illicit Discharge Hotline Incident Tracking Sheet

Incident ID:				
Responder Information				
Call taken by:			Call date:	
Call time:			Precipitation (inches) in past 24-48 hrs:	
Reporter Information				
Incident time:			Incident date:	
Caller contact information (<i>optional</i>):				
Incident Location (<i>complete one or more below</i>)				
Latitude and longitude:				
Stream address or outfall #:				
Closest street address:				
Nearby landmark:				
Primary Location Description		Secondary Location Description:		
<input type="checkbox"/> Stream corridor (<i>In or adjacent to stream</i>)		<input type="checkbox"/> Outfall	<input type="checkbox"/> In-stream flow	<input type="checkbox"/> Along banks
<input type="checkbox"/> Upland area (<i>Land not adjacent to stream</i>)		<input type="checkbox"/> Near storm drain	<input type="checkbox"/> Near other water source (storm water pond, wetland, etc.):	
Narrative description of location:				
Upland Problem Indicator Description				
<input type="checkbox"/> Dumping		<input type="checkbox"/> Oil/solvents/chemicals	<input type="checkbox"/> Sewage	
<input type="checkbox"/> Wash water, suds, etc.		<input type="checkbox"/> Other: _____		
Stream Corridor Problem Indicator Description				
Odor	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid/Sour	<input type="checkbox"/> Petroleum (gas)
	<input type="checkbox"/> Sulfide (rotten eggs); natural gas	<input type="checkbox"/> Other: Describe in "Narrative" section		
Appearance	<input type="checkbox"/> "Normal"	<input type="checkbox"/> Oil sheen	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Suds
	<input type="checkbox"/> Other: Describe in "Narrative" section			
Floatables	<input type="checkbox"/> None:	<input type="checkbox"/> Sewage (toilet paper, etc)	<input type="checkbox"/> Algae	<input type="checkbox"/> Dead fish
	<input type="checkbox"/> Other: Describe in "Narrative" section			
Narrative description of problem indicators:				
Suspected Violator (name, personal or vehicle description, license plate #, etc.):				

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed:		Outfall ID:	
Today's date:		Time (Military):	
Investigators:		Form completed by:	
Temperature (°F):	Rainfall (in.):	Last 24 hours:	Last 48 hours:
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	
Land Use in Drainage Area (Check all that apply):			
<input type="checkbox"/> Industrial		<input type="checkbox"/> Open Space	
<input type="checkbox"/> Ultra-Urban Residential		<input type="checkbox"/> Institutional	
<input type="checkbox"/> Suburban Residential		Other: _____	
<input type="checkbox"/> Commercial		Known Industries: _____	
Notes (e.g., origin of outfall, if known):			

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE	DIMENSIONS (IN.)	SUBMERGED
<input type="checkbox"/> Closed Pipe	<input type="checkbox"/> RCP <input type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Other: _____	<input type="checkbox"/> Circular <input type="checkbox"/> Single <input type="checkbox"/> Elliptical <input type="checkbox"/> Double <input type="checkbox"/> Box <input type="checkbox"/> Triple <input type="checkbox"/> Other: _____ <input type="checkbox"/> Other: _____	Diameter/Dimensions: _____	In Water: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully With Sediment: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully
<input type="checkbox"/> Open drainage	<input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> rip-rap <input type="checkbox"/> Other: _____	<input type="checkbox"/> Trapezoid <input type="checkbox"/> Parabolic <input type="checkbox"/> Other: _____	Depth: _____ Top Width: _____ Bottom Width: _____	
<input type="checkbox"/> In-Stream	(applicable when collecting samples)			
Flow Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <i>If No, Skip to Section 5</i>			
Flow Description (If present)	<input type="checkbox"/> Trickle <input type="checkbox"/> Moderate <input type="checkbox"/> Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS					
PARAMETER	RESULT	UNIT	EQUIPMENT		
<input type="checkbox"/> Flow #1	Volume		Liter	Bottle	
	Time to fill		Sec		
<input type="checkbox"/> Flow #2	Flow depth		In	Tape measure	
	Flow width	____' ____"	Ft, In	Tape measure	
	Measured length	____' ____"	Ft, In	Tape measure	
	Time of travel		S	Stop watch	
Temperature		°F	Thermometer		
pH		pH Units	Test strip/Probe		
Ammonia		mg/L	Test strip		

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? Yes No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	<input type="checkbox"/>	<input type="checkbox"/> Sewage <input type="checkbox"/> Rancid/sour <input type="checkbox"/> Petroleum/gas <input type="checkbox"/> Sulfide <input type="checkbox"/> Other:	<input type="checkbox"/> 1 – Faint	<input type="checkbox"/> 2 – Easily detected	<input type="checkbox"/> 3 – Noticeable from a distance
Color	<input type="checkbox"/>	<input type="checkbox"/> Clear <input type="checkbox"/> Brown <input type="checkbox"/> Gray <input type="checkbox"/> Yellow <input type="checkbox"/> Green <input type="checkbox"/> Orange <input type="checkbox"/> Red <input type="checkbox"/> Other:	<input type="checkbox"/> 1 – Faint colors in sample bottle	<input type="checkbox"/> 2 – Clearly visible in sample bottle	<input type="checkbox"/> 3 – Clearly visible in outfall flow
Turbidity	<input type="checkbox"/>	See severity	<input type="checkbox"/> 1 – Slight cloudiness	<input type="checkbox"/> 2 – Cloudy	<input type="checkbox"/> 3 – Opaque
Floatables -Does Not Include Trash!!	<input type="checkbox"/>	<input type="checkbox"/> Sewage (Toilet Paper, etc.) <input type="checkbox"/> Suds <input type="checkbox"/> Petroleum (oil sheen) <input type="checkbox"/> Other:	<input type="checkbox"/> 1 – Few/slight; origin not obvious	<input type="checkbox"/> 2 – Some; indications of origin (e.g., possible suds or oil sheen)	<input type="checkbox"/> 3 – Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? Yes No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	<input type="checkbox"/>	<input type="checkbox"/> Spalling, Cracking or Chipping <input type="checkbox"/> Peeling Paint <input type="checkbox"/> Corrosion	
Deposits/Stains	<input type="checkbox"/>	<input type="checkbox"/> Oily <input type="checkbox"/> Flow Line <input type="checkbox"/> Paint <input type="checkbox"/> Other:	
Abnormal Vegetation	<input type="checkbox"/>	<input type="checkbox"/> Excessive <input type="checkbox"/> Inhibited	
Poor pool quality	<input type="checkbox"/>	<input type="checkbox"/> Odors <input type="checkbox"/> Colors <input type="checkbox"/> Floatables <input type="checkbox"/> Oil Sheen <input type="checkbox"/> Suds <input type="checkbox"/> Excessive Algae <input type="checkbox"/> Other:	
Pipe benthic growth	<input type="checkbox"/>	<input type="checkbox"/> Brown <input type="checkbox"/> Orange <input type="checkbox"/> Green <input type="checkbox"/> Other:	

Section 6: Overall Outfall Characterization

<input type="checkbox"/> Unlikely <input type="checkbox"/> Potential (presence of two or more indicators) <input type="checkbox"/> Suspect (one or more indicators with a severity of 3) <input type="checkbox"/> Obvious

Section 7: Data Collection

1. Sample for the lab?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
2. If yes, collected from:	<input type="checkbox"/> Flow	<input type="checkbox"/> Pool	
3. Intermittent flow trap set?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	If Yes, type: <input type="checkbox"/> OBM <input type="checkbox"/> Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

APPENDIX E

City of Jackson Construction Inspection Forms



Stormwater Construction Site Inspection Report

General Information			
Project Name			
Location			
Date of Inspection		Start/End Time	
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Contact Information			
Present Phase of Construction (IF Known)			
Type of Inspection:			
<input type="checkbox"/> Regular <input type="checkbox"/> Pre-storm event <input type="checkbox"/> During storm event <input type="checkbox"/> Post-storm event			
Weather Information			
Weather at time of this inspection?			
<input type="checkbox"/> Clear <input type="checkbox"/> Cloudy <input type="checkbox"/> Rain <input type="checkbox"/> Sleet <input type="checkbox"/> Fog <input type="checkbox"/> Snowing <input type="checkbox"/> High Winds			
<input type="checkbox"/> Other: _____ Temperature: _____			
Are there any discharges at the time of inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No			
If yes, describe: 			
Have any discharges occurred since the last inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A			
If yes, describe: 			

Site-specific BMPs

- A copy of Storm Water Pollution Prevention Plan (SWPPP) should be on file at the construction site. Request to review the SWPPP and list below all Best Management Practices (BMPs) identified in the SWPPP. This list will help ensure that you are inspecting all required BMPs at the construction site. **Does the Site Operator have a copy of their SWPPP on site: (check one) Yes__NO__N/A__**
- MDEQ requires Site Operators to complete their own site inspections on a weekly basis using the Inspection and Certification Form for Erosion and Sediment Controls included in their Large Construction General Permit. **Is this form being completed: (check one) Yes__NO__N/A__**
- List below any BMPs that should be installed at the construction site.

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
3		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
4		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
5		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
6		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
7		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
8		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
9		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
10		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
11		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
12		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
13		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
14		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2	Are natural resource areas (e.g. creeks, ditches, streams, wetlands, etc.) protected with barriers or similar BMPs?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
3	Are perimeter controls and sediment barriers adequately installed?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
4	Are discharge points and receiving waters free of any sediment deposits?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
5	Are storm drain inlets properly protected?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
6	Is the construction entrance/exit preventing sediment from being tracked into the street?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
7	Is trash/litter from work areas collected and placed in covered dumpsters?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
10	Are materials that are potential stormwater contaminants stored inside or under cover?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Non-Compliance

Describe any incidents of non-compliance not described above:

Inspector's Signature: _____



Stormwater Vacant Lot/Undeveloped Site Inspection Report

General Information			
Property Address:			
Location			
Date of Inspection		Start/End Time	
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Contact Information			
Present Phase of Construction (IF Known)			
Type of Inspection:			
<input type="checkbox"/> Random/Pre-storm event <input type="checkbox"/> Random/During storm event <input type="checkbox"/> Random/Post-storm event			
Weather Information			
Weather at time of this inspection?			
<input type="checkbox"/> Clear <input type="checkbox"/> Cloudy <input type="checkbox"/> Rain <input type="checkbox"/> Sleet <input type="checkbox"/> Fog <input type="checkbox"/> Snowing <input type="checkbox"/> High Winds			
<input type="checkbox"/> Other: _____ Temperature: _____			
Are there any discharges at the time of inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe: <div style="border: 1px solid black; height: 40px; width: 100%; margin-top: 5px;"></div>			
Have any discharges occurred since the last inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A If yes, describe: <div style="border: 1px solid black; height: 40px; width: 100%; margin-top: 5px;"></div>			

Site-specific BMPs

- List below any BMPs that should be installed at the construction site.

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
3		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
4		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
5		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
6		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2	Are natural resource areas (e.g. creeks, ditches, streams, wetlands, etc.) protected with barriers or similar BMPs?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
3	Are perimeter controls and sediment barriers adequately installed?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
4	Are discharge points and receiving waters free of any sediment deposits?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
5	Are storm drain inlets properly protected?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
6	Is the construction entrance/exit preventing sediment from being tracked into the street?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
7	Has trash/litter or other debris accumulated in the drainage way?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Non-Compliance

Describe any incidents of non-compliance not described above:

**Inspector's
Signature:** _____

APPENDIX F

City of Jackson
Industrial Facility Inspection Report Form



Industrial Facility Inspection Report

Facility Information			
Facility Name			
Facility Address/Mailing Address			
Facility Contact/Title		Phone Number	
NPDES Permit Number		Receiving Water(s) of the MS4	
Industrial Activity Conducted at the Facility			
Inspector Information			
Date of Inspection		Start/End Time	
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Contact Information			
Weather Information			
Weather at time of this inspection? <input type="checkbox"/> Clear <input type="checkbox"/> Cloudy <input type="checkbox"/> Rain <input type="checkbox"/> Sleet <input type="checkbox"/> Fog <input type="checkbox"/> Snowing <input type="checkbox"/> High Winds <input type="checkbox"/> Other: _____ Temperature: _____			
Are there any discharges at the time of inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe: <div style="height: 100px; border: 1px solid black; margin-top: 5px;"></div>			

Stormwater Pollution Prevention Plan (SWPPP) Review

			Notes:
1	Is there a SWPPP on site at the facility?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2	Is an individual/team identified who is responsible for implementing/developing a SWPPP?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
3	Are employee training records regarding stormwater pollution prevention topics included in the SWPPP?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
4	Is there a site map included in the SWPPP?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
5	Are potential pollutant materials that can be discharged from the site identified in the SWPPP (If so list them)?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
6	Is the storage location of pollutant materials identified?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
7	Is the name of receiving water(s) or MS4(s) listed? (If so list them)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
8	Does the SWPPP identify control measures that will be used to prevent/reduce stormwater pollution?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
9	Does the SWPPP contain completed routine inspection reports/logs regarding good housekeeping measures?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
10	Does the SWPPP contain a Spill Response Plan?	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Overall Facility Site Inspection

Areas Inspected:		Notes:
1	Is there visible evidence of pollutants entering the stormwater drainage system (i.e. stains, discoloration, residue, odors, sheens, sediment, debris accumulation, etc.)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
2	Were all above ground storage tanks that may potentially cause stormwater pollution?	<input type="checkbox"/> Yes <input type="checkbox"/> No
3	Were all garbage bins and dumpsters on the site inspected?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4	Are materials or products stored outside that could potentially cause stormwater pollution?	<input type="checkbox"/> Yes <input type="checkbox"/> No
5	Are materials contained in storage drums, barrels, or other containers that are deteriorating or leaking which could potentially cause stormwater pollution?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Monitoring		

Inspector's Signature: _____ **Date:** _____

APPENDIX G

City of Jackson
Stormwater Comprehensive Site Inspection
Report for Municipal Facilities



**City of Jackson
Stormwater Comprehensive Site Inspection Report
For Municipal Facilities**

This inspection must be conducted at least once annually by the City's Stormwater Management Program staff. Stormwater pollution control measures and preventive maintenance measures identified in the facility's Stormwater Pollution Prevention Plan (SWPPP) will be observed and evaluated to determine adequacy, proper implementation and operation.

FACILITY NAME:	INSPECTION TIME:	DATE:		
WEATHER INFORMATION:				
<ul style="list-style-type: none"> • Description of Weather Conditions (e.g., sunny, cloudy, raining, snowing, etc.): _____ • Was stormwater (e.g., runoff from rain or snowmelt) flowing at outfalls and/or discharge areas shown on the Site Map during the inspection: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Comments: _____ 				
I. POTENTIAL POLLUTANT SOURCE AREA INSPECTION AND BEST MANAGEMENT PRACTICES EVALUATION				
<p>SWPPP and Site Map: Ensure that the facility has a copy of the SWPPP/Spill Prevention Plan and site map on site along with copies of the quarterly inspection reports.</p> <ul style="list-style-type: none"> • Is the Site Map current and accurate? • Is the SWPPP inventory of activities, materials and products current? <p>Any new potential pollutant sources must be added in the facility's SWPPP</p>	Yes	No	<p>Findings and Remedial Action Documentation: Describe any findings below and the schedule for remedial action completion including the date initiated and date completed or expected to be completed.</p>	
<p>Vehicle/Equipment Areas:</p> <p><i>Equipment cleaning: Check NA if not performed on-site. Skip section.</i></p> <p>Is equipment washed and/or cleaned only in designated areas?</p> <ul style="list-style-type: none"> • Observe washing: Is all wash water captured and properly disposed of? <p><i>Equipment fueling: Check NA if not performed on-site. Skip section.</i></p> <ul style="list-style-type: none"> • Are all fueling areas free of contaminant buildup and evidence of chronic leaks/spills? • Are all chemical liquids, fluids, and petroleum products, on an impervious surface that is surrounded with a containment berm or dike that is capable of containing the total enclosed tank volume? • Are structures in place to prevent precipitation from accumulating in containment areas? <ul style="list-style-type: none"> ○ If not, is there any water or other fluids accumulated within the containment area? ○ Note: If containment areas are not covered to prevent water from accumulating, the SWPPP must include a plan describing how accumulated water will be managed and disposed of. 	Yes	No	NA	<p>Findings and Remedial Action Documentation:</p>

<p>Equipment maintenance:</p> <ul style="list-style-type: none"> • Are maintenance tools, equipment and materials stored under shelter, elevated and covered? • Are all drums and containers of fluids stored with proper cover and containment? • Are exteriors of containers kept outside free of deposits? • Are any vehicles and/or equipment currently leaking fluids? Identify leaking equipment. • Is there evidence of previous leaks or spills? Identify and address. • Are materials, equipment, and activities located so that leaks are contained in existing containment and diversion systems (confine the storage of leaky or leak-prone vehicles and equipment awaiting maintenance to protected areas)? <p>Add any additional site-specific BMPs:</p> <hr/> <hr/> <hr/> <hr/>	<p>Yes</p>	<p>No</p>	<p>NA</p>	<p>Findings and Remedial Action Documentation:</p>
---	------------	-----------	-----------	---

I. POTENTIAL POLLUTANT SOURCE AREA INSPECTION AND BEST MANAGEMENT PRACTICES EVALUATION

<p>Good Housekeeping BMPs:</p> <p>1. Are paved surfaces free of accumulated dust/sediment and debris?</p> <ul style="list-style-type: none"> • Date of last quarterly vacuum/sweep _____ • Are there areas of erosion or sediment/dust sources that discharge to storm drains? <p>2. Are all waste receptacles located outdoors:</p> <ul style="list-style-type: none"> • In good condition? • Not leaking contaminants? • Closed when is not being accessed? • External surfaces and area free of excessive contaminant buildup? <p>3. Are the following areas free of accumulated dust/sediment, debris, contaminants, and/or spills/leaks of fluids?</p> <ul style="list-style-type: none"> • External dock areas • Pallet, bin, and drum storage areas • Maintenance shop(s) • Equipment staging areas (loaders, tractors, trailers, forklifts, etc) • Around storage room(s) • Around maintenance yards • Other areas of industrial activity: <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<p>Yes</p>	<p>No</p>	<p>NA</p>	<p>Findings and Remedial Action Documentation:</p>
--	------------	-----------	-----------	---

<p>Spill Response and Equipment:</p> <p>Are spill kits available, in the following locations?</p> <ul style="list-style-type: none"> Fueling stations Transfer and mobile fueling units Vehicle and equipment maintenance areas <p>Do the spill kits contain all the permit required items?</p> <ul style="list-style-type: none"> Oil absorbents capable of absorbing fuel. A storm drain plug or cover kit. A non-water containment boom with absorbing capacity, material, structures or other equipment that can be used for containment purposes. A shovel. Two five-gallon buckets with lids. <p>Are contaminated absorbent materials properly disposed of?</p>	<p>Ye s</p>	<p>No</p>	<p>NA</p>	<p>Findings and Remedial Action Documentation:</p>
--	-----------------	-----------	-----------	---

I. POTENTIAL POLLUTANT SOURCE AREA INSPECTION AND BEST MANAGEMENT PRACTICES EVALUATION

<p>General Material Storage Areas:</p> <ul style="list-style-type: none"> Are damaged materials stored inside a building or another type of storm resistance shelter? Are all uncontained material piles stored in a manner that does not allow discharge to stormwater? Are scrap metal bins covered? Are outdoor containers covered? 	<p>Ye s</p>	<p>No</p>	<p>NA</p>	<p>Findings and Remedial Action Documentation:</p>
---	-----------------	-----------	-----------	---

<p>Stormwater BMPs and Treatment Structures: Visually inspect all stormwater BMPs and treatment structures devices, discharge areas infiltration and outfalls shown on the Site Map.</p> <ul style="list-style-type: none"> Are BMPs and treatment structures in good repair and operational? Are BMPs and treatment structures free from debris buildup that may impair function? Are berms, curbing or other methods used to divert and direct discharges adequate and in good condition? 	<p>Ye s</p>	<p>No</p>	<p>NA</p>	<p>Findings and Remedial Action Documentation:</p>
---	-----------------	-----------	-----------	---

<p>Observation of Stormwater Discharges:</p> <ul style="list-style-type: none"> Is the discharge free of floating materials, visible oil sheen, discoloration, turbidity, odor, foam or any other signs of contamination? Water from washing vehicles or equipment, steam cleaning and/or pressure washing is considered process wastewater and is not allowed to comingle with stormwater or enter storm drains. Is process water comingling with stormwater or entering storm drains? Illicit discharges include domestic wastewater, noncontact cooling water, or process wastewater. Were any illicit discharges observed during the inspection? 	<p>Ye s</p>	<p>No</p>	<p>NA</p>	<p>Findings and Remedial Action Documentation:</p>
--	-----------------	-----------	-----------	---

II. CORRECTIVE ACTION AND SWPPP MODIFICATIONS DESCRIPTIONS: Additional space to describe inspection findings and corrective actions if needed. Provide brief explanation of the general location and the rationale for the additional or different BMPs.

III. CERTIFICATION STATEMENTS AND SIGNATURES:

Inspector - Certification: This section must be completed by the person who conducted the site inspection prior to submitting a completed copy of this form to the facility manager. The inspector must also retain a completed copy of this report for documentation purposes.

- The facility is in compliance with the terms and conditions of the SWPPP.
- The facility is out of compliance with the terms and conditions of the SWPPP. This report includes the remedial actions that must be taken to meet the requirements of the SWPPP and permit, including a schedule of implementation of the remedial actions.

“I certify that this report is true, accurate, and complete, to the best of my knowledge and belief.”

Inspector’s Name – Printed	Inspector’s Signature	Inspector’s Title	Date

APPENDIX H

City of Jackson
Illicit Discharge Summary Table
Neel-Schaffer 2009 Assessment Report

STORM SEWER OUTFALL EVALUATION

The sampling was performed during dry weather. A storm event/weather history report is provided in Appendix F for reference. The City provided an outfall map that was utilized to locate the identified outfalls for this study. A copy of the City of Jackson Storm Sewer Outfall Map is provided in Appendix G. Numerical data for each location is presented in Appendix A.

ILLICIT DISCHARGES

Several storm sewer outfalls located along creeks within the City of Jackson revealed excessive levels of pollution. The table below describes the outfall location and the type of pollution found in excessive levels in the storm water. In general, certain outfalls identified herein revealed effluent levels that exceeded water quality standard criteria for surfactants, BOD, fecal coliform, COD, zinc and low pH.

Hanging Moss Creek Illicit Discharges	
<u>Outfall</u> HMC-2	<u>Excessive Pollution Levels/Illicit Discharges</u> Surfactants, BOD, fecal coliform, COD and Copper
Purple Creek Illicit Discharges	
<u>Outfall</u> PC-1	<u>Excessive Pollution Levels/Illicit Discharges</u> Surfactants
Eastover Creek Illicit Discharges	
<u>Outfall</u> EOC-1 EOC-2	<u>Excessive Pollution Levels/Illicit Discharges</u> fecal coliform fecal coliform, hardness
Eubanks Creek Illicit Discharges	
<u>Outfall</u> EC-2 EC-5	<u>Excessive Pollution Levels/Illicit Discharges</u> fecal coliform zinc

ILLICIT DISCHARGES (Cont'd)

Trahon Creek Illicit Discharges	
<u>Outfall</u> TRC-2 TRC-3 TRC-4 TRC-6	<u>Excessive Pollution Levels/Illicit Discharges</u> fecal coliform fecal coliform, hardness fecal coliform, hardness hardness
Big Creek Illicit Discharges	
<u>Outfall</u> BGC-2	<u>Excessive Pollution Levels/Illicit Discharges</u> fecal coliform
Bakers Creek Illicit Discharges	
<u>Outfall</u> BKC-1	<u>Excessive Pollution Levels/Illicit Discharges</u> fecal coliform
Belhaven Creek Illicit Discharges	
<u>Outfall</u> BC-3	<u>Excessive Pollution Levels/Illicit Discharges</u> fecal coliform, hardness
Cany Creek Illicit Discharges	
<u>Outfall</u> CC-18	<u>Excessive Pollution Levels/Illicit Discharges</u> fecal coliform
Hardy Creek Illicit Discharges	
<u>Outfall</u> HC-5 HC-3 HC-2	<u>Excessive Pollution Levels/Illicit Discharges</u> hardness hardness fecal coliform, surfactants
3 Mile Creek Illicit Discharges	
<u>Outfall</u> 3MC-1 3MC-3 3MC-2	<u>Excessive Pollution Levels/Illicit Discharges</u> hardness, low pH surfactants, fecal coliform surfactants, fecal coliform
Bailey Hill Creek Illicit Discharges	
<u>Outfall</u> BHC-1	<u>Excessive Pollution Levels/Illicit Discharges</u> zinc

ILLICIT DISCHARGES (Cont'd)

Lynch Creek Illicit Discharges	
<u>Outfall</u>	<u>Excessive Pollution Levels/Illicit Discharges</u>
LC-1	surfactants, fecal coliform
LC-3	surfactants, fecal coliform
LC-4	hardness, zinc
LC-5	hardness
LC-7	surfactants, fecal coliform
LC-8	surfactants, fecal coliform
LC-9	surfactants, fecal coliform
LC-10	surfactants, fecal coliform
LC-11	fecal coliform
LC-13	surfactants, fecal coliform
LC-15	surfactants, fecal coliform, BOD, COD
LC-16	fecal coliform

Town Creek Illicit Discharges	
<u>Outfall</u>	<u>Excessive Pollution Levels/Illicit Discharges</u>
TC-3	hardness
TC-5	fecal coliform
TC-6	fecal coliform
TC-7	fecal coliform
TC-8	fecal coliform

APPENDIX I

City of Jackson Storm Water Pollution Prevention Plan And Spill Response Plan Template



**STORM WATER POLLUTION
PREVENTION PLAN
AND
SPILL RESPONSE PLAN**

JACKSON, MISSISSIPPI

**PREPARED BY:
THE CITY OF JACKSON, DIVISION OF PUBLIC WORKS
STORM WATER MANAGEMENT PROGRAM
200 S PRESIDENT STREET, 5th FLOOR
JACKSON, MISSISSIPPI 39201
(601) 960-0000**

CITY OF JACKSON
STORM WATER MANAGEMENT PROGRAM
FACILITY'S MANAGEMENT CERTIFICATION

Name of Facility: _____

Type of Facility: _____

Location of Facility: _____

Facility Contact for Administrative Storm Water Pollution Prevention: _____

MANAGEMENT CERTIFICATION

I certify that I have read and understood this Storm Water Pollution Prevention Plan (SWPPP) and Spill Response Plan (SRP). In signing this management certification, I am verifying my commitment to help in the reduction of storm water pollution by implementing and maintaining the Best Management Practices (BMPs) specified in this SWPPP and SRP.

Print Name Title

Signature Date

CITY OF JACKSON
STORM WATER MANAGEMENT PROGRAM
COMPREHENSIVE SITE COMPLIANCE EVALUATION

Date: _____

Name and Title of Person Performing Evaluation: _____

1. Complete or review a recently completed Facility Inspection Checklist.
2. Complete or review a recently completed Outfall Inspection Checklist for **each** of the outfalls at the facility.

Based on the findings of the Facility Inspection and Outfall Inspections, complete the following:

Evaluate the effectiveness of measures to reduce pollutant potential at this facility.

Indicate any revisions necessary to update the Storm Water Pollution Prevention SWPPP for compliance.

Signature of Evaluator: _____

MANAGEMENT CERTIFICATION

I certify that I have performed this Comprehensive Site Compliance Evaluation to identify any areas of non-compliance. Based on this evaluation, I have reviewed the Storm Water Pollution Prevention Plan and revised it, if necessary, to incorporate additional pollution prevention measures and BMPs.

In signing this management certification, I am verifying my commitment to help in the reduction of storm water pollution by implementing and maintaining the Best Management Practices (BMPs) specified in this SWPPP.

Print Name Certified Stormwater Inspector
Title

Signature Date

**Storm Water Pollution Prevention Plan (SWPPP)
And
Spill Response Plan (SRP)**

Table of Contents

<u>Topics</u>	<u>Page</u>
Certifications and Evaluations	
• Facility’s Management Certification (Form)	1
• Comprehensive Site Compliance Evaluation (Form)	2
Facility Background Information	
a. Facility Information	5
b. Significant Chemicals / Hazards (List).....	6
c. Facility Location - USGS Topographic (Map).....	7
d. Site Layout (Map).....	8
Storm Water Pollution Prevention Plan	
1.0 Introduction	9
1.1 Pollution Prevention Team	9
2.0 Description of Potential Pollutant Sources	10
2.1 Drainage Basin Flow	10
2.2 Drainage Basin Potential Pollutants	11
2.3 Spills and Leaks.....	12
3.0 Best Management Practices and Controls	13
3.1 Housekeeping.....	13
3.2 Preventive Maintenance Program.....	13
3.2a Additional BMPs Applied To This Facility / Operation.....	14
3.3 Inspections	15
3.4 Employee Training	15
3.5 Non-Storm Water Discharges.....	15
3.6 Sediment and Erosion Control.....	15
4.0 Site Compliance, Evaluation and Reporting.....	16
4.1 Record Keeping	16
4.2 Evaluations / Certification	16
4.3 Regulatory Agencies Contact Information (Table)	17
Spill Response Plan (SRP)	
C.1 Overview.....	19
C.1.1 Introduction.....	19
C.1.2 Objectives.....	19
C.2 Spill Prevention Team.....	20
C.3 Facility Description.....	20

Spill Response Plan (SRP) – cont.

C.3.1	Site Map	20
C.3.2	List of Significant Materials	21
C.3.3	Facility Services.....	21
C.3.4	List of Past Spills and Leaks	21
C.4	Spill Prevention and Control Practices	22
C.5	Spill Response Instruction / Checklist	22
C.6	Sample Spill Report (Form).....	27

Appendix

- Tables
 1. Facility Storm Water Pollution Prevention Team.....29
 2. Emergency Response Numbers.....29

- Forms
 1. Outfall Inspection Checklist.....30
 2. Employee Training Record.....31
 3. Quarterly Facility Inspection Checklist.....32

FACILITY BACKGROUND INFORMATION

FACILITY NAME	
FACILITY ADDRESS	
FACILITY ACTIVITIES/PURPOSE	
AREA OF THE FACILITY (in acres)	
PAVED AREA/STRUCTURES (in acres)	
UNPAVED AREA (in acres)	
STORMWATER PERMIT ¹	YES Permit No. _____ NO
LIST OF CHEMICALS USED ONSITE	
DRAINAGE BASIN (NAME) ²	
CREEK/ RIVER (NAME)	
APPROX. DISTANCE OF CREEK/RIVER FROM THE FACILITY	
THE LOCATION OF THE FACILITY AND A SITE MAP ARE PRESENTED ON PAGE 7 AND 8 OF THIS DOCUMENT.	

¹ Include Permit Number if the facility has a separate NPDES permit from MDEQ.

² Enter the name of the drainage basin that the facility falls under. Contact Public Works for information if necessary.

FACILITY LOCATION ON A USGS TOPOGRAPHIC MAP

SITE MAP (LAYOUT)

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

1.0 INTRODUCTION

A SWPPP is a written plan that summarizes existing operations and pollution-generating activities and identifies the pollution prevention/good housekeeping practices, both existing and future, that will be used prevent or reduce stormwater pollution at a stormwater hotspot facility. National Pollution Discharge and Elimination System (NPDES) Permit MSS049786, requires that a Storm Water Pollution Prevention Plan (SWPPP) to be developed for all applicable City of Jackson facilities.

This SWPPP has been prepared in an effort to help reduce storm water pollution from this facility. In Jackson, Mississippi, there is a unique system of storm water collection. The City has a separate storm system and a separate sanitary sewer system. This means that in the City, storm water runoff enters a system of storm inlets that is directed to the nearest river or stream without treatment. Typical storm water pollution can include but not be limited to the following items:

- Trash and litter
- Oils, petroleum products, paints and other chemicals
- Pesticides and herbicides
- Organics, i.e. lawn clippings, leaves and branches
- Inorganics, i.e. silt, sediment and gravel

It is unlawful for any person to willfully dispose of contaminants into the City storm system. It is important to analyze your facility for potential storm water pollution contaminants and institute methods that minimize or eliminate pollutants entering the city storm water system. Implementing a method of site controls through the use of Best Management Practices (BMPs) will minimize the discharge of site pollutants to the storm water system.

This SWPPP and accompanying records, reports and changes will be retained in facility location, which is accessible to all employees.

The facility is committed to an active role in the reduction of pollution and the protection of human health and the environment. This attitude is reflected in the facility's policy of eliminating or reducing the release of pollutants to storm water.

1.1 Pollution Prevention Team

In order to fulfill our commitment of storm water pollution reduction, this facility has created a pollution prevention team. A list of facility team members is included in **PAGE 29**.

2.0 DESCRIPTION OF POTENTIAL POLLUTANT SOURCES

2.1 Drainage Basin Flow

Drainage Basin Flow

Select the sources of storm water flows from Drainage Basin from the following (If different, please describe):

- Asphalt-paved parking lots
- Concrete-paved driveways
- Lawns
- Landscaped areas
- Playground
- Baseball diamond
- Ball field (Football, Soccer, etc.)
- Stadium
- Buildings (Offices, warehouse, storage, shop, etc.)
- Structures
- (Material Stored) Underground storage tanks (USTs)
- (Material Stored) Above-ground storage tanks (ASTs)
- (Material Stored) Drum storage area (concrete-paved and covered?)
- Vehicle-washing rack
- Trash bin enclosures (How Many? _____)
- Trash bins (How Many? _____)
- Various processes or machines (What Kind? _____)
- Vehicle maintenance shop
- Others _____

DESCRIBE AS BEST AS YOU CAN HOW STORM WATER FLOWS FROM THE FACILITY TO THE RECEIVING WATER UNITS. (Include outfalls description, location in the facility, names of the receiving water units, their approx. distances and direction from the facility)

SEE THE ATTACHED SITE MAPS – PAGE 7 AND 8

2.2 Drainage Basin Potential Pollutants

Drainage Basin Potential Pollutants

Select the potential sources of pollutants from Drainage Basin from the following (If others, please describe):

- Automotive fluids leaked from in vehicles in the parking lot;
- Used oil spilled around or from the used oil AST;
- Spilled gasoline from dispensing and UST filling;
- Automotive fluid released into the parking lots from the vehicle service center shop building;
- Any pesticides, herbicides or fertilizers applied to the landscaped area;
- Grass clippings and leaves; and
- Waste materials collected in the trash bins.
- Others _____

To minimize storm water pollution from leaked automotive fluids, the vehicles should be properly maintained to minimize fluid leaks from vehicles, the parking lot should be periodically inspected for leaked fluids, and leaked fluids should be cleaned up in a timely manner.

To minimize storm water pollution from spilled used oil, spill cleanup equipment and materials should be readily available to immediately cleanup and properly dispose of any spilled used oil. For any catastrophic used oil spills, the facility should have prearranged agreement with at least one (1) qualified and licensed hazardous waste cleanup contractor to contain and cleanup any catastrophic used oil spills.

To minimize storm water pollution from spilled gasoline during dispensing, vehicles should be attended at all times when being filled. To minimize storm water pollution during UST filling the UST and tanker truck should be attended at all times. In addition, spill cleanup equipment and materials should be readily available to immediately cleanup and properly dispose of any gasoline spilled. For any catastrophic gasoline spills, the facility should have prearranged agreement with at least one (1) qualified and licensed hazardous waste cleanup contractor to contain and cleanup any catastrophic gasoline spills.

To minimize storm water pollution from automotive fluids released from the vehicle service center shop building, spill cleanup equipment and materials should be readily available to cleanup and properly dispose of any spills that occur in the building. The floors of the building should be cleaned periodically minimize vehicles from tracking pollutants from the building to the parking lots. The wash water generated from any cleaning operations should be discharged to the sanitary sewer.

To minimize storm water pollution from applied pesticides or herbicides, these products should be used in accordance with the manufacturer's instructions and not when rain is forecasted for the near

future.

To minimize storm water pollution from applied fertilizers, these products should be used in accordance with the manufacturer's instructions (i.e., not over applied).

To minimize storm water pollution from grass clippings and leaves, these should not be blown or raked into the street, but should be collected and properly disposed of with the solid waste generated at the facility.

To minimize storm water pollution from waste materials collected in the trash bin, the trash bin should be covered at all time to minimize storm water exposure to the waste materials.

Please see section 3.0 for details on BMPs and engineered controls to prevent or minimized storm water pollution at the facility.

2.3 Spills and Leaks

Any significant spills or leaks which contaminate storm water or otherwise drain to a storm water conveyance at the facility will be documented on page 27 of this SWPPP and promptly reported in accordance with Federal and State regulations. Addresses and telephone numbers of appropriate regulatory agencies are listed in Table on page 17.

3.0 BEST MANAGEMENT PRACTICES AND CONTROLS

The facility has developed storm water management controls to minimize the discharge of pollutants to storm water and is currently implementing these controls, when needed.

3.1 Housekeeping

- Cover areas where potential pollutants are stored**
Store potential pollutants such as trash, grease, paints, chemicals and metals to minimize contact with storm water from other sources. Keep these materials covered, labeled and stored in appropriate containers.
- Sweep parking lots and other outdoor storage areas regularly**
Sweep these areas at least once per week to maintain a debris-free facility. Pick up and dispose of debris, do not sweep it into the gutter or storm drain inlet. Do not wash pollutants into the storm water drain.
- Maintain landscaping**
Pick up and dispose of trimmings and clippings. Don't sweep or blow vegetation into the gutter or storm drain inlet. Avoid over-irrigation and over-application of herbicides and pesticides.
- Recycle or dispose of fluids properly**
Recycle automotive fluids, solvents and cleaners or dispose of them as hazardous materials.
- Wash vehicles and equipment in designated areas only**
Wash areas must be paved and fitted to drain only to sanitary sewers. A permit is required to connect and discharge to the sanitary sewer. A commercial car wash may be an alternative if your facility is not properly equipped.
- Provide secondary containment where necessary**
Secondary containment shall be provided around storage areas from which a significant potential exists to discharge materials or wastes to the receiving waters.

3.2 Preventive Maintenance Program

- Seal leaking storage containers and dumpsters**
Prevent damaged containers and open waste receptacles from coming into contact with rainfall. Ensure proper drain caps for dumpsters are in place. Replace leaking dumpsters, if necessary.
- Clean up Spills and Leaks**
Clean any spills promptly and without water, when possible. Rags, damp mops and dry absorbent materials are recommended. Once a spilled material is absorbed, clean up and dispose of waste materials promptly.
- Store Spill Kits in Appropriate Locations**
Store spill kits at strategic points throughout the facility including but not limited to chemical storage areas, loading docks, and bulk storage containers. Make sure spill kits are stocked with the proper materials (brooms, absorbent materials, mops, rags, dust pans, drip pans etc.)

3.3 Inspections

- Identify and inspect storm drain inlets
Prevent accumulated pollutants from washing down storm drains on your property by inspecting storm drains monthly, or more often as needed. Remove and properly dispose of debris.
- Periodic inspections of equipment located on rooftops
Equipment located on rooftops (e.g., emergency generators, HVAC systems, etc.) shall be periodically inspected, and preventive maintenance conducted as necessary to prevent leaks and spills.
- Perform a facility inspection to prevent spills and leaks
Maintain a regular inspection and repair schedule for vehicles and equipment. Minimize oil and fuel leaks.

3.4 Employee Training

It is required that every applicable employee be trained to implement storm water pollution prevention practices.

The City of Jackson offers a free training session regarding storm water pollution. Contact Public Works for details.

3.5 Non-Storm Water Discharges

The following may be considered as allowable non-storm water discharges:

- Potable water including water line flushings
- Landscape watering provided all pesticides, herbicides, and fertilizer have been applied in accordance with manufacturer's instructions
- Uncontaminated ground water or spring water
- Foundation or footing drains where flows are not contaminated with process materials such as solvents

All other non-storm water discharges (such as vehicle wash water) must be in compliance with an individual NPDES permit issued for the discharge.

3.6 Sediment and Erosion Control

Silt and sediment run-off causes biological, physical and chemical impairment to rivers and streams. The MDEQ has specific regulations and requirements for sites with areas of construction activity exceeding one acre. A separate storm water permit is required for these sites.

If the facility is performing land-disturbing activities in an area less than one acre, it is important to implement BMPs that control siltation in the construction area and prevent it from flowing into the storm drains. Examples of sediment and erosion control BMPs are inlet protection, silt fencing and

settling ponds.

4.0 Site Compliance Evaluation

Facility inspections should be conducted by facility managers at the facility, as they are useful tools in determining if the BMPs implemented at the facility are adequate and properly maintained. It is recommended that comprehensive inspections be performed at least once a year. Forms for documenting the quarterly facility inspection and comprehensive program inspection are provided on page 1 and 2 of the SWPPP.

In general, the comprehensive inspection should examine areas potentially contributing to storm water discharge for evidence of, or the potential for, pollutants entering the drainage system. Pollutant reduction measures should be evaluated to determine adequacy, proper implementation, and if any additional control measures are necessary. Structural storm water management measures, sediment and erosion control measures, and other structural pollution prevention measures identified in the SWPPP should be observed to ensure proper operation. A visual inspection of equipment needed to support and implement the SWPPP, such as spill response equipment, also should be made.

Blank inspection forms are provided on page 32 and 33; however, site-specific forms can be created by the facility if desired. The inspections should identify any areas of non-compliance. If areas of non-compliance are identified, this SWPPP should be reviewed and revised to incorporate additional pollution prevention measures and BMPs.

4.1 Record Keeping

The records of all Spill prevention and control inspections, site inspections, employee training and annual report will be maintained at _____ facility for at least 3 years.

The annual report will include any changes made to SPCC, the reason for changes, incidents of spills or leaks, action taken for spill cleanup, inspection results, and any other information relevant to the SPCC.

4.2 Evaluations / Certification

- **Facility Manager**
 - **Shall conduct a quarterly inspection of their facility inspection using the attached Quarterly Inspection Form.**
 - **Shall conduct an annually review of the SWPPP and SRP and certify it on the Facility Management Certification Page.**
- **City's Storm Water Program Managers**
 - **shall conduct a comprehensive Site Compliance Evaluation**

REGULATORY AGENCIES CONTACT INFORMATION (TABLE)

Regulatory Agency	Division / Department	Address	Phone Number
City of Jackson	Storm Water Program Division of Public Works	200 S President St, Jackson MS 39201	(601) 960-0000
Mississippi Department of Environmental Quality	Office of Pollution Control	515 E Amite St Jackson MS 39201	(601) 961-5588
United States Environmental Protection Agency	Region IV	Sam Nunn Atlanta Federal Center, 61 Forsyth Street, SW Atlanta, Georgia 30303-3104	(404) 562-8700
National Response Center	-----	-----	(800) 424-8802

SPILL RESPONSE PLAN (SRP)

(FACILITY)

SPILL RESPONSE PLAN (SRP)

Spill Response Plan (SRP)

C.1.	Overview.....	19
C.1.1	Introduction.....	19
C.1.2	Objectives.....	19
C.2.	Spill Prevention Team.....	20
C.3.	Facility Description.....	20
C.3.1	Site Map.....	20
C.3.2	List of Significant Materials.....	21
C.3.3	Facility Services.....	21
C.3.4	List of Past Spills and Leaks.....	21
C.4.	Spill Prevention and Control Practices.....	22
C.5	Spill Response Instruction / Checklist.....	22-26
C.6	Sample Spill Report (Form).....	27

C.1. OVERVIEW

C.1.1 Introduction

This Spill Response Plan (SRP) Specifies material handling and storage requirements and identifies spill cleanup procedures for the areas and processes at _____, in which spills may potentially occur. This SRP describes this facility and its operation, identifies potential Spill areas at the facility, recommends appropriate practices to reduce and clean spills.

This SRP becomes effective as of _____.

C.1.2 Objectives

The goal of the SRP is to improve the quality of surface waters by reducing the amount of pollutants resulting for spills, contained in the stormwater runoff that could potentially reach the storm drainage system and receiving waters.

The main objectives of the SRP are:

- Identify and evaluate spills from _____ facility that may affect the quality of stormwater discharges from the facility.
- Identify and implement site-specific practices to prevent and clean spills.
- Provide for facility inspection, record keeping and reporting.

A copy of this plan should be kept at the facility. It should be reviewed periodically to assure all

information and measures are current and accurate and should be updates as needed.

C.2. SPILL PREVENTION TEAM

The spill response team is responsible for developing, implementing, maintaining and revising the SRP. The members of the team are familiar with the operation, maintenance and management of this facility. The members of the team and their primary responsibilities (i.e. implementing, maintaining, record keeping, conducting inspections) are as follows:

Spill Response Team		
Name	Title	Responsibility
Leader:		
Member:		
Member:		

C.3. FACILITY DESCRIPTION

C.3.1 Site Map

Refer to pages 7 and 8 of this document for a detailed site map of the facility. The features presented in the map are:

- Property boundaries
- Building and other permanent structures
- Material storage and disposal areas
- Location of storm drain inlets
- Waste disposal areas
- Location of past spills
- Locations of high-risk, waste generating areas,
 - Fueling Stations
 - Vehicle/equipment washing and maintenance areas
 - Above ground storage tanks for liquids
 - Outside storage areas for raw materials, by-products and wastes
 - Other areas of concern _____

C.3.2 List of Significant Materials (See page 6)

C.3.3 Facility Services

Select all that apply:

- General Maintenance
- Pressure Washing
- Cleaning and Waxing
- Engine repair/Tuning
- Propeller Repair
- Oil Changes
- Parts Cleaning
- Painting
- Blasting
- Sanding
- Air Conditioning Repair and Service
- Other Services. List _____

C.3.4 List of Past Spills and Leaks

Select appropriate:

- There has never been a significant spill at the facility
- There have been one or more significant spills. Please fill the following table if this option is selected.

List all the pollutant materials that have been spilled or leaked in the facility over the last three years are presented in the table below.

List of Spills				
Date	Material	Volume	Location	Actions Taken

C.4. Spill Prevention And Control Practices

Spill prevention and control practices will be implemented to reduce the amount of pollutants in stormwater discharges from the facility.

C.5 Spill Response Instructions

Spill Cleanup Guidelines

Chemical spills or hazardous materials emergency situations should be handled as RESCUE, CONFINE, REPORT, SECURE, AND CLEANUP.

Rescue

Just as you are not to re-enter a burning building, **DO NOT** go back into an area where a chemical spill has occurred. In many documented cases, rescuers not wearing proper protective equipment have been overcome by toxic or asphyxiating fumes trying to rescue other victims and died as a result. Do not make this mistake.

As you leave an area involved in a chemical spill, assist people exiting the area.

- Evacuate personnel from the spill area.
- Direct personnel to nearest fire exit.
- Alert neighbors.
- Attend to victims.

First Aid

- Remove victim from spill area to fresh air (but do not endanger your own life by entering areas with a toxic atmosphere).
- Immediately remove contaminated clothing.
- Wash skin with soap and water.
- Flush skin and/or eyes with water for at least 15 minutes. (You may not feel any immediate effect from chemical spills, but it is very important to wash quickly and thoroughly as many chemicals can cause severe tissue damage, which is not apparent until hours later.)
- Get medical attention for victims.

Chemical spills over large body areas

- Have someone nearby contact emergency personnel for assistance.
- Remove contaminated clothing while under a safety shower.
- Flood affected body area in cool water for at least fifteen minutes.

- Wash off chemicals with mild detergent and water; do not use neutralizing chemicals, unguents, creams, lotions or salves.
- Make sure medical personnel understand exactly what chemicals are involved.

Victims of Hydrogen Fluoride (HF) spills

- Have someone nearby contact emergency medical personnel for assistance.
- Flush with cool water until any whitening of tissue disappears.
- Swath injured areas with soaking wet, iced cloths.
- Get immediate medical help.

Confine

- Close fire doors.
- Isolate area.
- Establish exhaust ventilation if possible.
- Vent fumes only to outside of building.

If fumes are in a room that is not vented to outside of building, close off room.

Report

Contact 911 first when:

- Spills involve injury requiring medical treatment.
- Spills involve fire or explosion hazards.
- Spills are potentially life threatening.

Contact Department of Public Works when:

- One gallon of a chemical or more or any quantity of a highly reactive or toxic material is spilled.
- An unknown chemical is spilled.
- You do not have proper training or proper protective equipment to perform the cleanup.
- You have any questions or doubts about your ability to clean up the spill.

When contacting Department of Public Works, indicate a chemical spill has occurred. Be prepared to provide the following information:

- The name, telephone number and location of the reporter.
- Location of the incident.
- Time and type of incident.
- Name and quantity of material involved, to the extent known.
- The extent of injuries, if any.
- The possible hazards to human health or the environment outside the facility.
- The safest route to approach the spill.

Warn emergency responders of any other hazards they may encounter, such as large quantities of stored chemicals (particularly flammables, oxidizers and air-borne toxic or irritant materials), radioactive materials or biohazards, etc., on site.

Secure

Until Emergency Responders arrive on the scene, you and your staff will need to block off entrances to the spill site and prevent people from entering the contaminated area.

Cleanup

If you are going to do the cleanup, follow the procedures listed in the "What To Do When You Clean Up A Chemical Spill" section.

What To Do When You Clean Up A Chemical Spill

If you have the proper training, proper personal protective equipment and the proper material to absorb and clean up your chemical spill, and no one has been injured, the spill is contained, and the spill is not life threatening or a fire or explosion hazard, follow these procedures:

1. Perform all the procedures in the RESCUE, CONFINE, REPORT, and SECURE sections above, with the exception that you do not need to report the incident to Department of Public Works.
2. When cleaning a spill yourself, locate the spill kit.
3. Choose appropriate personal protection.
 - Always wear protective gloves and eye protection.
 - If there is a chance of body contact, wear an apron and coveralls.
 - If the spill is on the floor, wear rubber or plastic boots (NOT leather).

4. Remove ignition sources.

- Turn off hot plates, stirring motors, flame sources.
- Shut down all equipment.
- If unable to shut off sources of ignition, notify emergency responders.

5. Confine or contain the spill.

- Cover with an absorbent mixture.
- Clean up minor spills with paper towels or sponge if they won't react.
- Sweep solid materials into a dustpan, place in sealed container.
- If acid/base, first add a neutralizing agent; sodium bicarbonate for acids, sodium bisulfate for bases.
- Small amounts of inorganic acids/bases: use neutralizing agent and absorbent material.
- Small amounts of other materials: absorb with non-reactive material (e.g. vermiculite, sand, towels, Floor-Dri).
- Large amounts of inorganic acids/bases: neutralize and call for help.
- Large amounts of other materials: make a judgment call; depending on the amount, toxicity or what the substance can run into or react with, you may handle it yourself or call for help.

6. Remove absorbent material with a broom and dustpan.

- Place in plastic bag or other appropriate container.
- Dispose of the material as a chemical waste.

7. Wet mop the spill area.

The following table describes previous spills and applicable practices used to clean up the spills for the _____ facility:

Spill prevention and control Practices			
Date of Spill	Spill Type/Material	Spill Quantity	Actions Taken

SAMPLE SPILL REPORT

Date of Occurrence: _____

Discovered by: _____

Location: _____

Material Type and Volume:

Cause of Spill: _____

Corrective Action Taken: _____

(Signature)

Report Prepared By:

Name: _____

Title: _____

Phone: _____

APPENDIX

Tables

1. Facility Storm Water Pollution Prevention Team.....	29
2. Emergency Response Numbers.....	29

Forms

• Outfall Inspection Checklist.....	30
• Employee Training Record.....	31
• Quarterly Facility Inspection Checklist.....	32

FACILITY STORM WATER POLLUTION PREVENTION TEAM

Team Member	Contact Information	Title	Responsibility
			Organization of employee training
			Supervision of record keeping
			Supervision of site inspections and good housekeeping
			Supervision of preventive maintenance, spill prevention and reporting
			Overall responsibility for preparation and implementation of the SWPPP along with achieving site compliance

EMERGENCY RESPONSE NUMBERS

OUTFALL INSPECTION CHECKLIST

(Normally conducted by Certified Stormwater Inspector)

Note: Complete one form for EACH outfall present at the facility. This form is for use as part of the annual Comprehensive Site Compliance Evaluation, although outfalls can be inspected more frequently, if necessary.

Date: _____ Time: _____

Weather Conditions during the Inspection: _____

Name and Title of Person Performing Inspection: _____

Outfall Number and Location: _____

Yes _____ Is the outfall in good condition and can water flow freely? If not, please describe.

No _____

Yes _____ Is flow visible? If yes, complete checklist below. No _____

Yes _____ Is standing water present? If yes, complete checklist below. No _____

Observations regarding flowing or standing water in Outfall:

Color of water _____

Oily sheen Yes / No

Odor _____

Sludge present Yes / No

Murky Yes / No

Stains on conveyance Yes / No

Floating objects Yes / No

Plant life present and healthy Yes / No

Scum Yes / No

Suds Yes / No

Signature of Inspector: _____

EMPLOYEE TRAINING RECORD

Date of Session: _____

Time: _____

Trainer: _____

Topic _____

Employees Attending (names, printed):

Signature:

Specifics of Training: _____

Facility _____ **Year** _____ **Qtr** 1 2 3 4

QUARTERLY FACILITY INSPECTION CHECKLIST

(Page 1 of 2)

Date: _____ Time: _____ Weather Conditions: _____

Yes _____ Does your facility show signs of poor housekeeping (cluttered walkways,
No _____ unswept floors, uncovered materials, etc.)? If yes, please explain.

Yes _____ Are there spots, puddles or other traces of oil, grease or other chemicals on the
No _____ ground or pavement, or in shipping areas or outside containment structures?
If yes, please explain. _____

Yes _____ Is there discoloration, residue, or corrosion on the roof or around vents or pipes
No _____ that ventilate or drain work or storage areas? If yes, please explain.

Yes _____ Do you see leaking equipment, pipes, containers, or lines? If yes, please explain.
No _____

Yes _____ Do storage containers show signs of corrosion or leaks? If yes, please explain.
No _____

Yes _____ Do solid waste disposal containers (dumpsters, trash compactors, garbage cans)
No _____ have debris around them, or have they been left uncovered? If yes, please explain.

Yes _____ Are containers properly labeled? If not, please indicate location of containers.
No _____

Yes _____ Is evidence of soil erosion present? If yes, please indicate where.
No _____

Facility _____ Year _____ Qtr 1 2 3 4

QUARTERLY FACILITY INSPECTION CHECKLIST

(Page 2 of 2)

Yes _____ Are existing storm water conveyance devices (ditches, pipes, grates) operating
No _____ properly and free of leaves, debris and obstructions? If not, please explain.

Yes _____ Is spill response equipment available at appropriate locations and is the equipment
No _____ in good condition? If not, please explain.

Yes _____ Has new equipment been installed or new processes implemented at the facility?
No _____ If yes, please describe.

Yes _____ Have new containment areas or new coverings for outside storage areas been
No _____ installed? If yes, please describe.

Yes _____ Have new storm water conveyance devices been installed? If yes, please describe.
No _____

Yes _____ Have new potential pollutant sources been identified? If yes, please describe.
No _____

Other indications of potential storm water pollution noted during inspection (please describe):

Follow-up Actions Needed: _____

Facility Inspector:

Name (Printed) _____

Signature of Inspector: _____

APPENDIX J

City of Jackson
Drainage Areas Inspected for Obstructions



City of Jackson
Department of Public Works
Division of Bridges & Drainage
Drainage Maintenance and Inspection Log of
Drainage Check Points



FEBRUARY 2012

Exhibit D

To be Completed by Bridges and Drainage Maintenance Division Supervisor

	Date	Area/ Location (Physical Address)	Creek Location	Inspected By	Observation(s)/ Problem(s)	Assigned To	Action Taken	Date Corrected	Re-Inspected	
									By	Date
1	2/28/12	4037 Clearbrook Drive (Area boarded by Terry Rd, Frontage Rd & Savanna St; and Stokes Robertson Rd)	Caney Creek Area	A. Wiggins	Debris	C. Beauchamp	Removed debris	2/28/12	A. Wiggins	2/28/12
2	2/28/12	3044 Ridgeland Drive (Area boarded by McDowell Rd Extension, Cooper Rd, Longwood Dr & Oak Forest Dr.)	Caney Creek Area	A. Wiggins	Debris	C. Beauchamp	Removed debris	2/28/12	A. Wiggins	2/28/12
3	2/29/11	Rose Street @ Inge Street	Lynch Creek Area	A. Wiggins	Debris	C. Beauchamp	Removed debris	2/29/11	A. Wiggins	2/29/11
4	2/29/11	Gallatin St @ Porter St @ viaduct	Lynch Creek Area	A. Wiggins	Debris	C. Beauchamp	Removed debris	2/29/11	A. Wiggins	2/29/11
5	2/29/11	Gallatin Street @ Hiawatha Street	Lynch Creek Area	A. Wiggins	Debris	C. Beauchamp	Removed debris	2/29/11	A. Wiggins	2/29/11
6	2/29/11	Monument Street at viaduct	Lynch Creek Area	A. Wiggins	Debris	C. Beauchamp	Removed debris	2/29/11	A. Wiggins	2/29/11
7	2/29/11	Palmyra Street	Town Creek Area	A. Wiggins	Debris	C. Beauchamp	Removed debris	2/29/11	A. Wiggins	2/29/11
8A	2/27/11	Pleasant Ave. W. Fortification & Woodrow Wilson	Town Creek Area	K. Bratton	Debris	C. Payton	Removed debris	3/14/12	K. Bratton	3/14/12
8B	2/27/12	516 Derrick St	Town Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12
8C	2/27/12	530 Erie St	Town Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12
8D	2/27/12	Lavernet Rd	Town Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12
9	2/27/12	Macon Street (dead end-south)	Lynch Creek Area	K. Bratton	Debris	C. Grantham	Removed debris	3/15/12	K. Bratton	3/15/12

NOTE: N/A – From Assigned to Re-inspected by = No maintenance required/performed



City of Jackson
 Department of Public Works
 Division of Bridges & Drainage
 Drainage Maintenance and Inspection Log of
 Drainage Check Points



FEBRUARY 2012

Exhibit D

To be Completed by Bridges and Drainage Maintenance Division Supervisor

	Date	Area/ Location (Physical Address)	Creek Location	Inspected By	Observation(s)/ Problem(s)	Assigned To	Action Taken	Date Corrected	Re-Inspected	
									By	
10	2/27/12	Lynch St. @ Ellis Ave.	Lynch Creek Area	K. Bratton	Debris	C. Payton	Removed debris	3/14/12	K. Bratton	3/14/12
11	2/27/12	Casa Grande Cir. (Myer Ave to Myer Ave)	Lynch Creek Area	K. Bratton	Debris	C. Payton	Removed debris	3/14/12	K. Bratton	3/14/12
12	2/27/12 2/29/12	Robinson Rd @ Pecan Pl.	Lynch Creek Area	K. Bratton A. Wiggins	Debris	C. Payton C. Beauchamp	Removed debris	2/29/12 3/14/12	K. Bratton A. Wiggins	2/29/12 3/14/12
13	2/27/12	South Street @ Galvez Street	Lynch Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12
14	2/27/12	212 McTyere 218 McTyere	Town Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12
15A	3/15/12	517 Flag Chapel Rd	Lynch Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12
15B	2/27/12	5110 Ginger Dr	Lynch Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12
15C	2/27/12	5203 Queen Eleanor Ln & Bonita	Lynch Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12
15D	2/27/12	5730 Wild Flower Dr	Lynch Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12
15E	2/27/12	317 Queen Theresa Ln	Lynch Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12
15F	2/27/12	310 Queen Maragret Ln	Lynch Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12

NOTE: N/A – From Assigned to Re-inspected by = No maintenance required/performed



City of Jackson
Department of Public Works
Division of Bridges & Drainage
Drainage Maintenance and Inspection Log of
Drainage Check Points



FEBRUARY 2012

Exhibit D

To be Completed by Bridges and Drainage Maintenance Division Supervisor

	Date	Area/ Location (Physical Address)	Creek Location	Inspected By	Observation(s)/ Problem(s)	Assigned To	Action Taken	Date Corrected	Re-Inspected	
									By	Date
15G	2/27/12	313 Queen Catherine Ln	Lynch Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12
15H	2/27/12	312 Queen Alexander Ln	Lynch Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12
15I	2/27/12	313 Marie Ln	Lynch Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12
15 J	2/27/12	319 Queen Julianna Ln	Lynch Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12
15K	2/27/12	121 Queen Joanna Ln	Lynch Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12
15L	2/27/12	607 Queens Circle	Lynch Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12
15M	2/27/12	407 E. Hillsdale Dr	Lynch Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12
16	2/29/12	F.D.R. Dr. (from Presidential Dr. to dead end WEST)	Bogue Chitto Creek Area	C. Jones	Debris	I. McClenty	Removed debris	2/29/12	C. Jones	2/29/12
17	2/29/12	Ab Lincoln Dr. (from Flag Chapel Dr. to J.F. Kennedy Blvd)	Bogue Chitto Creek Area	C. Jones	Debris	I. McClenty	Removed debris	2/29/12	C. Jones	2/29/12
18	2/29/12	Bainbridge Dr. @ Holmes Ave.	White Oak Creek Area	C. Jones	Debris	I. McClenty	Removed debris	2/29/12	C. Jones	2/29/12
19	2/24/12	Stonewall St. @ Booker Washington	Town Creek Area	C. Jones	Debris	I. McClenty	Removed debris	2/24/12	C. Jones	2/24/12
20	2/27/12	Fontaine Ave (from Mayes St to dead end NORTH)	Town Creek Area	K. Bratton	Debris	C. Payton	Removed debris	3/14/12	K. Bratton	3/14/12
21	2/27/12	Rockdale Dr. (from Brinkley Dr. to Azalea Dr.)	Eubanks Creek Area	K. Bratton	Debris	C. Payton	Removed debris	3/14/12	K. Bratton	3/14/12

NOTE: N/A – From Assigned to Re-inspected by = No maintenance required/performed



City of Jackson
Department of Public Works
Division of Bridges & Drainage
Drainage Maintenance and Inspection Log of
Drainage Check Points



FEBRUARY 2012

Exhibit D

To be Completed by Bridges and Drainage Maintenance Division Supervisor

	Date	Area/ Location (Physical Address)	Creek Location	Inspected By	Observation(s)/ Problem(s)	Assigned To	Action Taken	Date Corrected	Re-Inspected	
									By	Date
22	2/27/12	Woodstock Dr. (6300 Block)	Hanging Moss Creek Area	K. Bratton	Debris	C. Grantham	Removed debris	3/15/12	K. Bratton	3/15/12
23	2/27/12	Westbrook Rd. (from Old Canton Rd. to dead end EAST)	White Oak Creek Area	K. Bratton	Debris	C. Grantham	Removed debris	3/15/12	K. Bratton	3/15/12
24	2/27/12	Olympia Fields (Brea Burn Dr to Brea Burn Dr.)	Purple Creek Area	K. Bratton	Debris	C. Grantham	Removed debris	3/15/12	K. Bratton	3/15/12
25A	2/27/12	4306 Robin Dr	Eubanks Creek Area	K. Bratton	Debris	C. Payton	Removed debris	3/14/12	K. Bratton	3/14/12
25B	2/27/12	State St. @ Choctaw Rd.	Eubanks Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/14/12	K. Bratton	3/14/12
26	2/27/12	Old Canton Rd. @ River Thames Rd.	White Oak Creek Area	K. Bratton	Debris	G. Coleman	Remove debris	3/14/12	K. Bratton	3/14/12
27	2/29/12	Lamar St (from Fortification St. to Duncan Ave.)	Town Creek Area	C. Jones	Debris	I. McClenty	Removed debris	2/29/12	C. Jones	2/29/12
28	2/27/12	Wacaster St. @ First Ave.	Lynch Creek Area	C. Jones	Debris	I. McClenty	Removed debris	2/27/12	C. Jones	2/27/12
29	2/24/12	Mill St. @ Whitfield St.	Town Creek Area	C. Jones	Debris	I. McClenty	Removed debris	2/29/12	C. Jones	2/29/12
30	2/29/12	Wilson St. @ McTyere Ave.	Town Creek Area	C. Jones	Debris	I. McClenty	Removed debris	2/29/12	C. Jones	2/29/12
31	2/29/12	Culley Dr. (from State St. to Frontage Rd.)	Hanging Moss Creek Area	C. Jones	Debris	I. McClenty	Removed debris	2/29/12	C. Jones	2/29/12
32	2/29/12	3718 West St.	Hanging Moss Creek Area	C. Jones	Debris	I. McClenty	Removed debris	2/29/12	C. Jones	2/29/12
33	2/28/12	209 Tennessee Ave.	Lynch Creek Area	C. Jones	Debris	I. McClenty	Removed debris	2/28/12	C. Jones	2/28/12
34	2/28/12	South Grandview Cir. @Terry Rd.	Big Creek Area	C. Jones	Debris	I. McClenty	Removed debris	2/28/12	C. Jones	2/28/12
35	2/24/12	212 Roosevelt St	Town Creek Area	C. Jones	Debris	I. McClenty	Removed debris	2/24/12	C. Jones	2/24/12

NOTE: N/A – From Assigned to Re-inspected by = No maintenance required/performed



City of Jackson
Department of Public Works
Division of Bridges & Drainage
Drainage Maintenance and Inspection Log of
Drainage Check Points



FEBRUARY 2012

Exhibit D

To be Completed by Bridges and Drainage Maintenance Division Supervisor

	Date	Area/ Location (Physical Address)	Creek Location	Inspected By	Observation(s)/ Problem(s)	Assigned To	Action Taken	Date Corrected	Re-Inspected	
									By	Date
36	2/27/12	Bell St.	Town Creek Area	C. Jones	Debris	I. McClenty	Removed debris	2/27/12	C. Jones	2/27/12
37	2/29/12	4918 Forest Hill	Caney Creek Area	A. Wiggins	Debris	C. Beauchamp	Removed debris	2/29/12	A. Wiggins	2/29/12
38	2/27/12	Huntview Dr (South of Rutherford)	Hanging Moss Creek Area	K. Bratton	Debris	C. Grantham	Removed debris	3/15/12	K. Bratton	3/15/12
39A	2/27/12	Beasley & Waverly	Hanging Moss Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/14/12	K. Bratton	3/14/12
39B	2/27/12	I-220 to Meadow Rd	Hanging Moss Creek Area	K. Bratton	Debris	C. Grantham	Removed debris	3/15/12	K. Bratton	3/15/12
40	2/27/12	5404 Marblehead	White Oak Creek Area	K. Bratton	Debris	C. Grantham	Removed debris	3/15/12	K. Bratton	3/15/12
41	2/28/12	Metro Parkway (Lynch St., Prentiss St.)	Lynch Creek Area	C. Jones	Debris	I. McClenty	Removed debris	2/28/12	C. Jones	2/28/12
42	2/27/12	Hwy 49N (Northwest Middle School)	Bogue Chitto Creek Area	K. Bratton	Debris	C. Payton	Removed debris	3/14/12	K. Bratton	3/14/12
43	2/29/12	Robinson Rd & Terrace St	Lynch Creek Area	A. Wiggins	Debris	C. Beauchamp	Removed debris	2/29/12	A. Wiggins	2/29/12
44	2/28/12	910 Royal Oak Dr	Lynch Creek Area	C. Jones	Debris	I. McClenty	Removed debris	2/28/12	C. Jones	2/28/12
45	2/27/12	1946 Aztec Dr	Eastover Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/14/12	K. Bratton	3/14/12
46	2/27/12	3549 Rita Dr	Town Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/14/12	K. Bratton	3/14/12
47	2/27/12	1981 Marshall Pl & Michael Clay Dr @ Linda Ln	Town Creek	K. Bratton	Debris	G. Coleman	Removed debris	3/14/12	K. Bratton	3/14/12
48	2/27/12	1605 Linden Pl	Belhaven Creek	K. Bratton	Debris	G. Coleman	Removed debris	3/14/12	K. Bratton	3/14/12
49	2/27/12	5044 Ashley Dr	White Oak Creek	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12

NOTE: N/A – From Assigned to Re-inspected by = No maintenance required/performed



City of Jackson
Department of Public Works
Division of Bridges & Drainage
Drainage Maintenance and Inspection Log of
Drainage Check Points



FEBRUARY 2012

Exhibit D

To be Completed by Bridges and Drainage Maintenance Division Supervisor

	Date	Area/ Location (Physical Address)	Creek Location	Inspected By	Observation(s)/ Problem(s)	Assigned To	Action Taken	Date Corrected	Re-Inspected	
									By	Date
50	2/27/12	Brookwood Rd (dead end)	Eubanks Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/14/12	K. Bratton	3/14/12
51	2/27/12	4506 Meadow Hill Rd	Eubanks Creek Area	K. Bratton	Debris	C. Payton	Removed debris	3/14/12	K. Bratton	3/14/12
52A	2/27/12	2736 & 2820 Newport St	Town Creek	K. Bratton	Debris	G. Coleman	Removed Debris	3/14/12	K. Bratton	3/14/12
52B	2/27/12	2712 Idaho St & 2618 Utah St	Town Creek	K. Bratton	Debris	G. Coleman	Removed Debris	3/14/12	K. Bratton	3/14/12
53A	2/27/12	324 Stillwood Dr & 316 Wilshire St	Eubanks Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12
53B	2/27/12	720 Witsell Rd & 4103 Meadow Ln Rd	Eubanks Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/15/12	K. Bratton	3/15/12
53C	2/27/12	El Paso @ Oaklawn	Eubanks Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/14/12	K. Bratton	3/14/12
54A	2/27/12	370 & 530 Naples Rd	Eubanks Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/14/12	K. Bratton	3/14/12
54B	2/27/12	236 Melbourne Rd	Eubanks Creek Area	K. Bratton	Debris	C. Payton	Removed debris	3/14/12	K. Bratton	3/14/12
54C	2/27/12	4426 Meadow Ridge Dr	Eubanks Creek Area	K. Bratton	Debris	C. Payton	Removed debris	3/14/12	K. Bratton	3/14/12
55	2/27/12	4457 Wedgewood St	White Oak Creek Area	K. Bratton	Debris	C. Payton	Removed debris	3/12/12	K. Bratton	3/12/12
56	2/27/12	6075 Ferncreek Dr	White Oak Creek Area	K. Bratton	Debris	G. Coleman	Removed debris	3/14/12	K. Bratton	3/14/12
57	2/29/12	Areas boarded by Siwell Rd & Brookhollow	Big Creek Area	A. Wiggins	Debris	C. Beauchamp	Removed debris	2/29/12	A. Wiggins	2/29/12
58	2/29/21	Areas boarded by Brookleigh & Torrey Pines	Big Creek Area	A. Wiggins	Debris	C. Beauchamp	Removed debris	2/29/12	A. Wiggins	2/29/12

NOTE: N/A – From Assigned to Re-inspected by = No maintenance required/performed