2019 BMP Implementation Survey

Mississippi's BMP Implementation Monitoring Program

The Best Management Practices Implementation Monitoring Program was developed to provide a way to measure the voluntary use of BMPs in Mississippi. The Mississippi Forestry Commission conducts the BMP Implementation Survey on a three-year cycle.

Photo by Bill Kitchings, Mississippi Forestry Commission

Mississippi's Voluntary Silvicultural Best Management Practices Implementation Monitoring Program

2019 BMP Implementation Survey For Mississippi

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August 2019

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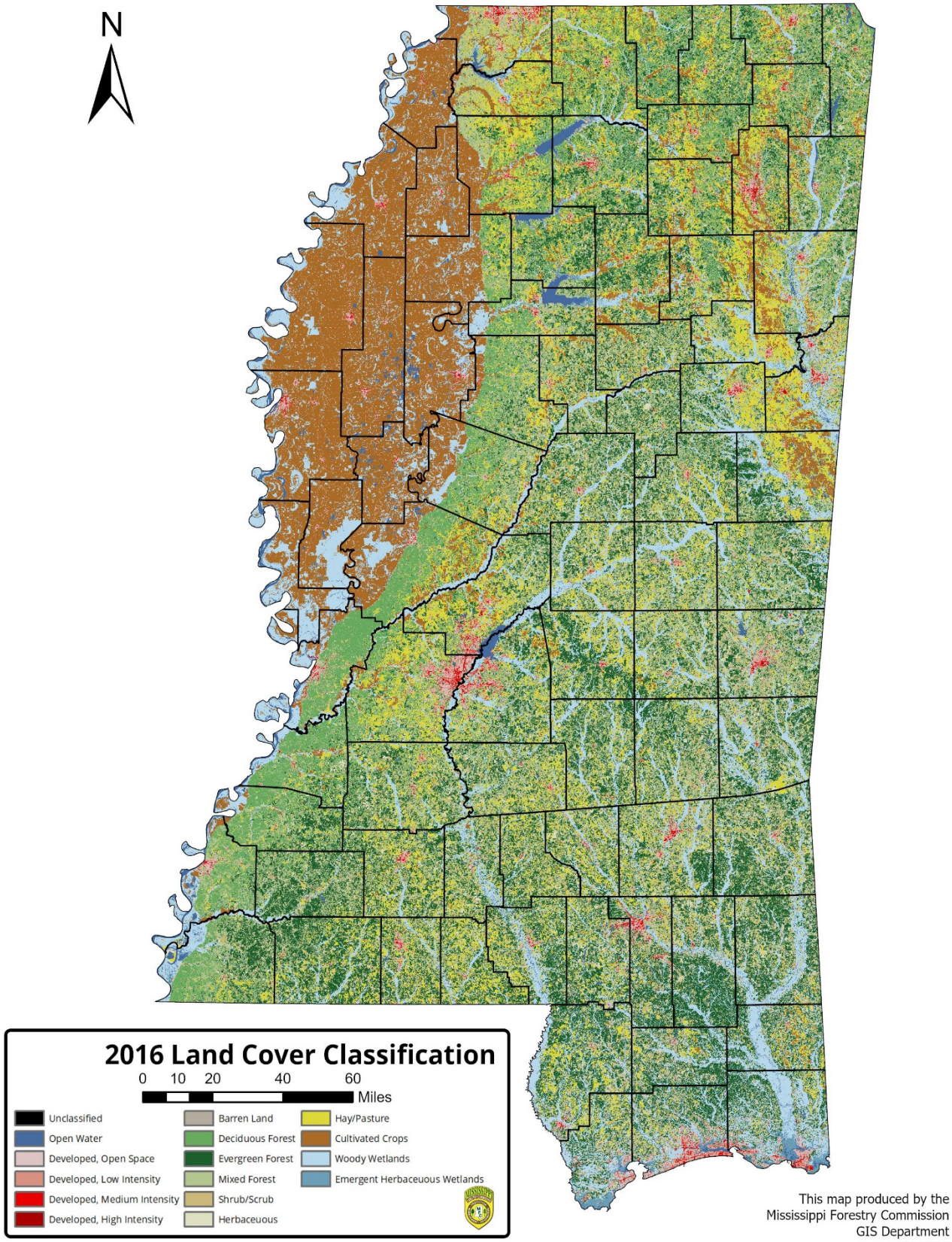
Figure 1: Forest Cover Types in Mississippi



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Executive Summary

In 2019, the Mississippi Forestry Commission (MFC) conducted a field survey of best management practices (BMPs) voluntarily implemented on forestland in Mississippi. This report presents the results of that survey.

The guidelines set forth in "Silvicultural Best Management Practices Implementation Monitoring: A Framework for State Forestry Agencies" were used to develop the 2019 BMP Implementation Survey for Mississippi.

A total of 174 sites in 75counties located in 9 basins in Mississippi having recent silvicultural activity were randomly selected to evaluate the voluntary implementation of best management practices. The Mississippi Forestry Commission utilized its own personnel to conduct the survey.

The following criteria were applied in selecting sites to be included in the survey:

- Forest harvesting activities occurring within 24 months.
- Sites must be at least 10 acres in size.
- Sites were selected without regard to ownership.

The 2019 BMP Implementation Survey results for Mississippi revealed that 95 percent of best management practices applicable to the survey sites were implemented in accordance with the guidelines published in the handbook *Mississippi's BMP – Best Management Practices for Forestry in Mississippi.* Figure 2 shows the BMP categories evaluated during the survey and the implementation results for each category.

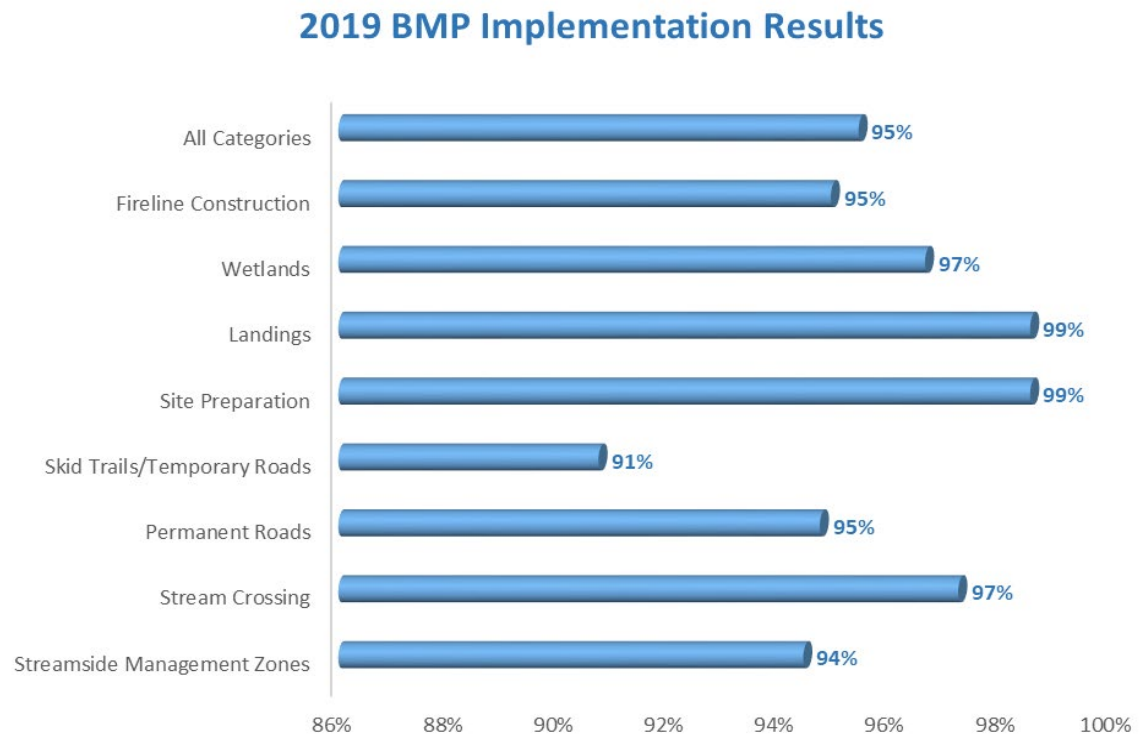

Figure 2: 2019 BMP Implementation Results

Introduction

Mississippi has nearly 20 million acres of forestland, covering two-thirds of the state's total land area. Forests make an important contribution to Mississippian's quality of life by providing jobs, forest products, livestock forage areas, wildlife habitat, scenic areas, recreational experiences, clean air, clean water, and many other social, economic, and health benefits.

Figure 3: Wetlands along the Pearl River

The Clean Water Act of 1987 required that proper steps be taken to prevent water pollution. Mississippi's Silvicultural Best Management Practices (BMPs) were established as a result of the Clean Water Act of 1987. Best Management Practices are non-regulated, voluntary guidelines for silvicultural activities that, when properly applied will protect water quality from non-point source pollutants while maintaining site productivity. Non-point source pollution is defined in Section 319 of the Clean Water Act of 1987 as "pollution caused by diffuse sources that are not regulated as point sources and normally associated with agricultural, *silvicultural*, urban runoff, and runoff from construction activities, etc. Such pollution results in human-made or human-induced alteration of the chemical, physical, biological, and radiological integrity of the water."

The Best Management Practices Implementation Monitoring Program was developed to provide a way to measure the voluntary use of BMPs in Mississippi. The program began in 1988 when the Department of Environmental Quality requested that the Mississippi Forestry Commission coordinate the development of voluntary best management practices for forestry in Mississippi. The Mississippi Forestry Commission worked with the Mississippi Forestry Association to put together a group of individuals representing a cross section of the forestry community to develop the guidelines. This group included landowners, loggers, forest industry, professional foresters, and the Department of Environmental Quality. Suggestions and comments from other states were also considered in the development of Mississippi's silvicultural BMPs.

Since the BMP guidelines inception, the Mississippi Forestry Commission has used some form of inspection on public and private lands. Currently, MFC employees utilize the same BMP Monitoring Inspection Form used for this survey to make sure all harvests on public lands meet BMP standards. This form is also used by MFC employees to ensure that all requests for Forest Resource Development Program (FRDP) cost-sharing money meet the BMP standard. Most wood industries are now SFI (Sustainable Forestry Initiative) certified. Therefore, their foresters also have a vested interest in following these same BMP guidelines. This BMP Implementation Survey can be viewed as a random audit of BMP practices on these lands and more.

The BMP guidelines were approved by the Mississippi Department of Environmental Quality and the Environmental Protection Agency and in 1989, published in the handbook *Mississippi's BMPs – Best Management Practices for Forestry in Mississippi.* Prior to this edition in 2019, the handbook was revised in 1995, 2000, 2008, and 2013.

2019 BMP Implementation Survey Procedure

Sampling Method

The 2019 BMP Implementation Survey is a statewide survey designed to assess statewide BMP compliance and not individual basin BMP compliance. Therefore, all results contained in this report are statewide results only.

The survey design from the Statistical Guidebook for BMP Implementation Monitoring produced by the Southern Group of State Foresters was used to determine the number of sample sites to visit. Based on an estimated overall percentage of implementation from past surveys, the sample size needed would have been 144 sites. However, we felt that a sample size of 174 should be used in order to adequately represent forestry activity statewide and cover all basins.

The Southern Group of State Foresters, under the direction of the North Carolina Forest Service, secured a grant from the US Forest Service to develop a new product called LandSatFACT. This product has been used to automate the detection of timber harvests across the landscape by comparing satellite images over time. Satellite image data forms the basis for calculations like the Normalized Difference Vegetation Index (NDVI), which clearly highlights healthy green plants on a landscape. Comparing NDVI values, and other similar calculations, over time reveals changes in vegetation patterns.

The chosen period of time for this analysis was June 15, 2017 to June 15, 2018. In order to reduce the number of false hits, a total of 350 sites were manually identified. This was done by overlaying cloud masks, forest masks, and the National Land Cover Database (NLCD) over Short Wave Infrared Imagery (SWIR) imagery from the SouthFACT web application. Satellite imagery was then used to verify that there was indeed a harvest at the selected sites. If not, the site was removed. It was then determined that 44 sites would be chosen for each Region, giving a total of 174 sites in all. The primary survey sites were then randomly allocated within each Region.
Believing that there would likely be instances where some forest removals were not silvicultural operations qualifying for BMP inspection, alternates were also assigned and randomly placed.

Eligible Survey Sites

Site selection criteria used for the 2019 survey were: (1) sites must have had some type of forest harvesting activity, either regeneration harvest or thinning, within a period of two years prior to the survey, (2) sites must be at least 10 acres in size, and (3) sites were selected without regard to ownership. The ownership of a site was determined after the site had been selected. This allowed for an unbiased selection and distribution of survey sites in regard to ownership.

Survey Site Evaluation

For each site surveyed by MFC Foresters, 73 values were collected on each of the 8 BMP categories. The BMP categories are as follows:

- Streamside Management Zone (SMZ)
- Stream Crossings
- Permanent Roads
- Skid Trails/Temporary (Secondary) roads
- Site Preparation Activities
- Landings
- Wetlands
- Fireline Construction

If a value within a category did not apply to the survey site, it was recorded as Not Applicable (N/A). All other practices were considered applicable to the site and were evaluated on whether or not they were

implemented as specified in Mississippi's BMP handbook. This method of evaluation allowed each BMP category and, ultimately, the overall BMP implementation program, to be evaluated and the results expressed as a percent of applicable BMPs implemented.

The presence of a significant risk to water quality was noted for each best management practice evaluated. The forester evaluating the site used the following standard to determine the presence of a significant risk to water quality: Significant risk to water quality exists, if during a normal rainfall, sediment is likely to be delivered to a permanent water body. The presence of a significant risk did not mean that water quality was impaired on the site.

All information recorded for each BMP was based on observations made at the time of the inspection. The evaluation process did not include any assumptions concerning future activities on the site.

2019 BMP Implementation Survey Results

The 2019 BMP Implementation Survey revealed that 95.3 percent of best management practices applicable to the survey were implemented. The Total Statewide compliance of the survey was determined to be 95% at the 95% confidence level.

A total of 174 sites having recent silvicultural activity were randomly selected to evaluate the voluntary implementation of best management practices. A compilation of all survey data collected is found in Table 1: BMP Monitoring Inspection Form – State Totals (see pages 18-21).

General Tract Information

Silvicultural Activity

A regeneration harvest had occurred on 139 sites (79.88%) of the 174 sites surveyed. The remaining 8.04 percent or 14 of the sites involved thinning operations the rest 12.06 percent or 21 of the sites were not applicable. Of the sites that had received a regeneration harvest, 86 had been artificially regenerated.

Tract Summary

The sites ranged in size from 10 acres to over 161 acres. Figure 4 shows the distribution of survey sites by tract size.

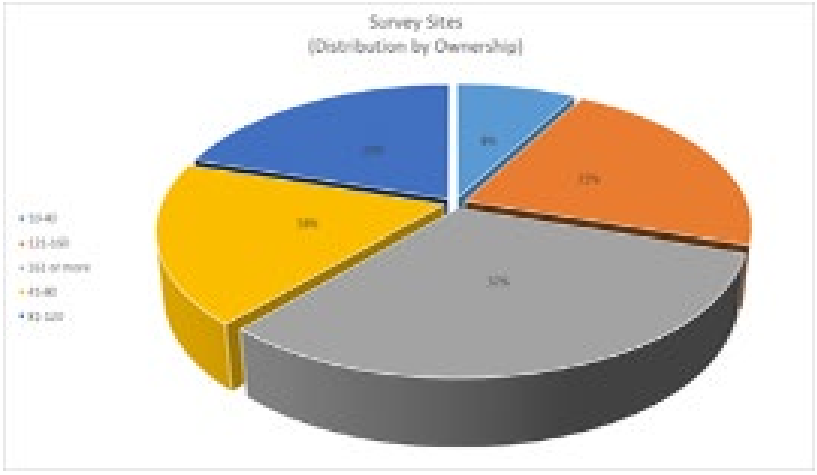

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Figure 4: Distribution of survey sites by tract size by acre

Ownership Summary

The survey sites were distributed and selected without regard to ownership in order to ensure an unbiased sample. Ownership was determined after a site was located. Figure 5 shows the distribution of survey sites in regard to ownership classes.

The 174 survey sites were in the following four forest ownership groups:

Federal –
(4 survey sites, 2.30 percent of survey)

Forest Industry –
(76 survey sites, 43.68 percent of survey)

Private Nonindustrial Forest Landowner (PNIF) –
(90 survey sites, 51.72 percent of survey)

State/Public –
(4 Survey sites, 2.30 percent of survey)

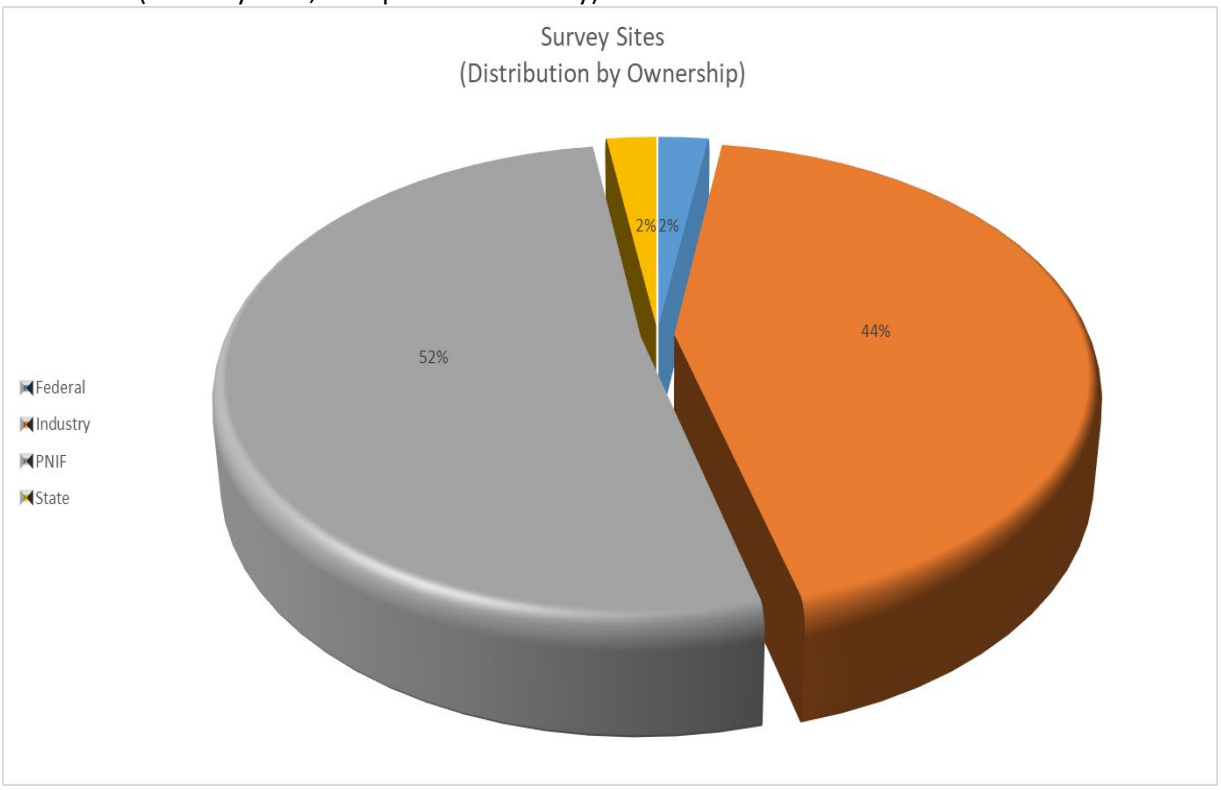


Figure 5: Survey Sites - Distribution by Ownership

Counties

The BMP survey sites were randomly distributed across the state based on the potential need for BMPs. Survey sites were located in 55 of the 82 Mississippi counties. See Table 2: BMP Survey Sites by County, page 22.

River Basins

For each site inspected for BMP monitoring, the river basin containing the site was identified. Survey sites were located in 9 of Mississippi's river basins as delineated in the Mississippi Department of Environmental Quality's Basin Management Program. The river basins of Mississippi are shown below in Figure 6.

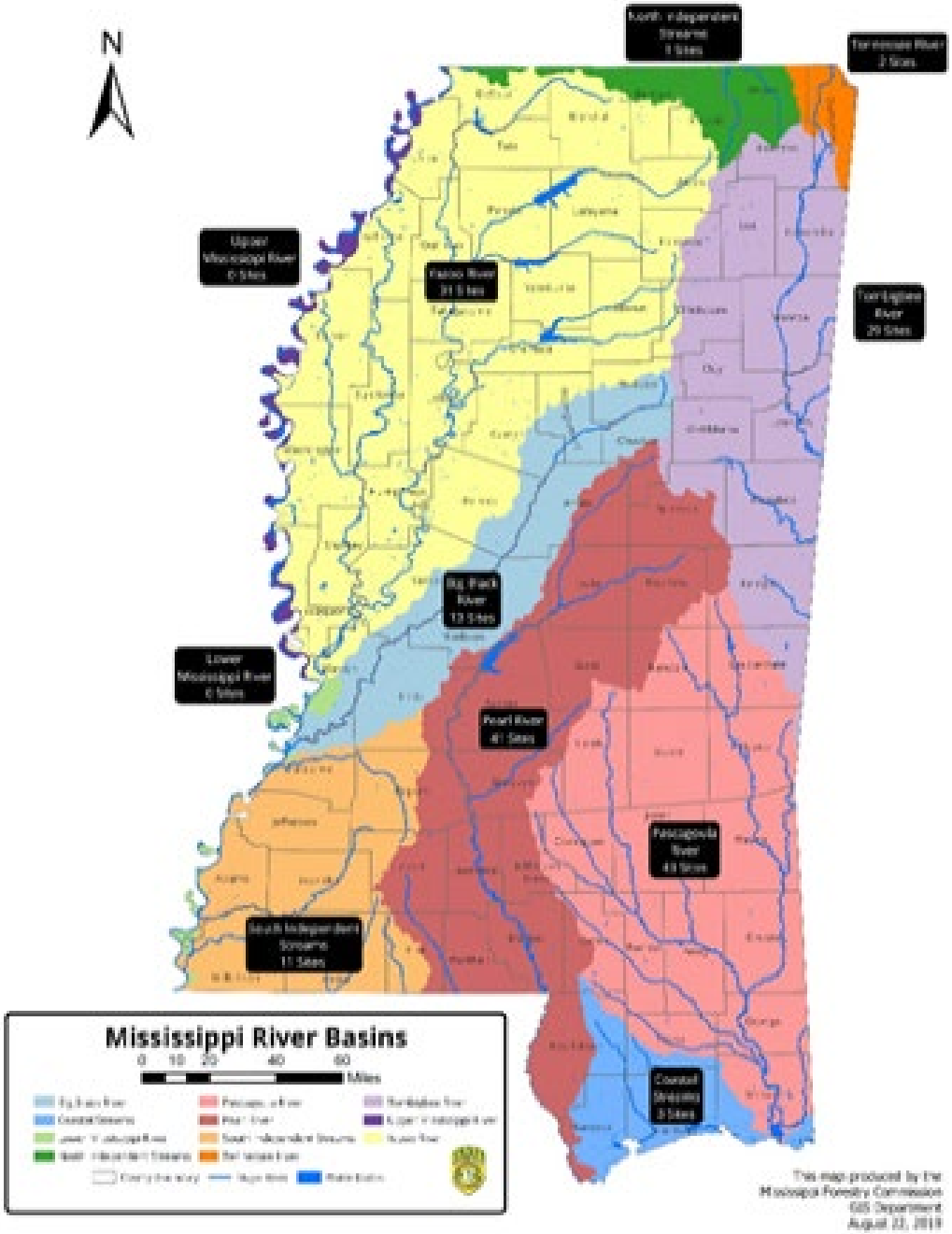


Figure 6: Mississippi River Basin

Survey Sites with Applicable BMPs by Categories

The number of survey sites on which BMP categories were applicable is shown in Figure 7. See Table 3: Applicable BMPs by Category, page 23.

The BMP categories Landings, Skid Trails/Temporary Roads and Permanent Roads were applicable on far more survey sites than other categories. Skid Trails/Temporary Roads category had the highest number of applicable sites surveyed at 160(92%). The Permanent Roads and landings categories were the next highest with Landings on 156 of applicable sites surveyed sites (89.65%) and Permanent Roads on 155 of the applicable site (89.08%).

The three categories that fell in the middle of the applicable range were Streamside Management Zones, Stream Crossings, and Site Preparation. There were 137 sites (78.73%) in the Streamside Management Zone category that were applicable. The Stream Crossings category had 126 sites (72.41%) which were applicable, with 107 sites (57.47%) out of 174 total sites that had Site Preparation completed.

The two categories that had the least number of sites that applied were Wetlands and Firelane Construction. The Wetlands category only had 80 applicable sites (45.97%) while the Firelane Construction category only had 32 applicable sites (18.39%).

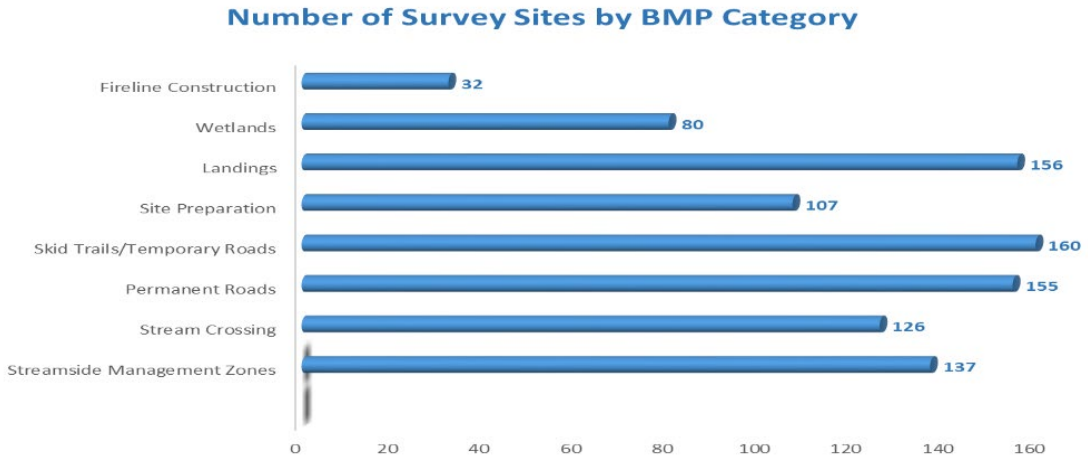


Figure 7: Number of Survey Sites by BMP category

BMP Implementation

Applicable BMPs were evaluated on whether or not they were implemented as specified in Mississippi's BMP handbook. Results showed that ninety-five percent of best management practices were implemented on survey sites where they were applicable.

Implementation results were also evaluated by BMP category. Figure 8 shows the implementation results for each BMP category. The number and percent of all applicable BMPs implemented for each category is presented in Table 3: Applicable BMPs by Category, page 23.

The lowest percentage of BMPs implemented was found in the Skid Trails/Temporary road category with 90.7% of the 805applicable practices implemented as specified. The Streamside Management Zone category had 1,319 applicable practices with 94.4% implemented as specified. Of the 214 practices in the Firelane Construction category, 94.9% were implemented as specified..

Of the 1,747 applicable practices in the Permanent Roads category, 94.7% were implemented as specified. The Wetlands category on 201 applicable practices had 237 practices with 96.6% implemented as specified.

Applicable BMP practices in the Stream Crossings category had the third highest percentage implemented as specified with 97.2% of the 528 applicable practices implemented according to specifications. Of the 819 applicable practices in the Landings category, 98.5% were implemented correctly. . The Site Preparation category had 909 applicable practices with 98.5% implemented as specified.

For a listing of 2019 BMP Implementation Results by MFC Region, see Table 5: Survey Sites Distribution by Region, page 24.

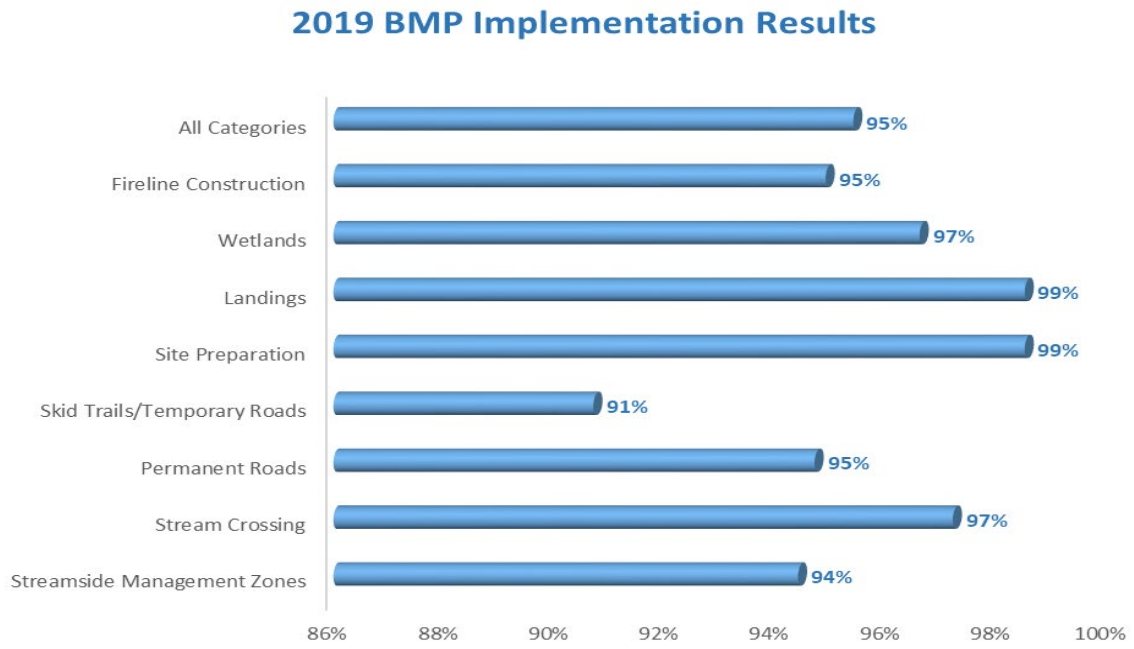


Figure 8: 2019 BMP Implementation Results

Significant Risk to Water Quality

Sites were evaluated for a significant risk to water quality each time a best management practice was determined to be applicable to the survey site. Of the 6,578 applicable BMPs evaluated, a significant risk to water quality was observed 25 times. These occurred on 11of the 174 sites surveyed. A complete listing of significant risks by individual best management practice is found in Table 1: BMP Monitoring Inspection Form – State Totals (see pages 18-21). A summary of significant risk by BMP category is given in Table 4: BMP Categories with Significant Risks to Water Quality, page 23.

No significant risks to water quality were observed in relation to BMPs associated with half of the categories, including Landings Site Preparation, Wetlands, and Firelane Construction. One significant risk was observed in relation to BMPs associated with Streamside Management Zones involving sedimentation.

The following categories Stream Crossings, Permanent Roads, and Skid Trails/Temporary Roads had multiple significant risk to water quality that was observed. The Stream Crossing category had risks observed involving ditches dumping into streams and crossings stabilized during use. The Permanent Roads category risks involved the reshaping of the roads, side ditches dumping into a stream, roads located where side drainage could be achieved, rutting depth, grade specification, roads well drained and appropriate structures installed(bridges, culverts etc.) flat no grade roads avoided, and potential problem soils avoided. The significant risks found in the Skid Trails/Temporary Roads category involved stabilization, a lack of water control structures such as water bars and turnouts, rutting depth, and sensitive areas respected.

Comparison of 2003, 2007, 2010, 2013, & 2016 Survey

The 2019 survey results that exceed the 2016 survey results in Firlane Construction, Landings, and Site Preparation categories. These categories improved by 2percent over the 2016 survey.. Categories that went below the 2013 survey results are Wetlands, Permanent Roads, and Streamside Management Zones. Skid Trails/Temporary Roads remain the category with the lowest evaluation in all surveys but remained at the 2013 survey results level. . The Wetlands category fell 3 percent from the 2016 survey. Figure 9 shows a comparison of all BMP surveys since 2003.

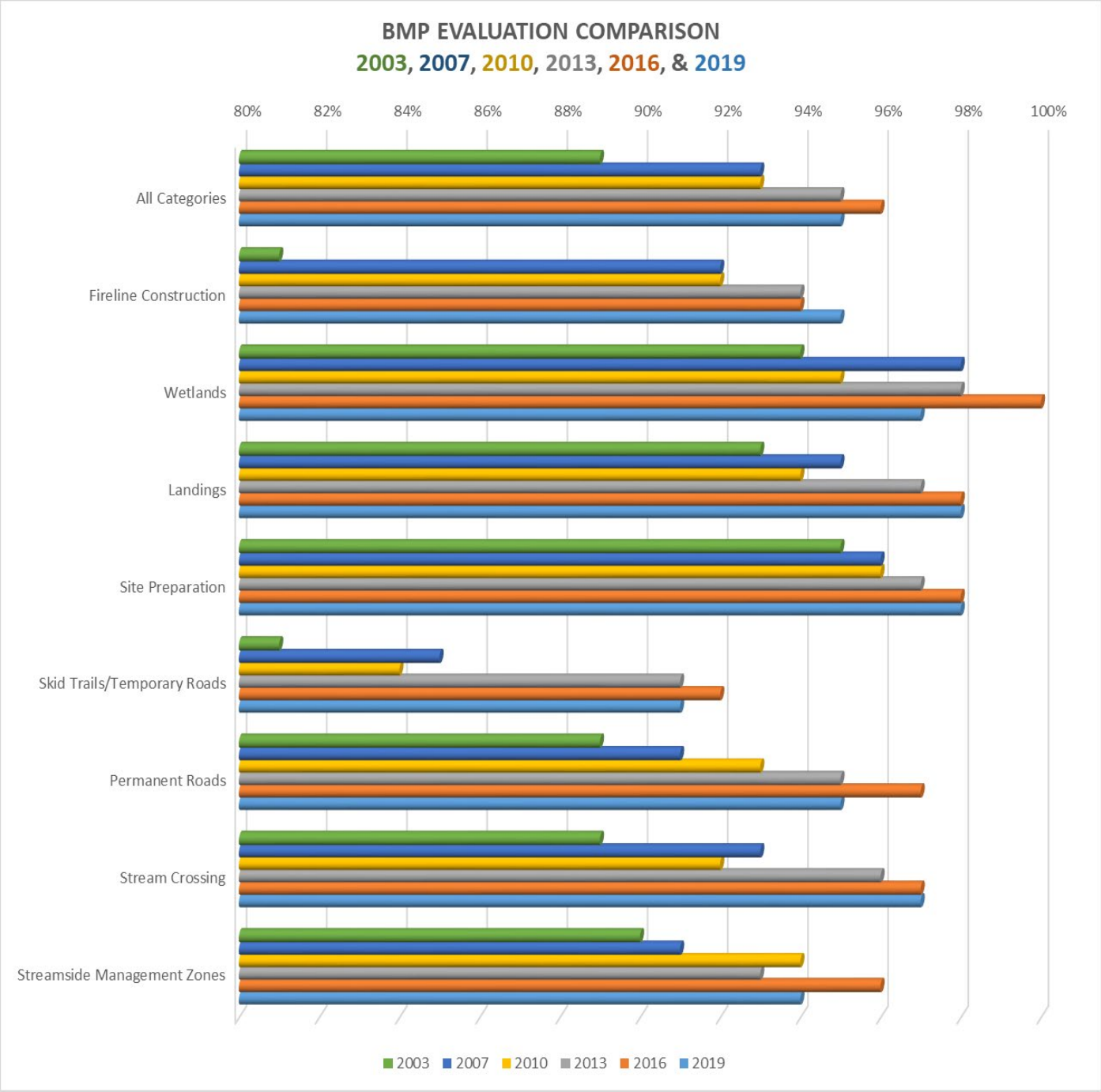


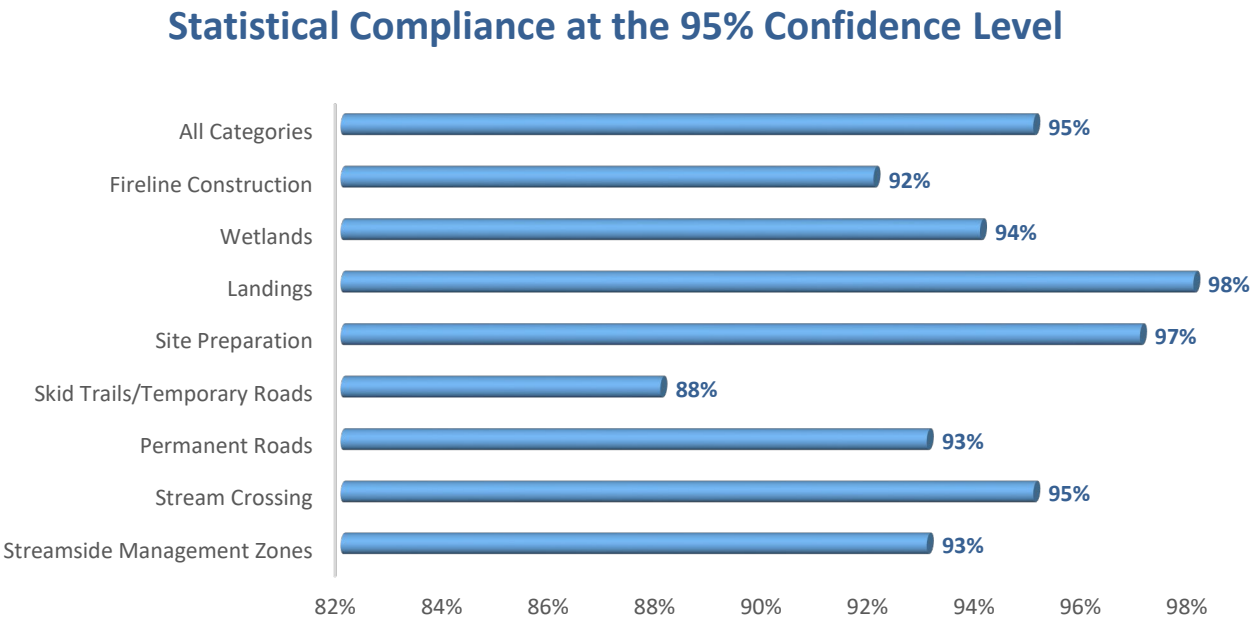
Figure 9: BMP Evaluation Comparison for All Surveys 2003 - 2019

Statistical Significance

A statistical analysis was completed following the survey. Figure 10 shows the statistical compliance of the survey. The total statewide compliance of BMP Implementation was determined to fall within 95% at the 95% confidence level. The metrics fell slightly lower for most of the individual categories. There were three categories that had slightly higher metrics, Landings at 98%, Firelane Construction at 92%, and Site Preparation at 97%. The rest of the categories metrics all fell lower with the exception of Wetlands which fell significantly lower from 100% in 2016 to 94% .

Areas that need improvement, which are directly correlated to the statistical compliance discussed above related to stabilization. Road stabilization on both Temporary Roads/Skid Trails (survey question 6E) and Permanent Roads (survey question 5E) were 88% compliant. Water bars on Temporary Roads (survey question 6D) and were only 84%. Rutting on Temporary Roads/Skid Trails (survey question 6C) and Permanent Roads (survey question 5B) were only 88% to 90% compliant.

Figure 10: Statistical Compliance



Conclusion

Our forests play an essential role in the protection of water quality. They absorb rainfall, filter pollutants and recharge underground water supplies. Forests produce much of the clean water we need for recreation and support of fish and wildlife habitats as well as the drinking water supply for millions of Americans.

Our forests make tremendous contributions to the economy and help to filter and protect our water quality. Voluntary best management practices are utilized in Mississippi to help ensure that our water quality is protected. Studies have shown that BMPs work when applied properly on a landowner's property.

The Mississippi Forestry Commission's 2019 BMP Implementation Survey for Mississippi was conducted to assess the implementation of the voluntary BMPs in the State. Steady progress has been made in the protection of the state's water resources over the years. Through continued education and training, as well as more diligent BMP implementation, the stabilization issues found in this survey can easily be remedied.

It is essential that the forestry community continue its efforts to protect water quality and monitor protection efforts. The Mississippi Forestry Commission, Southern Group of State Foresters and National Association of State Foresters are committed to protection of our forests and water through the use of routine assessments of protection measures implemented by the forestry community.

Mississippi's BMPs

Best Management Practices for Forestry in Mississippi

Appendix

Table 1: BMP Monitoring Inspection Form - State Totals

1. General Tract Information

Silvicultural Activity:

Regeneration Cut	139
Thinning	14
N/A	21

Tract Size (Acres):

10-40	14	*121-160*	38
41-80	32	*161 or more*	55
81-120	35		

Ownership Group:

PNIF	90	Federal	4
State	4	Industry	76

Mississippi's River Basins:

Big Black	20	Coastal Streams	0	Yazoo River	4	North Independent Streams	0
Pascagoula	37	Tombigbee	28	Pearl River	47	Tennessee River	5
Upper Mississippi	26	Lower Mississippi	4	South Independent Streams	3		

2. Site Characteristics

Estimated Slope Present:

0% - 5%	47
6% - 20%	76
21% - 40%	35
40% or greater	16

Predominant Soil Texture:

Clay	7	Sandy Loam	62
Clay Loam	65	Sand	23
Loam	10	Silty Soils	7

Edibility Hazard:

Low	55
Medium	97
High	22

Type of Stream Present:

Perennial	37
Intermittent	76
Ephemeral	77
N/A	35

Distance to Nearest Permanent Water Body:

300 feet or less	21
801 - 1600 feet	32
1,601 or greater	108

Evidence of Spills or Fuels Onsite:

Yes	3
No	171

Trash, Oil Cans, Hoses or Other Containers Left Onsite:

Yes	7
No	166

Has Tract Been Regenerated Artificially?

Yes	86
No	83
N/A	5

3. Streamside Management Zone

		N/A	YES	NO	SIG. RISK
A.	SMZ width established according to BMP specifications	37	129	8	0
B.	Harvesting/ thinning within SMZ according to BMP specifications	50	113	11	0
C.	SMZ integrity honored (no chemicals, fertilizer, burning, log decks within SMZ)	38	131	5	0
D.	Stream course clear of logging debris	42	124	8	0
E.	SMZ free of roads and landings	37	129	8	0
F.	Stream free of sediment due to silvicultural activity	43	120	11	2
G.	Rutting through streams or drains avoided	89	160	4	0
H.	Prescribed burning avoided	125	127	1	0
I.	Blocking the natural flow of water avoided	86	157	10	1
J.	Stream bank integrity honored5	88	164	1	0
	Section Total		1245	74	2

Percent Compliance 94.4

4. Stream Crossings

		N/A	YES	NO	SIG. RISK
A.	Ditches that dump into streams avoided	48	121	5	2
B.	Streams crossing properly installed	75	94	5	0
C.	Number of stream crossing minimized	69	105	0	0
D.	Stream or drain crossing at right angle only	74	99	1	0
E.	Stream crossing stabilized during use	76	94	4	0

Section Total	513	15	3

Percent Compliance: 97.2

5. Permanent Roads

		N/A	YES	NO	SIG. RISK
A.	Road respect sensitive areas	19	152	3	0
B.	Rutting depth does not exceed six inches for more than fifty (50) feet	20	139	15	1
C.	Roads located where side drainage can be achieved	10	157	7	1
D.	Roads wide enough to achieve surface drying	11	161	2	0
E.	Roads reshaped and/or stabilized	9	146	19	5
F.	Roads meet grade specifications	10	153	11	1
G.	Roads are well drained with appropriate structures (bridges, culverts, etc.)	14	147	13	1
H.	Side ditches do not dump into streams	19	145	10	2
I.	Flat no grade road avoided	17	149	8	1
J.	Streambeds, rocky places, and steep slopes avoided	18	155	1	0
K.	Potential problem soils avoided	20	151	3	1

Section Total	1655	92	13

Percent Compliance: 94.7

6. Skid Trails/ Temporary (Secondary) Roads

		N/A	YES	NO	SIG. RISK
A.	Sensitive areas respected	14	158	2	1
B.	Majority of skid grades (steepness) below fifteen percent	8	158	8	0
C.	Rutting does not exceed six inches for more than fifty feet	15	138	21	0
D.	Water bars, turnouts, and other water control structures present	20	130	24	2
E.	Roads and skid trails are stabilized	8	146	20	2

Section Total	730	75	5

Percent Compliance: 90.7

7. Site Preparation

		N/A	YES	NO	SIG. RISK
A.	Sensitive areas respected	67	105	2	0
B.	Contour followed	72	102	0	0
C.	SMZ integrity horned (no chemical, fertilizer, burning, log decks) within SMZ	73	100	1	0
D.	Soil disturbance kept to a minimum	59	113	2	0
E.	Excessive soil compaction avoided	60	112	2	0
F.	Does it appear that chemicals were used to label specifications	88	81	3	0
G.	Disturbance on slope minimized	64	109	1	1
H.	Water diverted from site prep area to vegetated surface	77	96	1	0
I.	Extremely hot burns avoided	95	77	2	0
	Section Total		895	14	2

Percent Compliance 98.5

8. Landings

		N/A	YES	NO	SIG. RISK
A.	Location outside of SMZ	18	155	1	0
B.	Well-drained location	7	166	1	0
C.	Number and size minimized	6	167	1	0
D.	Sensitive areas respected	12	162	0	0
E.	Restored/ stabilized	8	157	9	0
	Section Total		807	12	0

Percent Compliance 98.5

9. Wetlands (Wetlands BMPs are Mandatory Practices)

		N/A	YES	NO	SIG. RISK
A.	Hydrology of site unaltered	94	78	2	0
B.	Roads, drainage structures applied properly	97	74	3	0
C.	Mandatory BMPs followed	94	77	3	0
	Section Total		229	8	0

Percent Compliance 96.6

10. Fireline Construction

		N/A	YES	NO	SIG. RISK
A.	Fireline erosion controlled	142	29	1	0
B.	Majority of fireline constructed around slopes or grade of less than ten (10) percent	145	27	2	0
C.	Water bars, turnouts, and other water control structures properly installed	137	34	3	0
D.	Diversion ditches not constructed at the head of a drain	140	34	0	0
E.	Firelines not constructed down the slope of natural gully	144	27	3	0
F.	SMZs left between the fireline and streams	147	26	1	0
G.	Avoid constructing firelines into an SMZ	147	26	1	0
	Section Total		203	11	0

Percent Compliance 94.9

11. Follow Up Questions

		N/A	YES	NO
A.	Was activity supervised by a professional Forester?	110	60	4
B.	Was Landowner familiar with BMP handbook	107	59	8
C.	Was Logger familiar with BMPs?	108	66	0
D.	Were BMPs included in contract?	128	44	2
E.	Has Logger completed Logger educational training courses?	131	43	0
F.	Are recommendations planned for Landowner, if needed?	136	31	7
	Section Total		303	21

Percent Compliance 93.5

Statewide Compliance Percentage 95.4

Table 2: BMP 2019 Monitoring Sites by County

County	Survey Sites	County	Survey Sites	County	Survey Sites
Adams	0	Itawamba	5	Pike	1
Alcorn	0	Jackson	2	Pontotoc	2
Amite	1	Jasper	3	Prentiss	3
Attala	11	Jefferson Davis	1	Quitman	0
Benton	1	Jefferson	2	Rankin	3
Bolivar	0	Jones	1	Scott	8
Calhoun	11	Kemper	0	Sharkey	0
Carroll	3	Lafayette	2	Simpson	1
Chickasaw	3	Lamar	3	Smith	5
Choctaw	0	Lauderdale	8	Stone	2
Claiborne	0	Lawrence	7	Sunflower	0
Clarke	4	Leake	5	Tallahatchie	0
Clay	1	Lee	1	Tate	0
Coahoma	0	Leflore	0	Tippah	2
Copiah	0	Lincoln	2	Tishomingo	2
Covington	1	Lowndes	2	Tunica	0
DeSoto	0	Madison	3	Union	*1*
Forrest	2	Marion	2	Walthall	*0*
Franklin	3	Marshall	2	Warren	0
George	3	Monroe	4	Washington	0
Greene	0	Montgomery	0	Wayne	2
Grenada	0	Neshoba	4	Webster	1
Hancock	0	Newton	2	Wilkinson	1
Harrison	1	Noxubee	8	Winston	4
Hinds	0	Oktibbeha	0	Yalobusha	3
Holmes	4	Panola	1	Yazoo	1
Humphreys	0	Pearl River	5		
Issaquena	0	Perry	5	Total Plots	174

Table 3: Applicable BMPs Implemented By Category

BMP Category	Number of Survey Sites	Total Applicable Practices	BMPs Implemented	
			Number	*Percent*
Streamside Management Zones	137	1,315	1,245	96.20
Stream Crossing	126	524	513	97%
Permanent Roads	155	1,733	1,655	95%
Skid Trails/Temporary Roads	160	799	730	91%
Site Preparation	107	906	895	99%
Landings	156	816	807	99%
Wetlands	80	239	229	97%
Fireline Construction	32	214	203	95%
State Totals	**------**	**6,578**	**6,277**	**95%**

Table 4: BMP Categories with Significant Risks to Water Quality

BMP Category	Number	Percent
Streamside Management Zones	2	8.00
Stream Crossing	3	12.00
Permanent Roads	13	52.00
Skid Trails/Temporary Roads	5	20.00
Site Preparation	2	8.00
Landings	0	0.00
Wetlands	0	0.00
Fireline Construction	0	0.00
State Totals	**25**	**100.00**

Table 5: 2019 BMP Evaluations by Category for Each MFC District

BMP Category	Region 1	Region2	Region 3	Region 4	Statewide
Streamside Management Zones	94%	98%	95%	95%	94%
Stream Crossing	95%	100%	97%	100%	97%
Permanent Roads	93%	97%	94%	99%	95%
Skid Trails/Temporary Roads	95%	97%	95%	95%	91%
Site Preparation	99%	99%	99%	98%	99%
Landings	96%	99%	96%	100%	99%
Wetlands	91%	98%	93%	100%	97%
Fireline Construction	83%	99%	91%	100%	95%
All Categories	**94%**	**97%**	**94%**	**96%**	**95%**

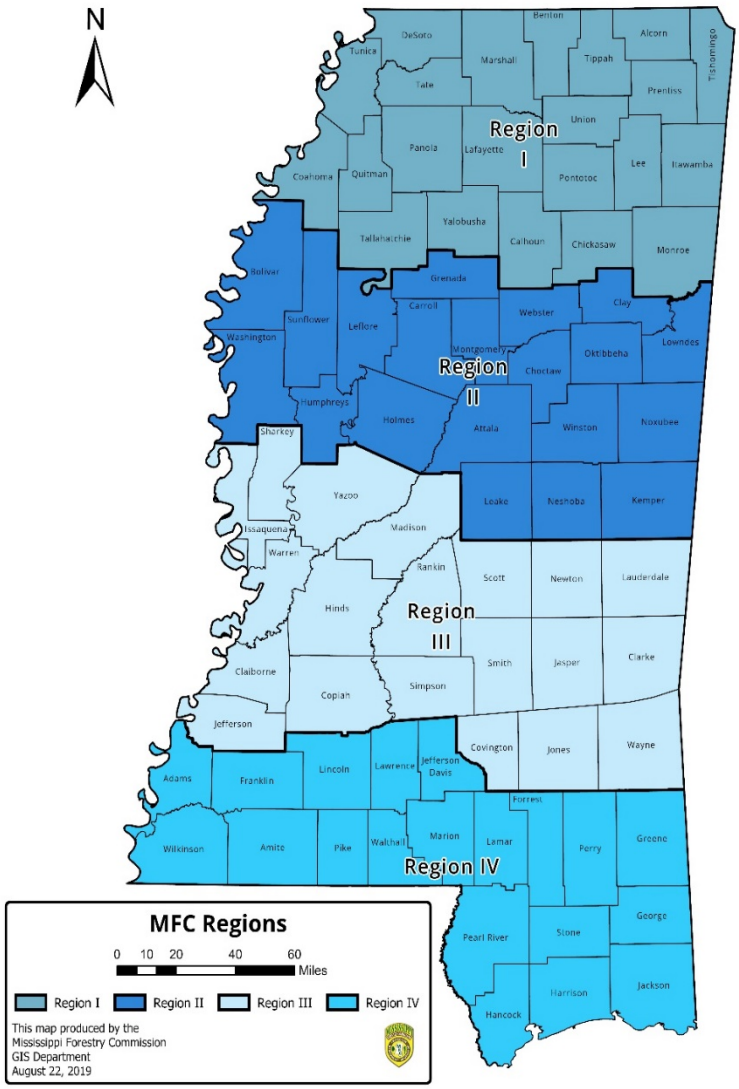


Figure 10: Map of MFC Districts

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This publication was funded in part through a grant from the Mississippi Department of Environmental Quality under the provisions of Section 319 of the Federal Water Pollution Control Act, as amended.