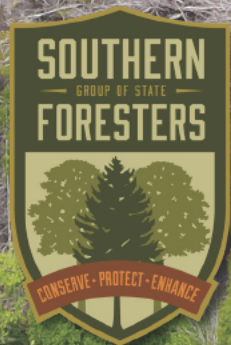


Implementation of Silviculture Best Management Practices

2026 Southern Region Report (2018-2023)



WATER RESOURCES
COMMITTEE

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PREFACE

Following the passage of the Clean Water Act, each southern state developed its own processes and policies to adhere to the Act's expectation of minimizing water pollution. To keep up with changes in state regulations, technology, science, and socio-cultural expectations, each southern state developed and since revised their respective forestry Best Management Practices (BMPs). These BMPs are the foundation from which states create forestry BMP implementation monitoring assessments.

To improve and maximize the integrity of forestry BMP implementation monitoring in the southeast, the Southern Group of State Foresters (SGSF) appointed a Task Force to develop recommendations for a more consistent approach to this activity in the region. Specifically, the Task Force was charged with developing guidance on monitoring BMP implementation that would be statistically sound, objective, and technically defensible. The goal was to achieve analytical consistency, making monitoring results and data generally comparable across all of the southern states.

In 1997 the Task Force completed the initial monitoring guidance document titled *Silviculture Best Management Practices Implementation Monitoring – A Framework for State Forestry Agencies (Framework)* and the states began working toward conformance. In 2001, the Water Resources Committee (WRC) became a formal committee of SGSF. The Framework was subsequently revised by the WRC in 2002, 2007, and 2024. However, since this report represents monitoring conducted between 2018 and 2023, data reference in this report was collected in accordance with the 2007 Framework.

As envisioned by the SGSF, one aspect of having multistate conformance with the Framework was the capability to compile BMP implementation data for participating states and periodically report this information at a regional level. Among other values, this “regional report” was expected to identify categories of BMPs for which implementation may need improvement throughout the region. It was further expected that those needs would then be addressed by the SGSF, through regional BMP training, demonstration, and information exchange. In 2008, a working group from the SGSF WRC solicited each of the southern states for all BMP implementation data that had been collected in conformance with the Framework since 1997. This data was compiled, analyzed, and published in the first regional report titled *Implementation of Forestry Best Management Practices: A Southern Region Report*, 2008.

Recognizing the value of the regional report, many cooperators requested the WRC periodically publish updated versions to promote continual improvement throughout the region. Subsequent regional reports were published by SGSF in 2012 and 2018. It is important to note that each state actively provides the forestry community with education and training on the implementation of BMPs but may not have the staffing or funding resources to collect data in a distinctly dedicated manner that adheres to all monitoring Framework requirements. All southern states administer and deliver water resources programs and services that aim to minimize nonpoint source pollution from forestry practices.

EXECUTIVE SUMMARY

Ninety-two statewide monitoring surveys have been conducted through 2023 since the initial development of the Framework in 1997, with 23 since the last regional report. The number of surveys completed to date provides a useful dataset for determining BMP implementation across the region as well as changes in state implementation since the inception of the Framework.

For the seven BMP categories considered in this report, the lowest average implementation for the region was for Firebreaks (86.4%), and the highest average implementation was for Chemical Application (99.5%). All other categories (Harvesting, Forest Roads, Streamside Management Zones, Site Preparation / Planting, and Stream Crossings) scored 92.7% or higher.

Combining all BMP categories in all states, and using only 2018-2023 regional report survey data, the average, overall BMP implementation for the southern region was 94.3%, up from 93.6% in 2018, 92.0% in 2012, and 87.0% in 2008. The range of overall implementation reported by individual states for surveys included in this report was from 83.0% to 99.3%.

BMP implementation across the region has largely maintained high implementation values. All of the seven BMP categories showed an increase over the previous report. Most notably, BMP implementation in the Chemical Application Category increased by 4 percentage points. The Overall Category had a 0.7% increase.

BMP implementation rates have generally trended upward across the region since the framework was initially published in 1997. Part of the improvements can be attributed to the forestry community's efforts to amplify BMP education and outreach. Each of the southern state forestry agencies actively participate in logger education programs that incorporate awareness and training on forestry BMPs and other state and federal regulations that aim to maintain water quality.

INTRODUCTION

Beginning in 1997, states in the southern region were introduced to a BMP monitoring protocol titled *Silviculture Best Management Practices Implementation Monitoring – A Framework for State Forestry Agencies* (Framework). Since then, all states in the region have conformed with the Framework and have completed at least one round of BMP implementation assessments. However, due to program funding, staff vacancies, and/or position restructuring, four states (Arkansas, Kentucky, Louisiana and Tennessee) did not complete a dedicated BMP monitoring assessment between 2018 and 2023.

The Framework calls for the evaluation of seven BMP categories: Harvesting, Forest Roads, Stream Crossings, Streamside Management Zones, Site Preparation, Firebreaks, and Chemical Application. In addition, conformance with the Framework states that BMPs should be evaluated at three implementation levels, including individual practice, category, and overall. To allow for regional comparisons, the Framework also asks that states express implementation as a percentage of the number of practices found in compliance compared to the total number of practices evaluated.

As agreed to by the SGSF WRC, states submitted BMP implementation data collected between 2018-2023. This data was to be extracted from each state’s dedicated BMP implementation monitoring assessment surveys which followed the 2007 Framework. However, Kentucky’s regulatory BMP data was also included in this 2018-2023 dataset.

Not all states reported data for all categories of BMPs referenced in the Framework. For example, observations of forest chemical use in Tennessee is not common, therefore Tennessee does not report implementation monitoring data for this BMP category. Similarly, some states evaluate BMPs less frequently than others, resulting in disproportionate responses for certain BMP categories. Finally, BMP monitoring forms for states are organized differently with respect to the BMP categories called for in the Framework. For example, harvesting is a BMP category referenced in the Framework, though North Carolina addresses “harvesting practices” throughout their BMP Manual and captures these practices under multiple BMP categories during implementation monitoring. Consequently, for consistency in this report, regional examples (shown below) for each of the seven BMP categories were developed.

- Overall BMP Implementation – Average of all BMPs evaluated in the state
- Harvesting – BMPs for landings, skid trails, wetlands, and waste disposal
- Forest Roads – BMPs for permanent and temporary forest roads
- Stream Crossings – BMPs for stream crossings – permanent or temporary – haul or skidder
- SMZs – BMPs for Streamside Management Zones
- Site Preparation – BMPs for site preparation and planting
- Firebreaks – BMPs for firebreaks – wildland fire pre-suppression or prescribed burn
- Chemical Application – BMPs for application of pesticides, fertilizers or other chemicals

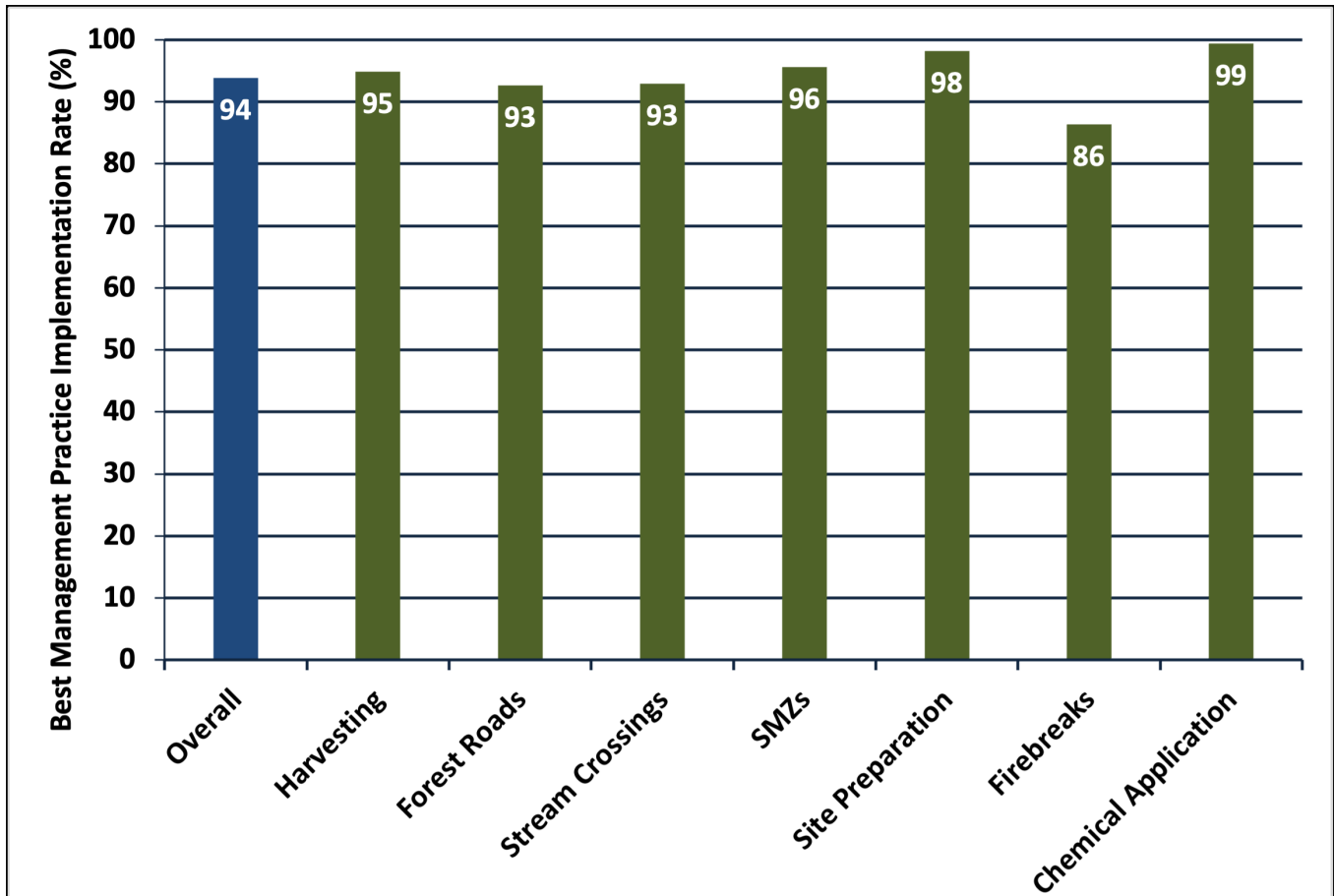
While there is extensive BMP implementation monitoring data across the region, direct state to state comparisons are difficult, given the natural variability in site characteristics, operational methods, and BMP specifications throughout the South. Table 1 on pages 10-13 provides current and historical data to facilitate in-state comparisons.

FINDINGS

Overall BMP Implementation

The Overall Implementation statistic is reported for each site and accumulated for each survey. It includes all BMPs for a given forestry operation and is expressed as a percentage of all applicable practices. Overall implementation from nine states ranged from 83.0 % to 99.3 % for this reporting period, averaging 94.3%. In states where multiple surveys were reported, overall implementation showed generally consistent scores. Figure 1 illustrates the average regional BMP implementation by category using 2018-2023 data provided by the states. The most recent survey for states with multiple surveys conducted between 2018-2023 was used to create Figure 1.

Figure 1. Average Regional BMP Implementation by Category

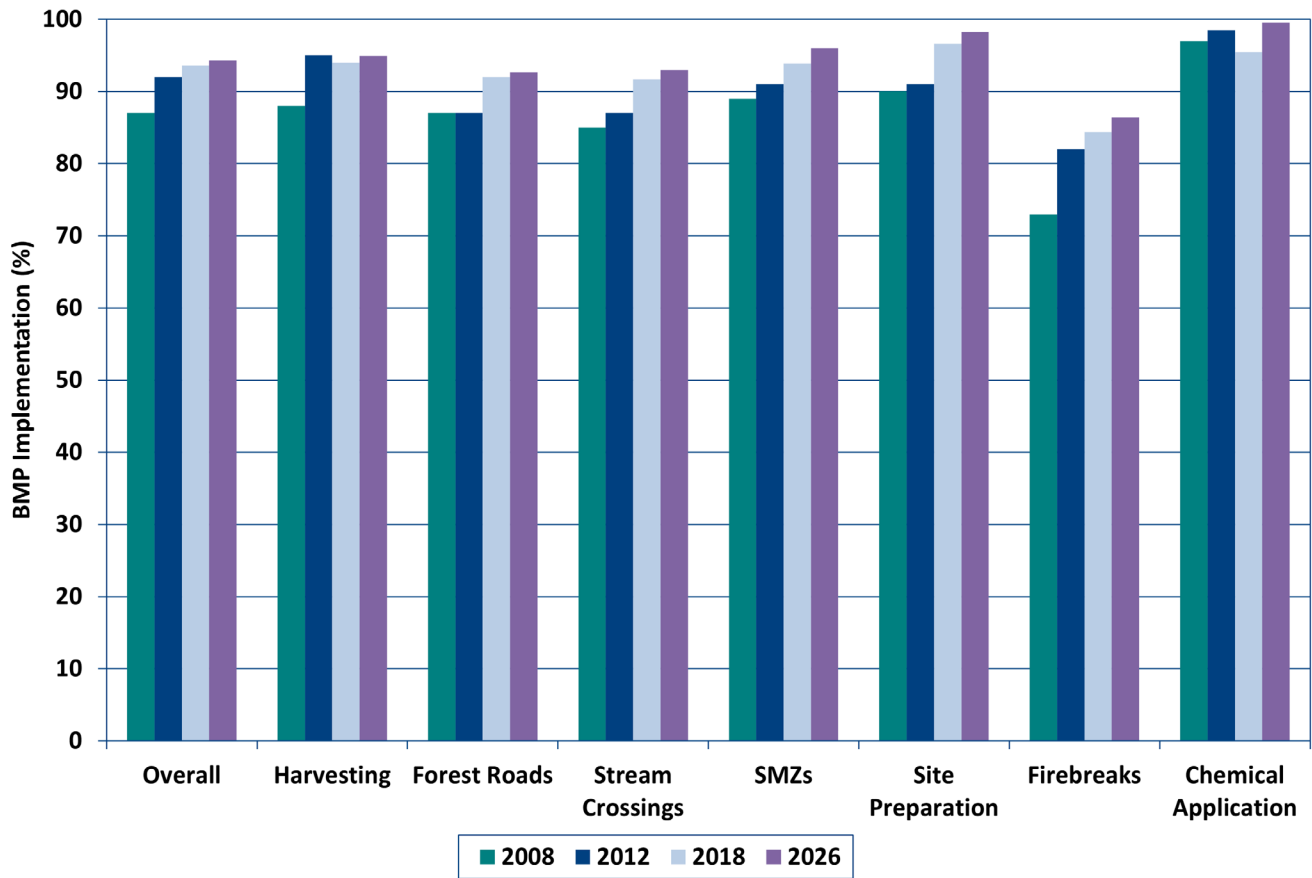


Regional Averages

Data reported by the individual states (2018-2023) were analyzed to determine the current region-wide averages for overall BMP implementation and the seven BMP categories (Figure 2). These data were then compared to the region-wide averages of the 2018, 2012, and 2008 reports to identify any change. The current overall BMP implementation average for the southern region is 94.3 %, representing an increase of seven percentage points since the initial 2008 Regional Report.

Regional BMP implementation averages increased from the last report for all categories. Notable improvement was observed in the Chemical Application Category, with a gain of four percentage points since 2018. Figure 2 below illustrates the average regional BMP implementation by category for three prior published Regional Reports (2008, 2012, 2018) and this report (2026).

Figure 2. Comparison of Average Regional BMP Implementation by Category



Implementation of BMPs by Report Category

The following information addresses the data submitted by the states for each BMP category required by the 2007 Framework. A brief description of the category is provided below along with the average score and range of responses from the last report.

Harvesting

The Harvesting Category includes BMPs that address forestry activities such as skidding, landings, wetlands, slash disposal, and timber felling. Eight states submitted 2018-2023 data for the Harvesting Category. For this reporting period, implementation ranged from 78.3 to 100%, with a regional average of 94.9%. In states where multiple surveys were reported, implementation of Harvesting BMPs were reported at similar levels and in several cases increased.

Forest Roads

The Forest Roads Category includes BMPs that address forestry activities such as road construction, road maintenance, and runoff/erosion control. Nine states submitted 2018-2023 data for the Forest Roads Category. For this reporting period, implementation ranged from 83.9 to 98.6% with a regional average of 92.7%. In states where multiple surveys were reported, implementation of Forest Road BMPs were reported at similar levels and in several cases increased.

Stream Crossings

The Stream Crossing Category includes BMPs that address forestry activities such as culvert sizing and installation, construction of low-water crossings, and runoff/erosion control. This category can include both temporary and permanent as well as road and skidder crossings. Nine states submitted 2018-2023 data for the Stream Crossings Category. For this reporting period, implementation ranged from 79.3 to 99.2% with a regional average of 92.9%. In states where multiple surveys were reported, implementation of Stream Crossing BMPs showed a generally positive change.

Streamside Management Zones (SMZ)

The SMZ Category includes BMPs that address forestry activities in proximity to streams, rivers, lakes and other water resource features. Ten states submitted 2018-2023 data for the SMZ Category. For this reporting period, implementation ranged from 90.7 to 99.2% with a regional average of 96.0%. In states where multiple surveys were reported, implementation of SMZ BMPs showed a generally positive change.

Site Preparation

The Site Preparation Category includes BMPs which address forestry activities that facilitate reforestation, such as shearing, chopping, raking, and bedding. Seven states submitted 2018-2023 data for the Site Preparation Category. For this reporting period, implementation ranged from 96.0 to 100% with a regional average of 98.2%. In states where multiple surveys were reported, implementation of Site Preparation BMPs showed a generally positive change.

Firebreaks

The Firebreaks Category includes BMPs that address forestry activities such as fireline construction, maintenance, and rehabilitation. While seven states submitted 2018-2023 Firebreak data, this category had the fewest number of sites, representing a relatively small sample size. For this reporting period, implementation ranged from 50.0 to 100 % with a regional average of 86.4 %. In states where multiple surveys were reported, implementation of Firebreak BMPs showed both positive and negative changes.

Chemical Application

The Chemical Application Category includes BMPs that address forest chemical use including pesticides, herbicides and fertilizer, especially near water resource features. Seven states submitted 2018-2023 data for Chemical Application Category. For this reporting period, implementation ranged from 98.1 to 100% with a regional average of 99.5 %. In states where multiple surveys were reported, implementation of Chemical Application BMPs showed a generally positive change.

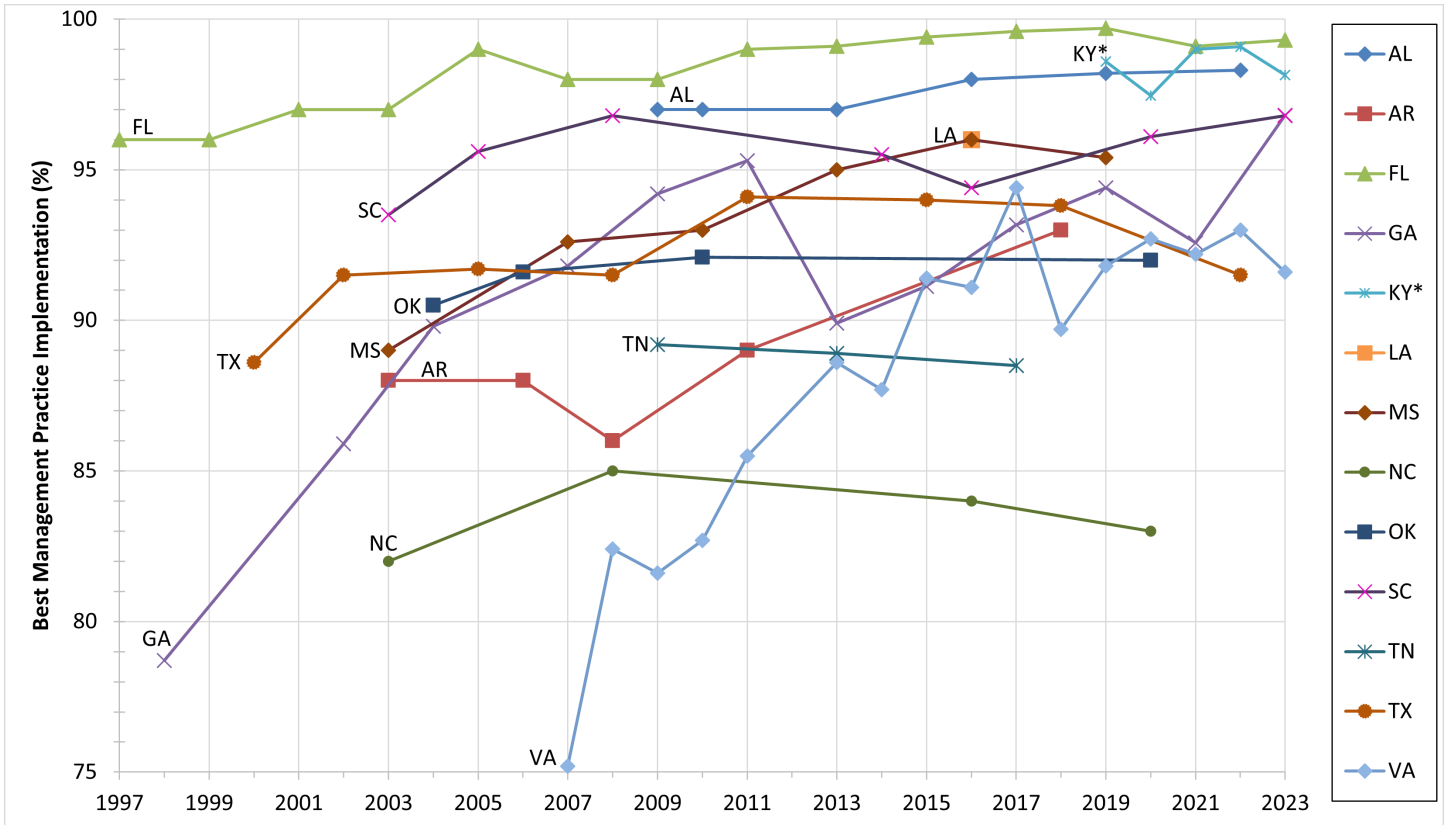
SUMMARY

This regional report on forestry BMP implementation monitoring is the fourth in a planned series to be published periodically. The objective of the report is to provide information at a regional level, for the purpose of continuously improving monitoring methods and BMP implementation, and to promote consistency among states in the southern region.

BMP implementation in the southern region is a high priority with the state foresters, as reflected in the continued support and coordination of the SGSF WRC. The overall regional implementation rate of 94.3% is generally considered to be exceptional. It is also important to note that positive change has been made in every BMP category since the 2008 report. Specific BMP categories that states may want to consider targeting for improvement are Firebreaks, Stream Crossings, and Forest Roads.

Individual states in which multiple surveys have been conducted between 1997 and 2023 have also shown positive changes in BMP implementation (Figure 3 and Table 1). This is largely attributed to the numerous educational, outreach, and training efforts being conducted across the southern region by the states and their cooperators, and to the efforts of the SGSF through the Water Resources Committee.

Figure 3. Changes in Overall BMP Implementation by State



* Indicates regulatory data not collected in conformance with the Southern Group of State Forester’s Silviculture Best Management Practices Implementation Monitoring – A Framework for State Forestry Agencies (2007).

Table 1. BMP Implementation by State, Year, and Regional Category

BMP Category								
Year	Overall BMP Implementation	Harvesting	Forest Roads	Stream Crossings	SMZs	Site Preparation	Firebreaks	Chemical Application
				Alabama				
2009	97	96	93	96	92	98	90	100
2010	97	98	93	96	97	98	97	98
2013	97	97	93	93	98	96	96	100
2016	98	97	95	97	96	97	95	95
2019	98	99	98	98	98	100	99	100
2022	98	98	96	99	99	100	99	99
				Arkansas				
2003	88	97	81	89	86	85	52	83
2006	88	96	85	90	81	86	55	87
2008	86	94	74	86	83	81	72	96
2011	89	97	85	84	86	74	80	100
2018	93	95	93	95	89	97	89	98
				Florida				
1997	96	98	91	93	99	97	97	100
1999	96	97	90	91	97	97	96	100
2001	96	98	94	92	96	95	97	99
2003	96	98	96	87	94	97	87	100
2005	99	99	98	100	99	99	94	98
2007	98	100	98	98	98	98	100	100
2009	98	99	98	96	97	99	94	100
2011	98	99	98	98	98	99	100	100
2013	98	99	97	99	97	99	100	100
2015	99	99	99	98	99	99	100	100
2017	99	99	99	100	98	99	100	100
2019	99	99	99	99	99	99	100	100
2021	99	99	97	96	99	99	100	100
2023	99	99	98	98	99	99	98	99
				Georgia				
1998	79	87	77	59	81	97	62	99
2002	86	91	83	77	87	95	94	98
2004	90	94	89	81	91	99	93	100
2007	92	97	91	84	89	94	96	98
2009	94	97	90	90	97	83	86	100
2011	95	98	94	93	95	95	100	100
2013	90	97	86	86	87	95	100	100
2015	91	97	86	84	94	94	94	100
2017	93	97	91	88	93	95	90	100
2019	94	98	93	91	93	87	87	96
2021	93	97	93	86	91	90	81	97
2023	97	99	96	94	98	96	90	100
				Kentucky				
2005	56	NA	67	58	71	NA	NA	NA
2007	68	NA	58	69	72	NA	NA	NA

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Table 1. BMP Implementation by State, Year, and Regional Category (continued)

BMP Category								
Year	Overall BMP Implementation	Harvesting	Forest Roads	Stream Crossings	SMZs	Site Preparation	Firebreaks	Chemical Application
				Mississippi				
2003	89	93	95	89	89	90	81	95
2007	93	95	96	91	93	91	92	96
2010	93	95	91	92	94	96	92	98
2013	95	NA	95	96	93	97	94	NA
2016	96	NA	96	97	96	97	93	NA
2019	95	NA	95	97	96	99	95	NA
				North Carolina				
2003	82	76	80	64	87	NA	NA	99
2008	85	85	86	72	91	NA	NA	94
2016	84	82	85	83	87	97	84	63
2020	83	78	84	87	91	NA	NA	NA
				Oklahoma				
2004	91	96	82	90	97	93	100	100
2006	92	98	83	91	97	90	50	100
2010	92	96	85	93	96	97	33	100
2020	92	97	86	94	95	97	73	98
				South Carolina				
2003	94	94	92	78	87	96	92	98
2005	96	96	94	96	96	NA	NA	NA
2008	97	96	95	94	99	NA	NA	NA
2014	95	96	95	84	97	NA	NA	NA
2016	94	NA	NA	NA	NA	93	81	100
2020	96	99	97	89	99	NA	NA	NA
2023	97	100	97	91	99	NA	NA	NA
				Tennessee				
2007	87	NA	NA	89	83	85	NA	NA
2013	89	87	88	82	88	97	88	NA
2017	89	89	86	79	86	NA	NA	NA
				Texas				
2000	89	98	84	67	86	96	96	100
2002	92	97	90	85	88	90	88	95
2005	92	97	92	81	91	95	96	100
2008	92	98	92	82	88	98	100	100
2011	94	99	96	85	90	98	89	98
2015	94	93	92	92	98	93	82	100
2018	94	94	91	91	97	94	60	95
2022	92	93	93	79	91	97	100	100

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Table 1. BMP Implementation by State, Year, and Regional Category (continued)

Year	BMP Category							
	Overall BMP Implementation	Harvesting	Forest Roads	Stream Crossings	SMZs	Site Preparation	Firebreaks	Chemical Application
				Virginia				
2007	75	78	70	77	82	60	NA	NA
2008	82	79	79	81	81	NA	68	100
2009	82	82	75	83	86	80	70	88
2010	83	85	74	82	86	81	74	NA
2011	86	86	78	87	91	81	76	NA
2013	89	91	83	92	90	NA	84	100
2014	88	89	84	90	89	83	76	100
2015	91	93	87	95	92	100	87	100
2016	91	91	88	95	93	100	77	100
2017	94	92	89	95	93	100	NA	100
2018	90	93	87	93	90	NA	87	100
2019	92	94	91	95	93	89	89	100
2020	93	92	90	96	93	93	90	100
2021	92	92	90	94	94	100	NA	100
2022	93	92	91	96	95	100	50	100
2023	92	94	88	96	93	100	50	100

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Table 2. Online Links to the Most Current State Forestry BMP Manuals in the Southern Region

State	Year Published	Online Link
Alabama	2007	https://www.forestry.alabama.gov/Pages/Management/Forms/2007_BMP_Manual.pdf
Arkansas	2021	https://www.agriculture.arkansas.gov/wp-content/uploads/2022/01/AR-Best-Management-Practices.pdf
Florida	2008	https://ccmedia.fdacs.gov/content/download/25527/file/silvicultural_bmp_manual.pdf
Georgia	2019	https://gatrees.org/resources/best-management-practices-bmps-2019/
Kentucky	2001	www.ca.uky.edu/files/for_130_bmp_guide_small.pdf
Louisiana	2022	https://assets.ctfassets.net/pc5e1rlgfrov/6DiUGXhelpxFxByG00fhym/f09978e1152550745d2b1828d513bdc5/best-mgmt-practices-bmp.pdf
Mississippi	2008	http://www.mfc.ms.gov/wp-content/uploads/2020/03/Entire_bmp_2008-7-24_2.pdf
North Carolina	2021	https://www.ncagr.gov/divisions/nc-forest-service/water-quality/best-management-practices-manual
Oklahoma	2016	https://ag.ok.gov/wp-content/uploads/2020/12/Forestry-Best-Management-Practices-for-Water-Quality-Management-in-Oklahoma.pdf
South Carolina	2021	https://www.scfc.gov/wp-content/uploads/2021/03/best-management-practices-manual.pdf
Tennessee	2023	https://www.tn.gov/content/dam/tn/agriculture/documents/forestry/2023/Forestry-BMP-Guide.pdf
Texas	2017	https://tfsweb.tamu.edu/wp-content/uploads/2024/05/BMP20Handbook_clean20copy20Aug202017.pdf
Virginia	2025	https://dof.virginia.gov/wp-content/uploads/VAs-Forestry-BMPs-for-WQ-Technical-Manual.pdf?x15979

Table 3. Online Links to Forestry BMP Implementation Information in the Southern Region

State	Online Link
Alabama	www.forestry.state.al.us/bmpmon.aspx
Arkansas	http://www.agriculture.arkansas.gov/best-management-practices-water-quality
Florida	www.fdacs.gov/bmps
Georgia	https://gatrees.org/wp-content/uploads/2023/12/2023_BMP_Survey_Results_Report_Final_V1.pdf
Kentucky	https://eec.ky.gov/Natural-Resources/Conservation/Pages/Best-Management-Practices.aspx
Louisiana	https://www.ldaf.state.la.us/
Mississippi	https://www.mfc.ms.gov/forest-health/water-quality-and-forestry-best-management-practices/
North Carolina	https://www.ncagr.gov/divisions/nc-forest-service/water-quality/forestry-bmp-implementation-surveys
Oklahoma	https://ag.ok.gov/forestry-water/
South Carolina	https://www.scfc.gov/development/best-management-practices/best-management-practices-reports/
Tennessee	https://www.tn.gov/agriculture/forests/protection/water-quality.html
Texas	tfsweb.tamu.edu/BMPMonitoring
Virginia	https://dof.virginia.gov/water-quality-protection/logger-assistance/forestry-best-management-practices-bmps-for-water-quality/