



# PROTECTING THE NATION'S WATER

State Forestry Agencies and Best Management Practices



NATIONAL ASSOCIATION OF STATE FORESTERS

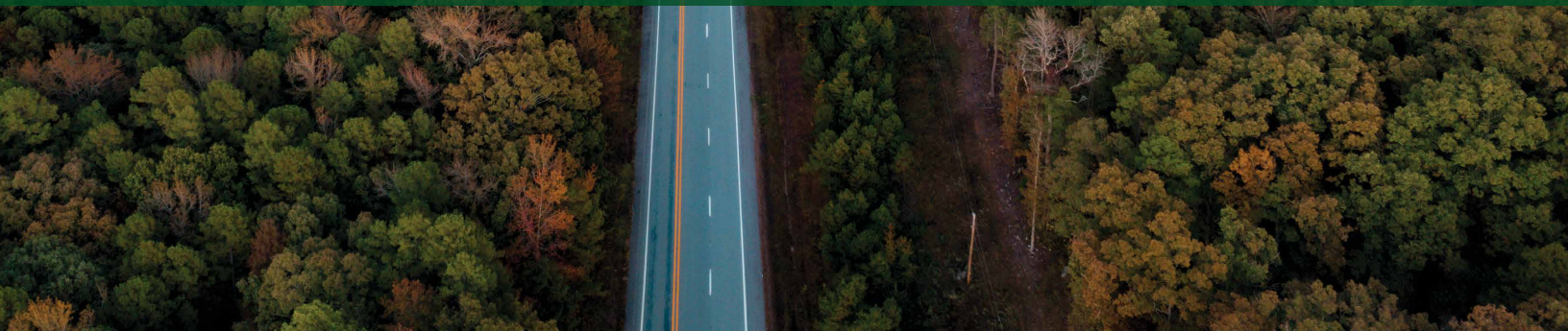




About 36% of the United States — 822.5 million acres to be exact — is forested.<sup>1</sup> In addition to providing a host of social, ecological, and economic benefits, U.S. forests provide more than 50% of the nation’s drinking water — a benefit we simply couldn’t live without.<sup>2</sup>

State forestry agencies play a critical role in ensuring that forests — and the water resources they provide — are protected and properly managed. As leaders in the development, promotion, and evaluation of forestry “best management practices” (BMPs), state forestry agencies help ensure water quality is protected before, during, and after forest management work takes place.

Due in equal parts to the establishment and monitoring of BMPs, the tremendous water quality benefits healthy forests provide, and the relatively low impact of forest management activities on water quality, Congress exempted normal forest management practices from Clean Water Act permitting requirements.



To ensure water quality is protected and soil stays in place, all states have developed BMPs for timber harvesting and forest management.

Not only are BMPs the most affordable method for protecting water quality, they are recognized by Congress and the U.S. Environmental Protection Agency (EPA) as among the most effective for addressing non-point source pollution.

**The overall success of a forestry BMP program depends on having a proactive approach. The aim of state forestry agencies and our partners is to prevent water quality problems before they arise.**

To gauge the success and continued evolution of BMPs, the National Association of State Foresters (NASF) has periodically surveyed its 59 members; that is, the men and women who lead state and territorial forestry agencies in all 50 states, eight U.S. territories, and the District of Columbia. The most recent survey was completed in 2019. Among its key findings were:<sup>3</sup>

**THE RATE OF BMP USE REMAINS EXCEEDINGLY HIGH** — Across all states, BMPs are implemented at a rate of 92%. This was a slight increase from the overall implementation rate last measured in 2013.

**A DIVERSITY OF APPROACHES IS WHAT ENABLES SUCCESS** — It’s no mystery that states vary markedly, from north to south, east to west. Fundamentally different climates, topographies, and underlying geologic conditions lead to different ecosystems that require different approaches to protecting water quality. Even neighboring states, with unique socio-political environments, use different methods for implementing government programs. By allowing states flexibility to determine BMPs that fit their forests and their residents, states can focus on what will work best for their water quality.

<sup>1</sup> Forest Resources of the United States, 2017 — A Technical Document Supporting the 2020 RPA Assessment. USDA Forest Service General Technical Report WO-97, March 2019.

<sup>2</sup> Water, Climate Change and Forests — Watershed Stewardship for a Changing Climate. USDA Forest Service General Technical Report PNW-GTR-B21, June 2010.

<sup>3</sup> BMP information for each state can be accessed on the NASF website — [www.stateforesters.org](http://www.stateforesters.org) — by clicking on any of the site’s interactive maps.

## What are “Best Management Practices”?

The protection and proper management of forests involves a range of activities, including harvesting, planting, road building, and insect/disease treatment. Numerous studies have measured how different approaches to these activities protect water quality and quantity. As a result, BMPs have been heavily promoted in the practice of forestry, and within the field today, are virtually synonymous with modern silviculture.

Every state has published BMP Guidelines for governments, industry, and family forest owners to use and/or reference. These are the benchmark standards for forest certification programs for organizations like the Sustainable Forestry Initiative, Inc., the American Tree Farm Program, and the Forest Stewardship Council.<sup>4</sup> In some states, BMP Guidelines are mandatory. In others, they are simply recommended. Scientific efforts are continuously evaluating their effectiveness so that states can improve their guidelines accordingly.

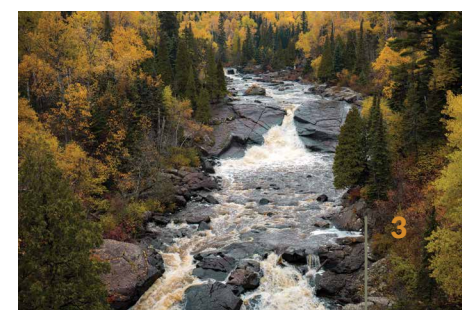
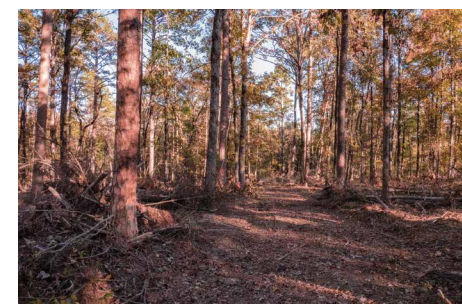
### SOME OF THE MOST COMMON BMPS ADDRESS:

**LOGGING ROADS** — Where permanent access does not exist, tree harvesting may require construction of a temporary road. Good road design minimizes long, steep slopes and allows enough space for equipment to turn without damaging non-harvested (or “residual”) trees. Any drainage should be diverted away from surface water and into forested areas to be absorbed into the forest floor. To eliminate sediment loss and to reduce soil compaction and runoff, often these roads are replanted with trees and/or seeded with a cover crop beneficial to wildlife.

**SKID TRAILS** — BMPs typically include specifications for skid trails used to transport logs out of the woods and into loading areas. A good skid trail reduces soil erosion and helps prevent any sediment displaced by logs or logging equipment from ending up in a stream. To this end, loggers will avoid skidding directly up or down hills, in or directly adjacent to streams, and over unnecessary distances. In mountainous terrain, helicopter logging or systems that use high overhead lines to keep logs off the ground until they reach the log deck may be necessary.

**LOG LANDINGS** — Landings are areas where logs are stacked and loaded onto trucks for transport. To reduce soil erosion and sediment loss, landings should be as flat as possible and occupy as small a footprint as feasible. BMPs for restoring landings after use include replanting trees and/or seeding a cover crop, such as clover.

**STREAM CROSSINGS** — Having logging equipment enter a stream bed can initiate long-term stream bank erosion problems and should always be avoided. When a stream crossing is absolutely necessary, selecting the right location and installing a spanning structure is crucial to protecting water quality. The need for fish passage should also be taken into account and any temporary structures impeding flow should be removed as soon as possible.



<sup>4</sup> For more information, visit: <https://www.sfprogram.org>, <https://www.treefarmssystem.org>, <https://us.fsc.org>





**STREAMSIDE MANAGEMENT ZONES** — A protective vegetative buffer along a stream or other water body is the most commonly prescribed and important water quality protection practice. Buffer widths vary depending on stream size, topography, and underlying geological conditions. Some buffers may call for no tree removal whatsoever. Others may allow for some tree removal within the buffer, as long as there is little to no ground disturbance.

**WETLANDS** — BMPs associated with wetlands are complex. Areas that are designated as “jurisdictional” wetlands by the federal government must take into account federal requirements. In general, BMPs recommend using specialized equipment to minimize compaction and rutting, prevent impediments to water flow, protect wildlife habitat, and eliminate introduction of harmful chemicals.

Other BMPs are recommended for reforestation activities, site preparation, the use of chemicals, the application of prescribed fire, and post-wildfire rehabilitation. The 2019 NASF BMP Monitoring Survey measured rates of BMP implementation as reported by all 50 states.



## How do states support BMP implementation?

### STATE FORESTRY AGENCY BMP GUIDELINES AND/OR BMP PROGRAMS CAN BE CATEGORIZED INTO FOUR GROUPS:

**REGULATORY** — In regulatory states, BMPs are prescribed and required by law to be implemented. Typically, state law dictates that BMPs shall be used and state regulations describe the required BMPs in detail. There are 13 states that implement BMP programs in this manner.

**QUASI-REGULATORY** — Some state BMP programs are identified as quasi-regulatory. In these states, state law establishes standards for water quality that silvicultural activities must meet, but does not stipulate how the operator is to meet those standards. Eleven states fall into this category.

**SOME LOCAL GOVERNMENT REGULATION** — This category (added since the last survey) includes states that do not require BMPs at the state-level, but allow local governments to require them. Five states operate in this manner.

**NON-REGULATORY** — Some states implement their BMP program through information and educational efforts and rely on voluntary compliance. As shown in the tables below, these states’ BMP programs are nearly as successful as regulatory BMP programs. Twenty-one states use this approach.

The following tables show implementation rates for states divided into the four categories. The differences between the categories are not that large. Where measured, the rate of overall implementation is at 94.95% for regulatory states, 93.82% for non-regulatory states, 90.58% for quasi-regulatory states and 89.39% where some local governments regulate.

In each category, there are states (identified in the footnotes) that do not monitor BMP use. Reasons for not monitoring vary. Often, state forestry agencies do not have legal authority to enter private property for the purpose of monitoring; and if monitoring was only done where permission was granted, the implementation rates would likely be skewed higher. For some states, forestry is not a major land use, so forest management activities do not present a significant risk to water quality. In other cases, states simply lack the budgetary resources to monitor BMP implementation.

TABLE 1. NON-REGULATORY STATES<sup>5</sup>

State	Roads	Skid Trails	Log Landings	Stream Crossings	Streamside Management Zones	Wetlands	Reforestation	Manual Site Preparation	Chemical Site Preparation	Pesticide Application	Prescribed Fire	Fire Rehabilitation	Overall Average
Indiana	94.6	77.9	91.2	76.3	81.7								84.34
South Carolina	97.1			73.6	98.9		100	92.9	100	100	60		88.93
Minnesota	77	90	65	73	79	91							79.17
Wyoming	86	86		86	86	86							86.00
Colorado	94	100	92		90			100		100	100		96.57
South Dakota	95	95	95	95	95	95				95	95		95.00
Louisiana	97.03	94.84	98.01	97.68	98.64	99.59	97.87	97.87	97.87		95.25		97.42
Tennessee	98.7	97.4	98.2	90.9	92.6								95.56
Arkansas	91.86	96.03	96.03	96.03	88.7		97.73	97.73	97.92		97.73		95.25
Texas	91.6	91	97.4	90.7	96.9	93.6	100	100	95.2				94.55
Mississippi	96.5	91.57	97.97	97.41	96.2	100	97.73					93.77	96.20
Average Implementation Rates	92.67	91.97	92.31	87.66	91.24	94.20	98.67	97.70	97.75	98.33	89.60	93.77	93.38

TABLE 2. STATES WITH SOME LOCAL GOVERNMENT REGULATION<sup>6</sup>

State	Roads	Skid Trails	Log Landings	Stream Crossings	Streamside Management Zones	Wetlands	Reforestation	Manual Site Preparation	Chemical Site Preparation	Pesticide Application	Prescribed Fire	Fire Rehabilitation	Overall Average
Maine	75	89	100	85	90	95							89.00
Utah	85	89	87	86	70	51	87	100	96		76		82.70
Virginia	87	86.8	93.9	93.1	89.5	98.3			100	100	86.8		92.82
Average Implementation Rates	82.33	88.27	93.63	88.03	83.17	81.43	87.00	100.00	98.00	100.00	81.40		89.39

TABLE 3. QUASI-REGULATORY STATES<sup>7</sup>

State	Roads	Skid Trails	Log Landings	Stream Crossings	Streamside Management Zones	Wetlands	Reforestation	Manual Site Preparation	Chemical Site Preparation	Pesticide Application	Prescribed Fire	Fire Rehabilitation	Overall Average
Florida	99.8	100	100	100	98.9	100		99.2	100	100	100	100	99.81
Michigan	95	96	100	94	95	69							91.50
Montana	96	98	100	96	97	94		100			97		97.25
Vermont	88	42	80	78	60	91							73.17
Ohio	100	68	89	62	84								80.60
Alabama	95.5			97.1	96.9			97.1	95.2		95.7		96.25
New Hampshire	100	87	96	82	74	100							89.83
North Carolina	85	79	90	79	86	64	97	97	77	77		84	83.18
Georgia	90.63	97.19	97.19	88.19	92.81	92.05	98.61	95.45	100	100	90.17	90.17	94.37
Average Implementation Rates	94.44	83.40	94.02	86.25	87.18	87.15	97.81	97.75	93.05	92.33	95.72	91.39	90.58

<sup>5</sup> Non-regulatory states that do not monitor are Hawaii, Illinois, Iowa, Missouri, North Dakota, Kansas, Rhode Island, Oklahoma, Nebraska, and Connecticut.

<sup>6</sup> States with some local government regulation that do not monitor are Arizona and New York.

<sup>7</sup> Quasi-regulatory states that do not monitor are Wisconsin and New Mexico.



TABLE 4. REGULATORY STATES<sup>8</sup>

State	Roads	Skid Trails	Log Landings	Stream Crossings	Streamside Management Zones	Wetlands	Reforestation	Manual Site Preparation	Chemical Site Preparation	Pesticide Application	Prescribed Fire	Fire Rehabilitation	Overall Average
Maryland	93	89	96	70	88	95							88.50
California	94	95	93	85	96								92.60
Washington	95				93.5	100							96.17
Delaware	91	91	91	91	97	99							93.33
Idaho	99	99	99	99	99	99	99		99	99	99		99.00
West Virginia	98	97	98	98	96	96							97.17
Oregon	98			96		89							94.33
Alaska	85	98	98	95	98		95	100					95.57
Average Implementation Rates	94.13	94.83	95.83	90.57	95.36	96.33	97.00	100.00	99.00	99.00	99.00		94.95

## Where's the support for state BMP programs?

There is no designated federal program for supporting the water quality protection work of state forestry agencies. Every year, state forestry agencies spend over \$33 million on their BMP programs; however, a small portion of that funding comes from the federal government.

The funding that does come from the federal government is authorized under Section 319 of the Clean Water Act. "Section 319 grants," as they are often referred to, are administered by the EPA and provide critical support to states to address their highest priority water quality issues. These federal funds are matched by states at a rate of 60:40 and directly support:

1. **Surveys/assessments of BMP implementation on logging sites;**
2. **Training for landowners and governmental entities on BMPs;**
3. **Logger education and workshops on BMPs;**
4. **Investigation and resolution of water quality impacts from forestry operations; and**
5. **Ongoing refinement and improvement of BMP standards.**

Other USDA Forest Service State and Private Forestry programs contribute to state forestry agencies' work related to water quality, but in less direct ways.

- **FOREST STEWARDSHIP PROGRAM** assistance, for instance, can include equipping landowners with technical information about BMPs. Funding for the Forest Stewardship Program has been reduced substantially over the years. In fiscal year (FY) 2011, the program was funded at \$32.5 million; by FY 2014, it was \$22.4 million, and as of FY 2018, \$20.5 million. That's a 37% drop in funding in just seven years.
- Similarly, **URBAN AND COMMUNITY FORESTRY PROGRAM** funds can positively affect water quality by supporting green infrastructure projects in urban and suburban landscapes. This program also struggles to maintain an adequate federal appropriation, but fortunately, not to the same extreme as Forest Stewardship.

<sup>8</sup>Regulatory states that do not monitor are Massachusetts, Kentucky, Pennsylvania, Nevada, and New Jersey.

The availability of state forestry agency personnel devoted to developing, monitoring, improving, and implementing BMP programs is limited, while demand for their services is increasing.

Every state forestry agency's BMP program would be better positioned to protect water resources if it had additional funding to obtain and maintain the following key elements of a forest water resources program:

- **A lead watershed specialist;**
- **Up-to-date BMP implementation monitoring covering the states' comprehensive set of forest operations and conditions;**
- **Ongoing BMP effectiveness research;**
- **Periodic assessments of the health and condition of riparian forests;**
- **A program component dealing with urban forests and water;**
- **Functional institutions for coordination between the various agencies and stakeholder groups with an interest in forest-related water resource issues;**
- **Formalized education and training for landowners, loggers, and resource managers; and**
- **A process for receiving and responding to complaints and resolving conflicts.**

Some state forestry agencies have a number of these key elements covered in their BMP programs, but others don't. Some are able to utilize other state agency staff for BMP-related work, and others can't. No matter their current capacity, demand for their services – particularly those services that protect water quality – continues to rise.

## Right Now,

**PARTICIPANTS IN FOREST CERTIFICATION PROGRAMS** rely on up-to-date implementation monitoring to validate that their work to protect water quality is indeed being accomplished;

The **EPA** grapples with legal questions that demand sound scientific input that BMP monitoring programs and BMP research provide; and

**EXISTING AND POTENTIAL CONSUMERS OF U.S. GROWN AND HARVESTED WOOD** look to BMP implementation rates as evidence of the sustainable nature in which timber and wood products are procured.

**STATE WATER QUALITY PROGRAMS** count on state forestry agencies' BMP work to prove that federally required water quality safeguards are implemented in forested areas.

### Success in Mississippi

Section 319 grants have helped the Mississippi Forestry Commission train more than 400 staff, loggers, foresters, and landowners in forestry BMPs over the past two years. The agency also uses the program to conduct statewide surveys of BMP implementation and effectiveness. In the most recent survey, it found that forestry BMPs were implemented in 96% of applicable cases.







Across the country, forestry BMPs are implemented appropriately, when and where they are needed, 92% of the time. This figure is not only one state forestry agencies can be proud of: it serves as strong evidence in support of a silvicultural exemption to Clean Water Act permitting requirements.

The collective success of state forestry agency BMP programs is predicated on the states' flexibility to design BMP programs that work individually. For this success to continue given increased demand for state forestry agency services, additional support for state forestry water resources programs is needed.