A National Evaluation of the Clean Water Act Section 319 Program

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U.S. Environmental Protection Agency
Office of Wetlands, Oceans, & Watersheds
Assessment & Watershed Protection Division
Nonpoint Source Control Branch

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Executive Summary

Nonpoint source (NPS) pollution is the leading source of water quality impairment in the United States. It is the primary source of impairment in over 33,000 waters -- roughly three-quarters of all impaired waters for which total maximum daily loads (TMDLs) have been calculated. It is also the dominant source of pollutants responsible for impairment of many of our nation's most significant waterbodies, such as the Gulf of Mexico and the Chesapeake Bay. The vast majority of our nation's impaired waters have no possibility of being restored unless the nonpoint sources are effectively remediated. Moreover, unless they are more effectively addressed as population and demands on the land increase, the number of NPS-impaired waters will continue to grow.

Through this study, EPA developed a detailed understanding of the ways that states utilize the Clean Water Act (CWA) section 319 funding to implement successful state NPS programs. Beginning in 1999, when Congress nearly doubled 319 funding levels to $200 million, EPA has directed states to devote approximately one-half of the funds (referred to as "base"319 funds) to implement broad solutions to states' NPS pollution problems and one-half (referred to as "incremental" 319 funds) to solve local water quality problems utilizing a watershed-based planning and implementation approach. A primary goal of this study was to gain a detailed, fact-based understanding of how states have used their base and incremental 319 funding. EPA's conclusion is that, overall, these complementary approaches are critical to helping states restore NPS-impaired waters, as well as protect healthy waters from future impairment.

Watershed projects, the mainstay of the national NPS program over the last decade, enable states to restore NPS-impaired waterbodies, thus providing significant benefits to surrounding communities that use those waterbodies. These projects also demonstrate restoration practices that can be adopted and implemented by partner stakeholders, including local, state, and federal agencies. To date, efforts by state 319 programs and their partners have led to the remediation and removal of 355 waterbodies from states' Clean Water Act (CWA) section 303(d) lists of impaired waters. An overview of each of these "Section 319 Success Stories" is available at www.epa.gov/nps/success/.

While the watershed-based planning and implementation approach has allowed state nonpoint source agencies to effectively and cost-efficiently identify and "target" NPS problem areas, it is not sufficient, taken alone, to expeditiously restore our nation's NPS-impaired waters. While the national NPS program has succeeded in delisting 355 waterbodies over the last six years, this represents only about 1% of the universe of NPS-impaired waterbodies. It is thus apparent that effective statewide programs and other base 319-funded activities will be critical to achieving more expedited success in restoring NPS-impaired waters, as well as protecting healthy, unimpaired waters. For this reason, a major focus of this national program evaluation was to improve understanding of how states currently utilize their base 319 funds to achieve program goals.

This study revealed a great richness and diversity among states' 319 programs. EPA found that a few states (e.g., California, North Carolina, and Wisconsin) possess and utilize broad-based regulatory authorities to support their programs, while a significantly greater number utilize regulatory approaches to address specific NPS areas, such as agriculture (more than 20 states, focusing particularly on animal feeding operations and nutrient management); forestry (20 states); and protection of riparian areas, shorelines and wetlands (10 states). At the same time, states use their 319 funding, along with state match (and, in many states, significant funds beyond the required 40% match), to implement statewide, non-regulatory programs that promote implementation on a widespread basis (e.g., promote broad use of nutrient management or low impact development techniques). These programs rely on and help develop and strengthen key NPS partnerships with federal and state agencies, conservation districts, and non-governmental groups to leverage interagency participation and funding to address NPS program priorities. These statewide approaches are key to making significant progress in remediating the tens of thousands of NPS-impaired waters.

Importantly, this study also identified opportunities for 319 program improvement. Over the past two years EPA has conducted a detailed review of a sample of state watershed-based plans, and has identified many watershed-based plans that provide a strong foundation for implementing successful watershed-based projects. However, some lack critical data analysis elements and reveal a need for additional technical training for watershed plan developers. EPA is planning to provide additional training in the coming year. See Appendix B (Watershed based Plan Review: Final Report (July 2011)) for more information, including EPA's recommendations for improving watershed planning.

EPA's national evaluation of the 319 program identified a number of opportunities for improving state NPS programs, including:

1. 28 states have not upgraded their NPS management program plans since 1999-2000. As a result, these plans do not adequately reflect all of the innovations of the past decade, including watershed-based planning and low impact development. Though not required under Section 319, upgrading program plans will help state NPS programs develop program goals/milestones, identify program priorities, and, in turn, will improve states' abilities to work effectively with partners in addressing statewide NPS priorities.

2. Some states' grant work plans and annual reports provide insufficient detail regarding the specific activities that will be or have been performed, thus making it difficult to gauge program success in implementing statewide programs and identify opportunities for improvement. Improving the level of detail contained in these grant documents and enhancing the rigor of the annual satisfactory progress determination process required by Section 319 will help ensure that state programs are achieving maximum effectiveness. In addition, it will be beneficial to establish processes that ensure that states expend their 319 funds within a reasonable time or, if that does not occur, that the funds are competed and reallocated.

3. While many state 319 programs currently work with the local, state (including state revolving loan funds under the Clean Water Act), and federal partners (such as the U.S. Department of Agriculture) to leverage additional program authorities and resources to help address nonpoint source pollution, there continues to be a great gap between the need and what is currently available to successfully implement these programs. EPA and states should work with all partners to promote improved processes, collaborative efforts, and incentives that can result in greater leveraging of funds and resources to address NPS program priorities.

To address these opportunities for improvement, a workgroup of EPA and State Water Division Directors developed a set of potential recommendations for improving the effectiveness of the 319 program (see Appendix C: Potential Recommendations from the EPA/State Water Division Director Workgroup Re. Section 319 NPS Program Improvements). EPA intends to work closely and collaboratively with the states and other partners to strengthen its implementation of the Section 319 program and to refine our collective efforts to restore and protect our Nation's waters.

INTRODUCTION

Nonpoint source pollution (NPS) is the leading source of water quality impairment in the United States. For example, more than 33,000 Total Maximum Daily Loads (TMDLs) (76% of all TMDLs) address waters that are primarily impaired by nonpoint source pollution (see the 2-page "TMDL Study," Appendix A to this report). Indeed, nonpoint source pollution is the dominant cause of many of our nation's most significant water quality problems, such as the hypoxic (oxygen-depleted) zone in the Gulf of Mexico or the nutrient-impaired waters of the Chesapeake Bay (see the pie charts on page 4 below)**.** Put simply, the vast majority of our nation's impaired waters have no possibility of being restored unless the nonpoint sources affecting those waters are effectively remediated. Moreover, unless nonpoint sources are more effectively addressed, we will continue to see the number of impaired waters grow over time.

State reports that list each impaired waterbody under section 303(d) of the Clean Water Act (CWA) indicate that more than 33,000 waterbodies have been identified in TMDLs as being primarily impaired by nonpoint source pollution. Our national efforts to remediate these waterbodies have resulted, in the past six years, in remediating 354 waterbodies so that they are no longer impaired (see www.epa.gov/nps/success). At this rate (approximately 60 remediated waterbodies per year), it would take more than 500 years to remediate all impaired waters – assuming that the tide can be stemmed to prevent any new impairments. Indeed, additional waters have continued to be added to the impaired waters list at a significant rate, indicating the critical need to protect healthy watersheds as well as restore those that have already been impaired.

It is thus clear that the success of our nation's overall effort to remediate impaired waters and protect healthy waters depends greatly on implementing a national nonpoint source program that is as effective as possible. It will require the devotion and leveraging of resources and the use of program tools and authorities by a broad array of federal, state, and local agencies; non-profit groups; and private citizens. It falls to the state nonpoint source agencies to implement programs that are as effective as possible, by:

- Continuing to demonstrate by example how to effectively implement watershed projects that will achieve water quality standards, and

- Growing and strengthening state-wide programs to achieve more widespread implementation of actions that are necessary to more effectively and efficiently "restore and maintain the chemical, physical, and biological integrity of the nation's waters," which is the national water quality objective set forth in section 101(a) of the CWA.

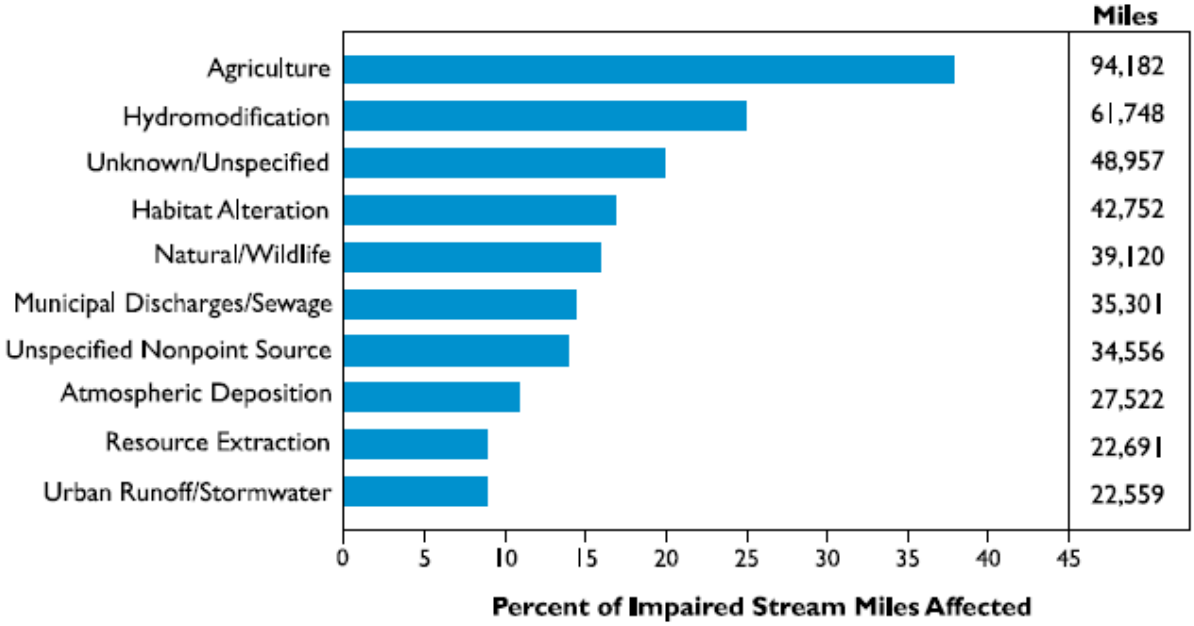
Note: This report did not review territories' 319 programs given that territories receive relatively little 319 funds. For similar reasons, the report did not review tribal 319 programs but does maintain a website with considerable information on tribal 319 programs at http://water.epa.gov/polwaste/nps/tribal/index.cfm.

Current Impact of Nonpoint Source Pollution on Water Quality

Impairments in Rivers and Streams

The most recent national report on the state of the nation's water quality is the *National Water Quality Inventory: Report to Congress, 2004 Reporting Cycle*, available at http://water.epa.gov/lawsregs/guidance/cwa/305b/2004report_index.cfm. Figure A-1 of that report lists the leading sources of impairments to rivers and streams as follows:

Figure A-1: Top 10 sources of impairment in assessed rivers and streams



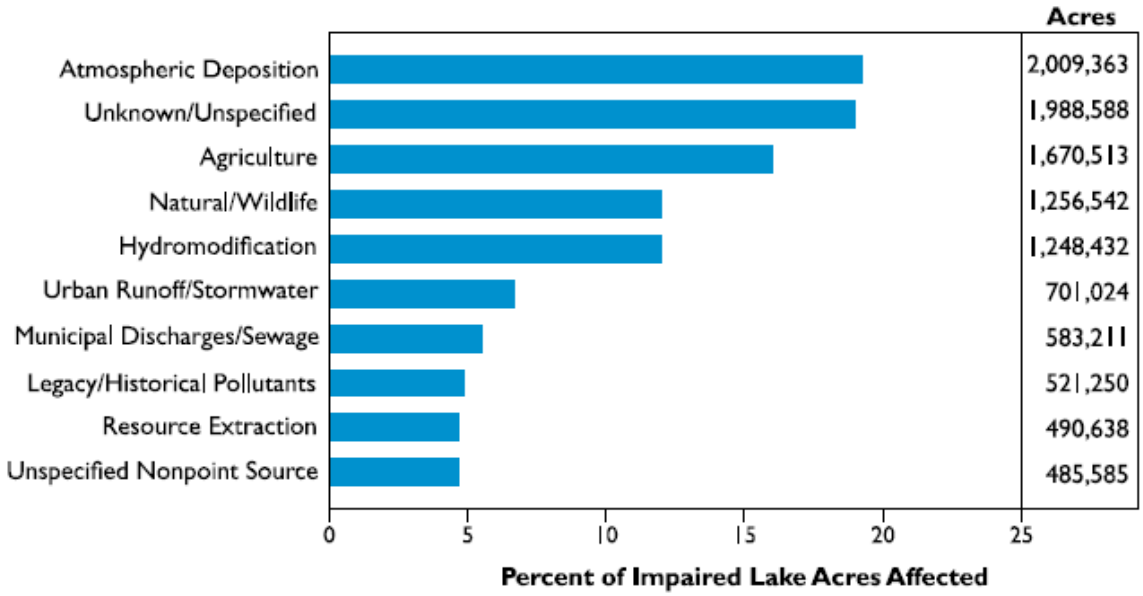
Note: Percents do not add up to 100% because more than one source may impair a waterbody.

As indicated, nonpoint source pollution dominates the sources of impairment. Among the top 10 sources of impairment in assessed rivers and streams, only one point-source category (municipal discharges/sewage) is ranked in the top ten (number 6), while Urban Runoff, which is comprised of a mix of point and nonpoint sources, ranks as number 10. Agriculture is by far the leading source of impairment and, together with hydromodification and habitat alteration, these nonpoint source categories are responsible for the significant majority of all impairments of rivers and streams nationwide. (It is notable that hydromodification and habitat alteration are frequently the result of agricultural activities, such as irrigation withdrawals and return flows, and farming or grazing in riparian areas.)

Impairments in Lakes

Figure A-2 of the *National Water Quality Inventory: Report to Congress, 2004 Reporting Cycle*, similarly lists the leading sources of impairments to lakes as follows:

Figure A-2: Top 10 sources of impairment in assessed lakes, ponds, and reservoirs



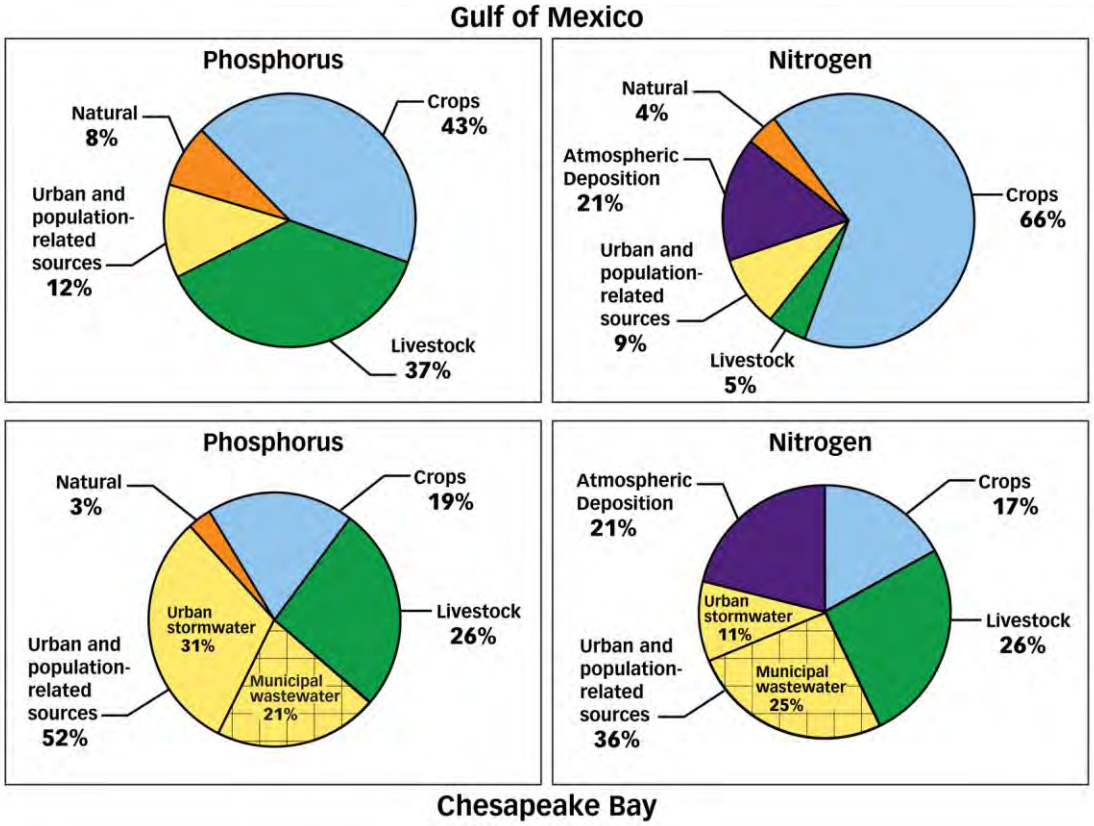
Note: Percents do not add up to 100% because more than one source may impair a waterbody.

Again, nonpoint source pollution is the most significant source of impairments in assessed lakes, ponds, and reservoirs. Point sources again include only two categories (urban runoff/stormwater and municipal discharges/sewage), which are, respectively, the 6th and 7th most significant categories in the list. Apart from atmospheric deposition, which is largely controlled through air quality programs, the leading known/specified sources of impairments are again agriculture and other NPS categories.

Impairments in Coastal Waters

Nonpoint source pollution is also a leading contributor to the degradation of some of the most significant coastal waters in the United States. The most prominent example is the contribution of nutrients from an area comprising approximately one-half of the contiguous United States to the Mississippi River and the Gulf of Mexico. Nutrients from this vast watershed have contributed to the creation of the extensive hypoxic zone in the Gulf; approximately 80% of those nutrients derive from agricultural sources in the watershed, as indicated in Figure A-3. Similarly, excess nutrients have resulted in significant water pollution in the Chesapeake Bay, and this nutrient over-enrichment is caused primarily by nonpoint source pollution, most notably agriculture (crops and livestock) (Figure A-3).

Figure A-3: Relative Nutrient Source Contributions



Sources of data in the pie charts:
1. USGS. 2008. *Differences in Phosphorus and Nitrogen Delivery to the Gulf of Mexico from the Mississippi River Basin: Sources of Nutrients Delivered to the Gulf of Mexico*. U.S. Geological Survey, Washington, DC. http://water.usgs.gov/nawqa/sparrow/gulf_findings/primary_sources.html. Accessed July, 2009.
2. Chesapeake Bay Program. 2009. *2009 State of the Chesapeake Bay Program*. http://archive.chesapeakebay.net/pressrelease/EC_2009_stateofprogram.pdf. Accessed July, 2009.

Contribution of Nonpoint Sources to Total Maximum Daily Loads

In April 2011, the U.S. Environmental Protection Agency (EPA) reviewed a randomized statistically valid number of TMDLs catalogued in the Assessment and Total Maximum and Daily Load Tracking and Implementation System (ATTAINS) to assess the proportion of waterbodies impacted primarily by nonpoint sources. Based on this review, EPA estimated that 33,820 TMDLs, amounting to 76% of all TMDLs were primarily impacted by nonpoint source pollution. See *Appendix A: Determination of TMDLs Primarily Impacted by NPS (May 2011)*.

The review was conducted as follows: Using the American Research Group online sample size calculator, it was determined that 96 TMDLs would provide a statistically valid sample size for the population (44,500 TMDLs were conducted and entered into ATTAINS as of April 14, 2011) that would meet a 10%

margin of error and 95% confidence interval. Using Microsoft Excel spreadsheet software, a "randomizer" function was applied to the data; this gave EPA the ability to pull a completely random selection of 96 TMDLs. Each TMDL document was reviewed to determine whether the impairment was due primarily to nonpoint sources or point sources. This was accomplished by verifying that the total load allocation to nonpoint sources exceeded 50% of all of a TMDL's allocations, either by calculations provided or statements in the TMDL document to that effect.

The study determined that 73 of the 96 TMDLs were primarily impacted by nonpoint sources, and only 23 TMDLs were primarily impacted by point sources. Only several TMDLs were exclusively impacted by point sources. Based on these findings, it was determined that approximately 76% of the TMDLs were primarily impacted by nonpoint sources. Furthermore, by extrapolating this percentage to the total number of TMDLs in ATTAINS as of April 14, 2011, EPA estimates that 33,820 TMDLs are primarily impacted by nonpoint sources. Since additional section 303(d)-listed waterbodies do not yet have TMDLs developed for them, it is expected that the 33,820 number will grow substantially in the coming years as more TMDLs are developed for these section 303(d)-listed waters.

National Aquatic Resource Surveys

Another indication of the adverse consequences of nonpoint source pollution is provided by the National Aquatic Resource Surveys ("NARS") that have been conducted in recent years by EPA in partnership with states and tribes. Often referred to as probability-based surveys, these studies report on core indicators of water condition using standardized field and laboratory methods. The surveys include a national quality assurance program and are designed to yield unbiased, statistically representative estimates of the condition of the water resources assessed. Studies have been completed for wadeable streams and for lakes (see www.epa.gov/aquaticsurveys).

The NARS have found that 42% of the nation's stream miles and 22% of the nation's lakes are in poor condition. Of the stressors assessed in the surveys, nitrogen and phosphorus are the most pervasive in the nation's wadeable streams, with more than 200,000 stream miles showing high concentrations for each stressor. Significantly, the NARS have shown that nitrogen concentrations increase with an increase in the percent of agriculture. The NARS also report that an estimated four million lake acres showed high concentration of phosphorus and 1.9 million acres showed high concentrations of nitrogen. Streams and lakes with high levels of nitrogen and phosphorus were about two times more likely to have poor biological health.

Current Status of and Future Threats to Healthy Watersheds

The opening sentence of the CWA, in section 101(a), states: "The objective of this Act is to restore **and maintain** the chemical, physical, and biological integrity of the nation's waters." Thus, in addition to focusing on addressing the impairments caused by nonpoint source pollution, the nonpoint source program must implement programs and practices that maintain water quality by preventing the degradation of water that is currently healthy.

Keeping healthy watersheds healthy has proven to be a major challenge. The number of waterbodies listed as impaired has continually grown, both as a function of better information about impairments and of the continuing degradation and impairment of formerly healthy waters.

In addition to the continued growth of the impaired waters list, other factors have been studied and reported on which provide a broader understanding of the continuing challenges that EPA and states face in maintaining good water quality. The following reports, among many others, are indicative of the ongoing degradation of many waterbodies and aquatic habitats in recent years:

- Over the last 50 years, coastal and freshwater wetlands have declined; surface water and groundwater withdrawals have increased by 46%; and non-native fish have established themselves in many watersheds (*The State of the Nation's Ecosystems*, Heinz Center, 2008).
- Fifty-three percent of estuarine areas, and 27% of streams in the lower 48 states, are at high or very high risk of current habitat degradation (*Through a Fish's Eye: The Status of fish Habitats in the United States,* National Fish Habitat Board, 2010).
- Nearly 40% of fish in North American freshwater streams, rivers, and lakes are found to be vulnerable, threatened, or endangered, nearly twice as many as were included on the imperiled list from a similar survey conducted in 1989 (*Conservation Status of Imperiled North American Freshwater and Diadromous Fishes*. Fisheries, Jelks et al., 2008).
- About 90% of freshwater species listed as critically endangered, endangered, or vulnerable on the 2004 IUCN Red List are threatened by human-induced habitat loss or degradation, and 71% of freshwater fish extinctions are attributable at least in part to habitat alteration (*Unlocking the potential of protected areas for freshwaters,* Abell, Robin, J. David Allan, Bernhard Lehner, in *Biological Conservation,* 134: 48-62*,* 2007).

Thus, while state nonpoint source programs must continue their efforts to remediate impaired waters, it is imperative that they provide leadership in the struggle to protect those waterbodies that remain healthy but may be at risk. This is important not only for the sake of the health of these waterbodies themselves, but also because of the significant functions they provide, such as providing refugia for adjacent impaired waters by supporting fish, macroinvertebrates and aquatic plants that once inhabited those impaired waters but no longer do in sufficient numbers to sustain healthy populations. As remediation activities in impaired waters make the return of such biological assets more likely, the refugia are able to supply those assets, thereby helping to restore full functionality to the entire watershed.

A Brief Review of the Nonpoint Source Program: History, Trends and Status

History of NPS Program

Prior to 1987, nonpoint source pollution received relatively little attention from the water quality community as well as from the public. Motivated by major disasters such as the Cuyahoga River (in Cleveland, Ohio) catching fire, concerns regarding toxic pollution of all types, and widespread eutrophication problems, all levels of government were properly focused on the immense demands of

controlling point source pollution from untreated or inadequately treated sewage and from discharges by a wide range of industries. The CWA, as enacted in 1972, established a regulatory permit system for all point sources, while leaving nonpoint source pollution unregulated. Furthermore, the 1972 CWA did not provide any funds for nonpoint source control. The same situation continued through the passage of the 1977 amendments to the CWA.

Throughout the 1970s and 1980s, significant progress was made in reducing water pollution as industrial dischargers complied with the CWA's regulatory requirements and installed the best practicable technology followed several years later with the best available technology economically achievable, and publicly owned treatment works (POTWs) similarly complied with regulatory requirements and installed secondary treatment (with the assistance of a large federal grants program that provided at least $60 billion dollars between 1972 and 1987 for the construction of publicly owned treatment works, which in turn was more than matched by state and local funds)[1]. Throughout this period, EPA did not implement a national nonpoint source program and did not provide any funds to states to implement nonpoint source programs – and very few states implemented nonpoint source programs on their own.

However, by the mid-1980s, it became increasingly apparent that even as point source pollution was being significantly abated, the preponderant remaining sources of water quality impairment – nonpoint sources – would continue to cause water quality impairment unless they were properly controlled as well. For example, the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA) issued a report highlighting this issue, *America's Clean Water: The States' Nonpoint Source Assessment 1985*, which catalogued in great detail the extensive water quality impairments in each state that were caused by nonpoint sources.

Similarly in January 1985, a Federal/State/Local Nonpoint Source Task Force issued the *Final report on the Federal/State/Local Nonpoint Source Task Force and Recommended National Nonpoint Source Policy*, which included the following conclusions on page 2:

- "In response to the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA) Nonpoint Source Pollution Survey (February 1984), 78% of the states indicated that the magnitude of current NPS pollution problems was greater than or equal to that of point source problems."

- All but one of the 38 states responding to a 1983 survey by the North American Lake Management Society indicated that nonpoint sources seriously affect lake water quality within their states, and more than two-thirds indicated that at least half of their lakes were being adversely affected by NPS pollution.

[1] Of course, many POTWs face remaining challenges to meeting water quality standards for pollutants like nutrients.

- "The 1982 National Fisheries Survey conducted jointly by EPA and the U.S. Fish and Wildlife Service found that NPS pollution adversely affects fish populations in 38% of the nation's waters and is a major concern in 19%. Agricultural sources are the most widespread NPS problems and affect 29% of all waters."

Indeed, by 1990, the states reported that agriculture was by far the leading source of impairment in river miles (60%) and that agriculture (57%) and hydrologic/habitat modification (40%) were the leading sources of impaired lake acres ("National Water Quality Inventory: 1990 Report to Congress").

In response to the increased recognition of the significance of NPS pollution as the emerging leader of water quality impairment in the United States, Congress enacted section 319 of the CWA in 1987. Section 319 called on states to develop nonpoint source assessments and management programs, and Congress began to provide funding to help states implement these programs in 1990.

In the first decade of the national NPS program, funding for state programs was very modest, beginning at about $38 million in 1990 and rising to $105 million by 1998. These funds were enough to enable states to begin educating the public about NPS pollution; provide training, technology transfer and technical assistance; and implement demonstration projects to demonstrate techniques that could be effective in controlling NPS pollution. The funding levels were generally not sufficient to enable states to implement broader watershed-scale projects that could result in remediation of impaired waters. However, by working with other federal agencies, states, local government, conservation districts, watershed groups, and other partners, states were able to achieve water quality improvement in a modest number of waterbodies. States' initial progress in achieving some of these modest successes were documented in three section 319 Success Stories documents (see "Links to Legacy Success Stories" at bottom of www.epa.gov/nps/success/).

Recent Developments in the Nonpoint Source Program

By the late 1990s, EPA, states, and Congress recognized that the section 319 funding levels would need to be increased in order to achieve water quality improvement at the watershed level. In 1999, Congress increased section 319 funding to $200 million, and EPA determined that one-half of that funding should be focused upon remediating impaired waters. Coupled with that, EPA required all states to upgrade their nonpoint source management programs in order to be eligible to receive their share of what EPA termed "the incremental funding" (i.e., the additional $100 million).

In 2001, EPA published supplemental guidance for FY 2002 in which it required for the first time that states must focus the incremental $100 million on developing and implementing watershed-based plans to remediate impaired waters. EPA repeated this in further supplemental guidance the next year. On October 23, 2003, EPA published an entirely new set of section 319 program and grants guidelines which, among other things, made permanent the requirement to focus the incremental funds on developing and implementing watershed-based plans to remediate impaired waters. These watershed-based plans were specifically defined in the guidelines to include nine components designed to focus on

assembling necessary information to characterize the sources of the problems and to provide a basis for successful implementation. Those guidelines remain in effect today. In addition, in September 2001, EPA published guidance that established a requirement that states report on the load reductions that they achieve in watershed projects with regard to sediment, nitrogen, and phosphorus (see www.epa.gov/nps/Section319/grts.html#AttachmentC).

Throughout the past decade, states have continued to implement their "base" NPS programs with at least $100 million (reaching a maximum of $137-138 million in 2001-2003). This has enabled them to implement the full set of program components envisioned in section 319(b)(2)(B): "programs (including, as appropriate, nonregulatory or regulatory programs for enforcement, technical assistance, financial assistance, education, training, technology transfer, and demonstration projects) to achieve the implementation of the best management practices by the categories, subcategories, and particular nonpoint sources designated…." These funds have enabled the states to develop and implement both broad programs and demonstration projects to promote the implementation of controls on animal feeding operations; nutrient management planning; low impact development; stream restoration; and many other critical aspects of nonpoint source control. They also provided funds to enable the states to work with federal, state, local, private sector groups and watershed groups to gain cooperation and to leverage dollars, authorities, and other resources to solve or prevent nonpoint source pollution problems. These funds also provide critical support for state staff to conduct project planning and selection, monitoring, and building of partnerships that are critical to ensure successful implementation of watershed-based plans.

The "incremental" $100 million, which states were required to spend on restoring impaired waters, enabled and encouraged states to address water quality problems at the watershed scale instead of focusing only on small projects. In 2005, EPA established an ambitious national program commitment to remediate primarily NPS-impaired waterbodies so that they would meet water quality standards. In 2005, EPA chose goals of remediating 250 waterbodies by 2008 and 700 by 2012. These goals were not based on prior experience by EPA or any other federal or state agency of remediating significant numbers of waterbodies. EPA's experience has borne out that states are able, with $100 million per year (in concert with base funds that support staff efforts as mentioned above) plus the effective utilization of partnerships with other agencies, non-profit groups and citizens, to remediate about 60 waterbodies per year.

To publicly track and document the states' progress in remediating primarily NPS-impaired waters, EPA created the web site, "Section 319 Nonpoint Source Success Stories" at www.epa.gov/nps/success/. For each primarily NPS-impaired waterbody that achieves water quality standards, EPA publishes a two-page "Success Story" that describes the water quality problem and its causes/sources, the practices implemented to solve the problem, the results, and the partners and funding sources who contributed to the solution. As of September 6, 2011, 354 waterbodies have been remediated. These range from large watershed projects that required many millions of dollars, many partners, and 10-20 years of

planning and implementation, to relatively small and inexpensive projects that focused on solving one or two problems that had caused a water quality problem in a small tributary.

While this success is notable, it must be kept in mind that more than 40,000 primarily NPS-impaired waterbodies (including those with TMDLs) have been listed by states under section 303(d). Thus, the successful remediation of 354 waterbodies during the past 6 years has only addressed less than 1% of all primarily NPS-impaired waters. This indicates that at the current pace of waterbody remediation, it will take about 700 years to achieve full restoration of currently-impaired waterbodies. Moreover, this does not even address the likelihood of still more waters being listed in the future as the result of new and/or continued activities that cause NPS pollution. **This suggests, among other things, that the watershed-by-watershed approach, even if improved and enhanced, will need to be supplemented by broader "wholesale" approaches to reduce and prevent nonpoint source pollution as expeditiously as possible.**

EPA and the states are currently taking several steps to address water quality impairments and threats with more wholesale approaches.

a. Regulating Point Sources that had been Excluded from Point Source Regulatory Requirements: EPA has taken some steps, and has initiated a process to take additional steps, to regulate certain categories of point source activity that in the past had been treated as if they are nonpoint sources. In particular, pursuant to Congress' direction in section 402(p) of the CWA, EPA now addresses some aspects of stormwater through the National Pollutant Discharge Elimination System (NPDES) point source regulatory program. To the extent that it has done so and may expand that program in the future, it is providing an alternative means that may more rapidly address some urban runoff problems that heretofore have been addressed under the NPS program. It must be noted, however, that unless/until all significant stormwater-caused impairments and threats are regulated under the NPDES program, they will continue to need to be addressed through the nonpoint source program.

b. Implementing State-Wide Programs: As indicated in several chapters of this report, many states are engaging in one or more activities on a broad scale that are intended to make more rapid progress in remediating sources of nonpoint source pollution. Examples discussed in the following chapters include:

1. Funding innovative technologies (e.g., low impact development and stream restoration techniques) or innovative programs (e.g., inspection programs, with or without an enforceable component).

2. Regulatory programs that can be brought to bear with respect to a broad array of nonpoint sources (e.g., California's Porter-Cologne act, which has been used to regulate irrigated agriculture, grazing operations, and forestry activities) or

particular sectors of concern (e.g., forest management laws and nutrient management laws).

3. Substantial state funding programs, significant use of State Revolving Fund funding support, or cooperation with other state or federal agencies.

These programs, projects, authorities, and funds enable these states to leverage other resources and tools to enhance their nonpoint source programs' abilities to make progress. However, it must be understood that a broad set of economic and social factors has a highly significant impact on each state's ability and willingness to enact regulatory authority or commit large amounts of state funds to address water quality beyond the program and funding requirements of section 319 (e.g., the requirement for a 40% state match).

c. Protecting Healthy Watersheds: EPA, building on significant efforts by the states, has in the past three years established and begun to implement a Healthy Watersheds Initiative that is designed to increase focus on the protection of healthy waters and their watersheds so that they do not become impaired and need to be addressed through more expensive remediation approaches (see www.epa.gov/healthywatersheds). Prevention of waterbody impairment by NPS pollution is generally much less expensive than remediating a waterbody that has already been impaired by NPS pollution. Given the enormity of the task and expense of remediating 40,000 section 303(d)-listed waters, it is imperative that EPA and the states maximize the use of more cost-effective approaches that can reduce the pace and number of new section 303(d) listings in the future. The Healthy Watersheds Initiative is designed to help EPA, states, and our partners do just that.

Many states are now developing green infrastructure programs, instream ecological flow standards, and other tools to help protect healthy watersheds (e.g., Massachusetts, Connecticut, Washington, Michigan, Tennessee – see the draft document, *Identifying and Protecting Healthy Watersheds,* http://water.epa.gov/polwaste/nps/watershed/upload/chapter5_033111_final_low.pdf). These programs provide frameworks for protecting waterbodies from development and other activities that may otherwise cause a significant amount of water pollution that could be very expensive to remediate. This preventive approach can protect those waterbodies that are most important to protect at a fraction of the cost of remediating them at a later time.

The Way Forward for NPS Pollution Control in the United States

It is clear from the above summary that the challenges facing the national NPS program are enormous. With no federal regulatory authority and only relatively modest federal funding (and with correspondingly limited regulatory authorities and modest funding sources in most states), the national

NPS program is faced with the highly challenging task of remediating 76% of all impaired waterbodies in the United States as well as preventing new impairments. This document summarizes the current state of our national efforts to control nonpoint source pollution and offers recommendations regarding how to improve our current efforts.

There have been numerous studies and articles published since the inception of the nonpoint source program regarding the issue of legislative authority that would strengthen the national effort to control NPS pollution. This study, however, does not address potential legislative changes to the program. Rather, it is limited to evaluating current implementation efforts and potential program improvements in the context of existing authorities and funding sources.

Appended to this document are two Appendices, C and D, which contain two draft documents that are not discussed in this report but which have been developed concurrently with the report. Appendix C contains draft recommendations developed by a senior management group of EPA and State program directors; these draft recommendations were developed based upon a review of the information contained in the NPS Study and will be considered for action in FY12 and 13. Appendix D contains a draft metric for tracking state progress in developing program improvements through the upgrading of their NPS management programs.

Chapter 1: Base 319 Funding Summary

Section 319 base funds are those funds that are used by states generally to implement all aspects of their nonpoint source (NPS) pollution control programs, which are described in the Clean Water Act (CWA) section 319(b)(2)(B) to include:

> *An identification of programs (including, as appropriate, nonregulatory or regulatory programs for enforcement, technical assistance, financial assistance, education, training, technology transfer, and demonstration projects) to achieve implementation practices by the categories, subcategories, and particular nonpoint sources designated under [the preceding paragraph].*

These funds are used in conjunction with state funds and other contributing sources to provide staffing and support to manage and implement the entire state Nonpoint Source Management Program, including all of the activities listed above. In particular, base funded activities include projects that identify and address nonpoint source problems and threats generally across the state; address particular regions or watersheds of the state; or demonstrate technologies, processes, or programs that, if successful, can be replicated across the state. Pursuant to EPA's program and grants guidelines, states may use a portion of these funds (up to 20%) to develop NPS Total Maximum Daily Loads (TMDLs) and watershed-based plans to implement NPS TMDLs; develop watershed-based plans in the absence of or prior to the completion of TMDLs; develop watershed-based plans that focus on the protection of threatened waters, source water, or other high-priority unimpaired waters; and conduct other NPS monitoring and program assessment/development activities. Furthermore, under sections 319(b)(2)(F) and (k), states work to assure the consistency of federal financial assistance programs and federal development projects with their NPS programs.

The information included in this chapter of the report, *Base 319 Funding Summary*, is focused on presenting a quantitative break-down of how states are utilizing their base 319 grants. **This information provides an overview of base-funded programs and an introduction to the report chapters that follow, each of which addresses an important aspect of state NPS program activities that rely in whole or in part on base funds.** Refer to other chapters for important findings about the scope of state program efforts to implement statewide programs and regulations, coordinate with key partners, leverage state and federal funds for NPS activities, and coordinate with the Clean Water State Revolving Fund (CWSRF) program.

Generally, states rely heavily on base 319 funds to support planning and prioritization of NPS Program activities. For example, many states rely on 319-funded staff or contract positions to engage with potential grant applicants at the local level about watershed-based plan development and implementation, state NPS program funding priorities, and how to apply for 319 funding. Base funding also provides support for implementation of long-term programs and projects to address NPS issues, including significant statewide programs that provide wholesale solutions to local water quality

concerns. Many examples are provided below and elsewhere in this report (see, e.g., *Chapter 4: Statewide NPS Programs and Initiatives* of this report).

To better understand how base funds are utilized, EPA evaluated base funding expenditures according to the following categories: 1) state NPS program staff; 2) other state or local staff; 3) TMDL development; 4) TMDL implementation plan development; 5) watershed-based plan development; 6) water quality project implementation (e.g., installing best management practices (BMPs)); 7) monitoring and assessment; 8) education/outreach/technical assistance; 9) NPS management program updates; 10) indirect costs; and 11) other.

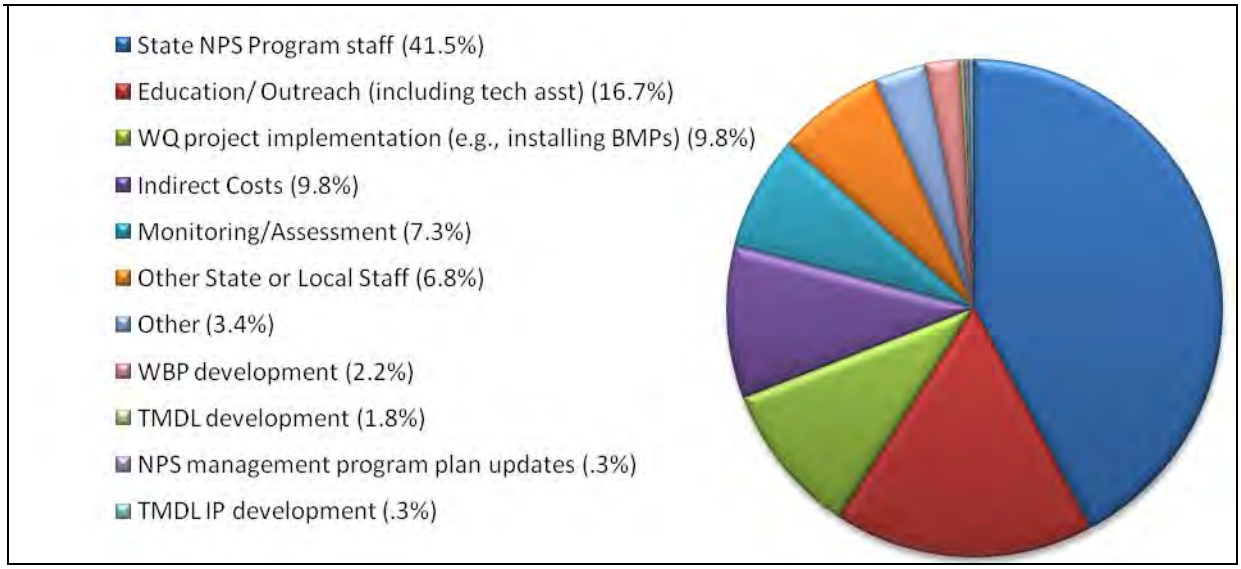
For purposes of this study, EPA developed a set of statistics and identified example projects based on how states used or plan to use Federal Fiscal Year 2010 (FY10) base funding allocations. State projects vary over time so this summary "snapshot" may not represent states' utilization of base 319 funds in the past with perfect accuracy.

EPA referred to the following documents to obtain this information:

- State NPS Program annual reports;
- State NPS Program work plans;
- State reporting in EPA's Grants Reporting and Tracking System (GRTS); and
- Correspondence with EPA regional and state NPS program staff.

In reviewing such state NPS program documents for this study, EPA faced challenges in finding a consistent, reliable source of information on how state NPS programs used FY10 base 319 funding. In general, this study identified varied approaches used in state NPS program reporting, specifically pertaining to how base 319 funding is spent. Some states provide two annual work plans: one for base, and one for incremental. Others develop a single NPS program work plan, which sometimes lacks detail on the funding source (base/incremental) used to support projects. Still further, some states that receive section 319 funding through a Performance Partnership Grant (PPG) do not prepare staffing and support work plans or similar documentation with details about 319-funded staff activities. These differences regarding the level of detail provided in work plans creates a challenge in aggregating and presenting national data. As a result, all of the summary data in this chapter is a reflection of the best available data from all states, and therefore does not capture the full range of activities supported with the base program. For additional discussion of sources of information about state programs, see *Chapter 9: Current Program Implementation*.

Figure 1-1: Amount of FY10 Base Funds Allocated Towards Various Project Categories[2]



- Approximately 41.5% of base 319 funding supports state NPS program staff. State NPS program work plans regularly describe these activities as those that support the "core program," including: grant project administration, grant project management and technical assistance, and oversight of statewide programs/activities. Most states specified that 319-funded staff are involved in activities such as TMDL development, watershed-based plan development, education and information projects, etc.; however, many 319 work plans do not provide itemized funding amounts for the various activities (i.e., all funding for those activities is captured under *NPS program staff*). As a result, the extent to which EPA was able to determine the percent of base funding committed to the specific categories below was limited by variability in state reporting methods. Thus, the percentages reported below are skewed lower than is the case for states that expend full-time equivalent (FTE) salary on these categories of activities. For more information on NPS program staff activities, see *Chapter 2: Staffing Summary*. In states that have regulatory authorities to control NPS pollution (documented in *Chapter 3: State Regulatory Authorities to Control NPS Pollution*), base 319 funds have often been used to support the development of these authorities as well as to apply these authorities to bring about watershed-specific successes. Some of these successes are highlighted in the state-specific examples below.
- Approximately 9.8% of base 319 funding is spent on water quality project implementation (e.g., installing BMPs). These types of projects include demonstration projects (such as nutrient management, innovative onsite treatment system technology, low impact development (LID) and green infrastructure), innovative nutrient reduction practices, acid mine restoration projects, and

[2] Information from three states (Alaska, Arkansas, and New York) was not included in the following base 319 funding summary statistics due to an inability to categorize how FY10 base 319 funds were spent (for example, a state was unable to distinguish between base and incremental funding amounts allocated to various activities).

installation of BMPs or river restoration projects in threatened water bodies. The chief purpose of these demonstration projects is to demonstrate the efficacy and significance of particular practices that have not yet passed into common usage. For example, prior to 2000, LID practices had not been implemented outside of a few counties. Beginning at that time, states began to use section 319 grants to fund LID projects in many jurisdictions; many millions of dollars were invested in such projects. To a very significant extent, as the result of this investment, LID technology has been shown to be effective at reducing stormwater impacts in a cost-effective manner and is increasingly being considered the technology of choice by many state and local governments as well by an increasing number of developers. Similar advances in technology and utilization have occurred with respect to abandoned mine reclamation, physical restoration of streams, and nutrient management. Examples of state-specific base-funded water quality projects include:

- **California** – CWA section 319 base funded activities played key roles in the restoration of 64 of the 78 river miles that California has either delisted or recommended for delisting from the state's section 303(d) impaired waterbodies list. These activities are documented on EPA's section 319 NPS Success Stories website for Big Meadow Creek and Upper Truckee River, which relied on implementing the regulatory authorities of California's Porter-Cologne Act (described in *Chapter 3: State Regulatory Authorities to Control NPS Pollution*) to effectively address grazing impacts, and for the Sacramento and Feather Rivers, which used Porter-Cologne's authorities to regulate diazinon as a waste discharge from irrigated lands. Base 319 funds are used to provide the staff needed to apply the broad powers under Porter-Cologne to regulate NPS discharges. In the case of the Sacramento and Feather Rivers, this authority resulted in regulations prohibiting the application of diazinon within 48 hours of a forecasted storm or when soils are saturated. Base 319 funds were also used to support ongoing planning and outreach/education efforts of the Sacramento River Watershed Program.
- **North Carolina** – CWA section 319 base and incremental funds played a central role in the restoration of river segments throughout the 5,630 square mile Neuse River Basin, as well as the restoration of impaired waters across the 5,571 square mile Tar-Pamlico River Basin (both efforts are documented on EPA's 319 Success Stories website). Specifically, 319 base-funded staff has worked to develop and implement Nutrient Strategy Rules (described in *Chapter 3: State Regulatory Authorities to Control NPS Pollution*), which provide a significant regulatory approach to reduce nonpoint sources of nutrient loading in these and several other large river basins throughout the state. Base and incremental 319 funds are used to support the development of nutrient strategies, specifically to: conduct applied research to quantify the sources and effects of nutrient loading; survey agricultural producers; manage stakeholder processes; conduct watershed modeling; develop model ordinances; etc. Incremental 319 funds worked hand-in-hand to apply these rules strategically on a project-by-project basis.

- **Virginia** relied on base 319 funds to restore 17 miles along Muddy Creek and Lower Dry Creek in the intensively farmed Shenandoah Valley, which had very high levels of bacteria, nitrate, phosphorus and sediment. Successes have largely been the result of partnerships between the Shenandoah Valley Soil and Water Conservation District (SVSWCD), Virginia Department of Conservation and Recreation, Virginia Department of Environmental Quality, Virginia Cooperative Extension, Rockingham County Farm Bureau, and U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service. In addition to these agency partners, the watershed's Old Order Mennonite community played a significant role in the project's success. The community took the initiative to voluntarily implement extensive BMPs such as stream exclusions, loose housing barns, and numerous manure storage units once they were made aware of the problems. Religious beliefs preclude the community from accepting any financial assistance to implement BMPs. Community members refused any cost share assistance and assumed complete financial responsibility for 8.3 of the 10 miles of livestock exclusion fencing installed throughout the watershed. Since 2002, more than $500,000 in section 319 funding has supported two full-time SVSWCD staff, who provide technical assistance to the Mennonite community and others in the project area. This support has been leveraged to generate nearly $839,000 in cost share funds to implement agricultural and residential BMPs, as well as $130,000 in USDA Environmental Quality Incentives Program (EQIP) funds to install BMPs throughout these watersheds (see EPA's Success Stories website for more information).
- In **Utah**, base funding supported an erosion control demonstration project on rural road design and reclamation that will be used as a model for how rural road design can prevent water quality impacts and also help to implement a TMDL with significant reductions in sediment and phosphorus loads to the Calder Reservoir. The project over its lifetime will restore critically eroded land and substandard dirt roads to minimize their impact on water quality through sedimentation and phosphorous loading.
- **Wyoming** base funds were used to support efforts to address water quality concerns in a river that is not listed as impaired but is at risk due to river shortening and related streambank erosion. Phase II & III of the Laramie River Restoration Project will mitigate bank erosion and improve aquatic habitat by installing treatments at 45 sites, encompassing approximately 10,000 linear feet in 3.6 miles of stream.
- **Texas'** Commission on Environmental Quality is funding the *Lower Rio Grande Valley Low Impact Development Implementation and Education* project with FY10 base and incremental 319 funding. The project provides funding for several municipalities in the Lower Rio Grande Valley to design, construct and maintain structures and facilities using LID stormwater management practices. A key component of the project is to provide education/outreach and training to the general public and land development professionals. The project will also create opportunities to assess the costs, functionality, and water quality benefits of LID practices.

- **Florida** – Base funds were used to support the Walton County Oakwood Hills Subdivision Unpaved Road/Stream Crossing Stabilization Initiative, which implemented stormwater runoff BMPs to mitigate environmental impacts associated with unpaved roads. A number of BMPs were implemented, including the paving of road surfaces, stabilization of roadside shoulders and swales for the treatment and conveyance of stormwater runoff, and stabilization at stream crossing locations. The Three Rivers Resource Conservation and Development Council, Inc. (a project partner) uses the site as a demonstration area to train other local governments in northwest Florida about unpaved road/stream crossing BMPs.

- On average, states commit approximately 16.7% of their base 319 funding to education/outreach activities. These activities include public education events, technical assistance on 319(h) water quality projects, research and development projects, etc. (see *Chapter 4: Statewide NPS Programs and Initiatives* for more detailed information about state education/outreach activities). A few examples include:

  - **Virginia** provides base 319 funds for an Agricultural Incentives Program Manager to manage various agricultural BMP incentive programs, including Virginia's Agricultural BMP Cost share Program and Agricultural BMP Tax Credit Program, administered through Virginia's Water Quality Improvement Fund (see *Chapter 6: Leveraging of State and Federal Funding for State NPS Programs* for more information on this fund.) The Virginia Agricultural BMP Cost share Program is administered by the Virginia Department of Conservation and Recreation (DCR) to improve water quality by encouraging voluntary installation of agricultural BMPs to meet Virginia's NPS pollution control water quality objectives. For more than 20 years DCR has maintained oversight and direction of the local agricultural cost share programs carried out by Virginia's 47 soil and water conservation districts. In addition to broad support for program implementation, districts have the lead responsibility for technical assistance related to TMDL implementation efforts. The State General funds that are provided to districts for staff and ongoing operations serve as the primary match for the section 319 grant to improve water quality and further natural resource conservation. Virginia also relies on base 319 funds to pay for 2.7 FTEs for Nutrient Management Planning Specialists. DCR currently has 13 field nutrient management specialists, two technicians, and two coordinators throughout the state. Development and delivery of individual farm nutrient management plans is the number one job priority for these positions.

  - Since 1999 **Massachusetts** has relied on base 319 funding to support the Massachusetts Alternative Septic System Test Center (MASSTC), which tests new and innovative onsite septic system technologies that are used to address related water quality concerns throughout the state. The MASSTC has become a premier research and development site for new technologies that reduce pollutants, especially nitrogen, in wastewater that is treated onsite.

- **Iowa** Department of Natural Resources allocated $100,000 of FY10 base funds for continuation of the Water Quality Initiatives for Small Iowa Beef and Dairy Feedlot Operations. This is a cooperative project involving various agencies and other partners that (1) educates producers to better understand the pollution potential of open feedlots, (2) trains producers to accurately assess the water pollution potential of their feedlots, (3) assists producers to identify and evaluate appropriate runoff control alternatives, and (4) provides technical assistance to producers to implement solutions that improve the environmental performance of their feedlots.
- In FY10 **South Dakota** provided $200,000 of base funding to continue support of the statewide Grassland Management Project (GMP). The GMP provides technical assistance to grassland managers to complete the planning and design of an additional 160,000 acres of rotational grazing systems (which are increasingly understood to improve soil stability and riparian areas, thereby sharply reducing erosion and stream impairment), and complete the implementation of rotational grazing systems on an additional 180,000 acres of grasslands. Grasslands in 319 water quality project areas, riparian grasslands, and southeast South Dakota receive priority for technical assistance during this project segment. This project includes information transfer to producers, researchers and technical specialists, and monitoring to evaluate progress.
- **Connecticut** Department of Environmental Protection provided a grant to a Resource Conservation and Development Area to determine the viability of using dairy manure fiber (byproduct of anaerobic digestion) in growing media (e.g., an alternative to peat) for commercial plant production. Trials using digestate-fiber-based potting mixes to grow annuals, perennials and woody plants will be conducted under the supervision of the University of Connecticut. This research will lead to viable alternative uses of manure nutrients and reduce NPS contributions of nutrients in farmland watersheds.
- **Mississippi** NPS program provides 319 funds and coordinates with Mississippi State University Cooperative Extension Service and the Mississippi Department of Agriculture and Commerce to manage the *Pesticide Container Recycling Program*. As of 2010, 1.2 million pounds of waste-pesticides had been collected which might otherwise have ultimately leached into surface and ground waters.
- **Florida** NPS program supports Statewide Agricultural BMP Outreach Teams with a 319 grant. These teams provide guidance to growers on BMP selection and implementation, demonstrate BMP practices, develop training materials, etc.

- States commit 7.3% of their base 319 funding to monitoring/assessment activities, which is critical in developing well-targeted watershed-based plans and subsequently assessing the effectiveness of restoration efforts (installation of BMPs, for example) in NPS-impaired waters (see *Chapter 4: Statewide NPS Programs and Initiatives* for more detailed information about state NPS monitoring activities). For example:

- **Oklahoma** Conservation Commission's (OCC) *Rotating Basin Monitoring Program* (RBMP) is a 319-funded program that supports 9.7 FTEs to implement a statewide NPS monitoring program and in turn leverages significant state and federal dollars that are focused on high-value implementation, leading to the development of NPS Success Stories (see www.epa.gov/nps/success for more details). OCC has fixed monitoring sites at the base of 11-digit HUC watersheds in the state. Each basin is monitored for a two-year period on a five year cycle. In 2010, a total of 138 fixed and 50 probabilistic sites were monitored in Basin Groups 4 and 5. The state indicated that multiple NPS Success Stories have been identified as a result of 319 base-funded ambient monitoring, which has shown where state-funded and USDA-funded conservation practices were responsible for water quality restoration and section 303(d)-delisting. The state's use of 319 funds to credibly evaluate the success of state and USDA-funded programs and projects has increased cooperation between USDA and the Oklahoma Conservation Commission's (OCC) state NPS program, including significant contributions of agricultural program funding to solving NPS problems (see C*hapter 7: Coordination with USDA* for more information).

- Approximately 6.8% of base 319 funding is spent on "other State or Local Staff," including staff in other state/local agencies who work on NPS activities. *Chapter 2: Staffing Summary* provides additional discussion of states that rely on base 319 funding to support staff outside of the agency or division that administers the NPS program. A few examples include:
  - **Texas** State Soil and Water Conservation Board, the state agency responsible for implementing the state's NPS program for agricultural and silvicultural activities, used FY10 base 319 funding to support three Soil and Water Conservation District technicians. These technicians provide technical assistance to livestock operators in developing and implementing water quality management plans. These efforts help promote the utilization of USDA funds in a manner that is targeted towards achieving the mutual interests of the NPS program and USDA in implementing projects and activities that protect water quality.
  - The **Utah** Department of Environmental Quality (UDEQ), which administers the NPS program, has a Memorandum of Understanding with the Utah Department of Agriculture and Food (UDAF) and corresponding yearly contracts lay out responsibilities for UDAF related to devising and implementing NPS measures and controls. In FY10 more than $200,000 was provided to UDAF by UDEQ for support of four FTEs to coordinate and administer the Animal Feeding Operation strategy, conduct statewide information and education programs, integrate the NPS program into other conservation programs of the Utah Conservation Commission and local conservation districts, provide technical assistance, and devise and implement NPS control measures.
  - The **Louisiana** Department of Environmental Quality supported nine watershed coordinators in FY10 using base 319 funds. These coordinators were assigned to work in 10 of the 12 basins in the state. They worked with local stakeholder groups in developing and

implementing watershed implementation plans, identified NPS contributions in targeted watersheds, provided educational outreach to citizens, engaged with stakeholder groups, such as state and federal agencies, local citizen groups, and parish and municipal governments; etc.

- **California** provides $425,000 of base 319 funds annually to pay for staff at the California Coastal Commission to help implement the Coastal Zone Act Reauthorization Amendments management measures, which is responsible for improving water quality across all categories of NPS pollution.
- **Pennsylvania**'s Department of Environmental Protection relied on base 319 funding in 2010 to create a new program to finance NPS projects with Clean Water State Revolving Funds (CWSRF), and support a new staff position within the state's public infrastructure financing authority, PennVEST, which manages these assets. In addition to improving the quantity and quality of NPS projects financed through the CWSRF, an important aspect to the new program is the creation of a NPS subfund to facilitate nutrient trading between point and nonpoint sources, and in particular to encourage trades with agricultural operators. Pennsylvania sees point-nonpoint nutrient trading as a central strategy for implementing the recently finalized Chesapeake Bay TMDL and creating options for renewals of wastewater treatment plant discharge permits (see also feature story in *Chapter 2: Staffing Summary*).

Nationally, states used the remaining FY10 base 319 funds for the following activities:

- 1.8% for developing TMDLs
- 0.3% for TMDL implementation plan development
- 2.2% for watershed-based plan development
- 0.3% for NPS management program plan updates
- 9.8% for indirect/administration costs
- 3.4% for *other* (which includes activities such as interagency cooperation, support for CWSRF program, unspecified contract expenses, etc.)

Performance Partnership Grants (PPGs)

Nationally, 22 states receive part or all of their 319 funds in a PPG. Eight states (AK, AL, MA, ME, NJ, NY, RI, VT) have their full 319 allocation in a PPG, and 14 states (AZ, CO, CT, IL, MI, MN, MO, NE, NH, OR, TX, UT, WI, WY) have partial 319 allocation (typically only base 319 funding) in a PPG. This study found that PPGs can present a challenge in tracking how 319 funds (particularly base) are used. This potential challenge emphasizes the importance of the *Performance Partnership Agreement* (PPA) in providing EPA and the states an opportunity to state clearly and agree, at the appropriate level of detail, on how the state will use the funds to implement program requirements and meet their program milestones per section 319 and to report on program accomplishments pursuant to the applicable reporting requirements of section 319.

Chapter 2: Staffing Summary

As provided in *Chapter 1: Base 319 Funding Summary*, 41.5% of all Federal Fiscal Year 2010 (FY10) base 319 funding was used to support state agency staff. This chapter is focused on documenting in general terms how the 319 funding for staff translates into total full-time equivalents (FTEs) for the NPS program and FTE activities. Most 319-funded state staff are directly involved in activities utilizing both the base and incremental section 319 funds. These activities are discussed in greater detail throughout this report, in Chapters 3-10; therefore, all these chapters must be considered to fully understand the role of 319 funding for state staff. For example, "interagency coordination" is listed below as one of the primary staff activities and detailed information about the importance of these staff efforts is provided in *Chapter 5: Key NPS Partnerships* and *Chapter 7: Coordination with USDA*.

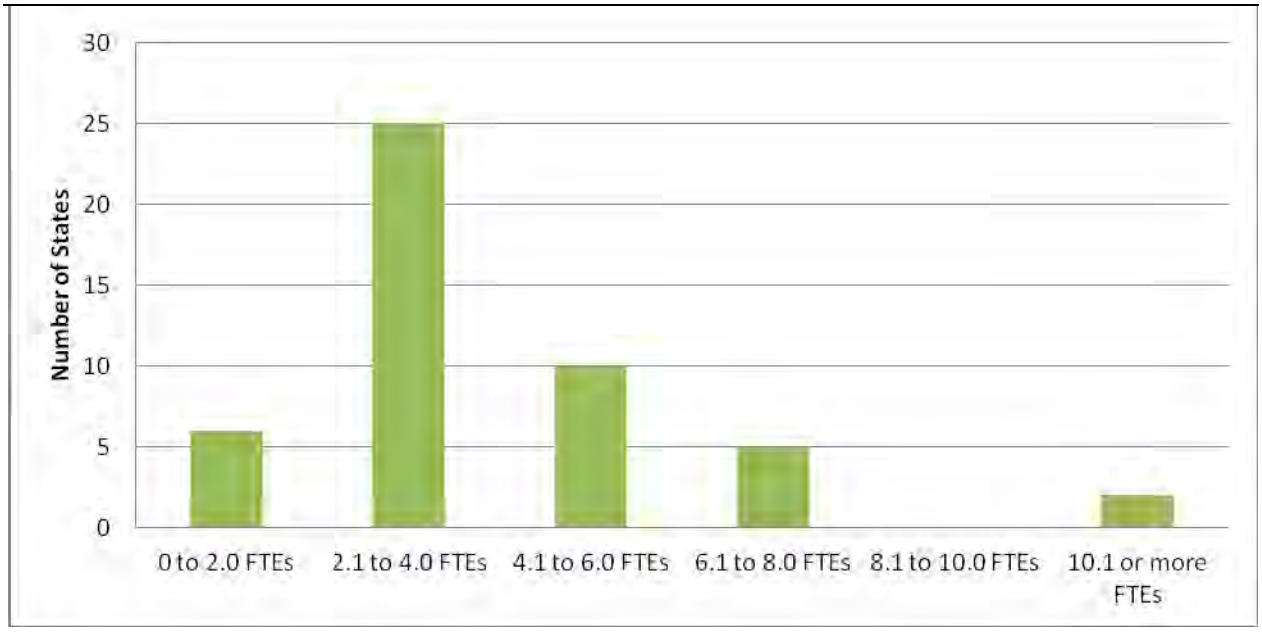
Information summarized in this chapter was obtained through review and evaluation of

- State NPS Program annual reports;
- State NPS Program work plans;
- State reporting in EPA's Grants Reporting and Tracking System (GRTS); and
- Correspondence with EPA regional and state NPS program staff.

State Nonpoint Source Agency Staffing (FY10)

- This study found that among all states and the District of Columbia, section 319 funding supports 14 FTEs, on average, within the state's primary nonpoint source (NPS) program agency (e.g., department of environmental quality, department of natural resources, etc.). Eighteen states support less than 10 FTEs with 319 funds, and nine states support more than 20 FTEs with 319 funds.
- Figure 2-1 compares all states based on the number of FTEs funded in relation to $1 million of section 319 grant funding. Given that the number of staff funded by section 319 varies from state to state, as do state 319 allocations, this graph is based on a calculation for each state of the number of FTE in proportion to each $1 million of the state's section 319 allocation. Note that in FY10, state allocations ranged from $1.2 million (District of Columbia) to $10.3 million (California). As illustrated by the graph in Figure 2-1, the most common distribution of staff and funding is states that fund two to four FTEs per $1 million of total FY10 section 319 funding allocation (e.g., Mississippi's total FY10 allocation was $3.7 million and in FY10 the state funded 11 FTE, or three FTE for each $1 million of 319 funding that the state receives for staff, pass through projects, education and outreach, etc.).

Figure 2-1: Number of FTEs per $1 million of FY10 319 funding



- Among the states with available information, state NPS programs support an average of 4.5 FTEs with 319 non-federal match funds. (While state NPS programs track the funding sources and amounts contributing to the total non-federal 319 match, approximately 20 states, the majority of which include their 319 funds in a Performance Partnership Grants (PPG), did not report the specific number of FTEs supported by these match dollars. For example, one PPG state indicated that more than 80 staff members in the state water quality agency, each of whom is committing approximately 5% of their time to NPS activities, are contributing to the state's 319 match total.)

- As indicated previously (see *Chapter 1: Base 319 Funding Summary*), 319-funded staff are often involved in a number of activities, ranging from total maximum daily load (TMDL) development, to development and implementation of statewide NPS initiatives, to 319 project oversight/administration. Generally, the most common "core program" staff activities described in NPS program work plans include[3]:

    - NPS program administration/implementation (including grant management/ administration)
        - Annual report, NPS Program Plan updates, Grants Reporting and Tracking System (GRTS) reporting, etc.
        - Preparing requests for proposals, reviewing proposals, coordinating the state NPS task force or committee, etc.

[3] This list is intended to provide a sense of how States typically characterize/categorize NPS program staff activities in NPS program work plans, and is not presented in any particular order.

        - Section 319 project oversight, including technical assistance and best management practice (BMP) site visits
            - For example, **New Hampshire** NPS program staff has completed nearly 100 initial or follow-up BMP site visits to date. These site visits allow the program to identify and correct problems with BMP performance. Staff also has developed a Watershed Management Plan tracking program to allow watershed groups and other grantees to better track implementation of plans.
    - Water quality monitoring
        - For example, Kansas Department of Health and Environment (KDHE) uses 319 funding to support KDHE field staff for a targeted watershed monitoring program to monitor water quality for implementation of watershed plans in priority watersheds.
    - Education/outreach activities
    - Developing NPS TMDLs and TMDL implementation plans
        - In many states, 319-funded staff provides support to the states' TMDL program by, for example, linking watershed-based planning effort with TMDL implementation. However, in a few states, base 319 funding provides substantial support for the TMDL program, so much that the state would have little to no staff developing and implementing NPS TMDLs, responding to NPS TMDL lawsuits, etc., without the 319 grant.
    - Watershed-based plan development
    - Interagency coordination
    - Basin-wide NPS coordination (engaging with stakeholders and identifying potential 319 project partners at the basin or watershed level)
        - See *Chapter 4: Statewide NPS Programs and Initiatives* for examples of state approaches to basin-wide planning and implementation
    - Developing and implementing statewide NPS initiatives and state NPS regulatory programs

Additional information on the specific statewide initiatives or programs supported by 319-funded staff is provided in *Chapter 3: State Regulatory Authorities to Control NPS Pollution* and *Chapter 4: Statewide NPS Programs and Initiatives*. See *Chapter 6: Leveraging of State and Federal Funding for State NPS Programs*, *Chapter 7: Coordination with USDA*, and *Chapter 8: Use of Clean Water State Revolving Fund for NPS* for detailed information about the results of 319-funded staff efforts to engage with stakeholders and identify additional state and federal resources for NPS projects. Additional information on interagency coordination is provided in *Chapter 5: Key NPS Partnerships* and *Chapter 7: Coordination with USDA*.

Feature Story: Oregon NPS Staff Build Partnerships for the Long-Term

In Oregon, 319-funded NPS program staff in Oregon's Department of Environmental Quality (ODEQ) play a key role in building partnerships to leverage significant local, State and federal funds (beyond the 319 grant and match) to address NPS priorities. In addition to directing 319 and leveraged funds to NPS priority watersheds throughout the State, ODEQ staff work closely with partner agencies and landowners at the local level to ensure project success.

Coordinating at the State and Federal Level

Through a close partnership between ODEQ and the Oregon Watershed Enhancement Board (OWEB), the State NPS program has leveraged significant State dollars to address water quality issues in NPS priority areas. OWEB grants support watershed assessment, monitoring, technical assistance, watershed action plan development and implementation, education/outreach, and watershed coordinator positions. Between 1999 and 2010, OWEB leveraged $229.3 million from Oregon Lottery funds and $134.1 million from Federal Pacific Coastal Salmon Recovery Funds, US Fish and Wildlife Service, and Salmon License Plate Revenue to distribute 4,800 grants to watershed councils, soil and water conservation districts, and other local organizations to protect and restore streams, rivers, wetlands, and natural areas. In 2010, OWEB provided $12.4 million for 163 projects related to water quality.

OWEB works closely with partner agencies (including ODEQ's NPS Program) to prioritize and distribute OWEB grants. ODEQ 319-funded basin coordinators serve on regional and statewide review teams to rank and recommend OWEB project proposals. Additionally, OWEB and 319 funds are regularly used to meet the other program's project match requirements. This interagency coordination provides OWEB and ODEQ an opportunity to identify shared watershed restoration priorities, and direct leveraged funds to address these priorities.

In 2010, ODEQ entered into a *Conservation Effectiveness Partnership* memorandum of agreement with the U.S. Department of Agriculture (USDA)-Natural Resources Conservation Service and OWEB to monitor, evaluate, and report on the effectiveness of cumulative conservation and restoration actions. Staff from the three agencies identified two pilot basins (Tillamook and Upper Deschutes) that received water quality-related funding from all agencies, and collaborated to evaluate the effectiveness of these multi-agency restoration activities. Findings will be used to better estimate the potential effectiveness of watershed restoration activities (see *Chapter 5: Key NPS Partnerships* for more information).

Coordinating at the Local Level – Tillamook Basin Case Study

In Tillamook Basin, ODEQ staff have achieved success in the field by not only working in their area of focus, but by living there, too. Staff spent several years cultivating relationships with farmers who were initially hesitant to implement 319-funded projects on their property aimed at remediating nonpoint pollution from cattle grazing and riparian degradation. ODEQ developed strong relationships with farmers and has had success in gaining the trust of farmers by highlighting the incentives of water

quality projects to landowners. For example, the installation of solar-powered electric fences and stream-fed nose pumps enables riparian protection to be achieved while improving the landowner's operation.

Pre-319 Restoration Work

Post-319 Restoration Work

By using 319 base funds as a leveraging means, ODEQ and Tillamook Basin watershed councils are able to access other federal, State, and local funding that wouldn't otherwise be available for use. ODEQ has also built unique and necessary partnerships by sharing office space with Oregon Department of Agriculture staff. This work has returned excellent results. Bacteria and temperature monitoring over the last 10 years show decreasing trends and improving water quality as a result of the implementation work. To date, approximately 165 riparian restoration projects have been implemented in the North Coast; equating to the restoration of 200 miles of the 320 miles of stream identified in TMDLs. Since 2000, about $2.6 million of 319 grant money and about $1.8 million in match funds have been expended in Oregon's North Coast Subbasin.

Citizens of Oregon's North Coast Subbasin have repeatedly emphasized the fact that water quality improvements could not have been possible without 319 dollars. According to Tom McDermott of Tillamook Estuaries Partnership, "…the 319 funds have been the backbone of…both the Tillamook Estuaries Parnership and the Nestucca-Nesowin Watershed Council." ODEQ staff and the 319 program play a key role in successful watershed restoration, by building agency partnerships, relationships with local communities, and leveraging local, State, and federal funds.

Other Staff Supported by Nonpoint Source Program (FY10)

In addition to nonpoint source agency staff who manage and implement the NPS "core program" (see above for a list of core program activities), among the states with available information, 22 states (AL, CA, DE, FL, GA, IA, IL, IN, KY, LA, MN, MO, NE, NJ, OH, OK, PA, SC, TX, VA, VT, WV) also support staff in state and local partner agencies. Examples include:

- **Vermont** Department of Environmental Conservation gives an annual grant of incremental 319 funds to Vermont Agency of Agriculture, Food and Markets (AAF&M). The grant supports staff and NPS program activities, such as implementation of the Vermont BMP Cost Share Grant Program (see

the *Leveraging of State and Federal Funding* summary of this report for more information). The involvement of AAF&M improves the partnership opportunities between the Vermont NPS Program and the agricultural community, and USDA and conservation districts in particular.

- **Utah** – In FY10 Utah Supported 4 FTEs in the Department of Agriculture and Food to help with the "core" NPS program. For example, one FTE has been tasked with GRTS data entry and soliciting annual reports for all active grants. See *Chapter 1: Base 319 Funding Summary* for more information. Another FTE has been largely responsible for Utah's education and outreach initiatives (see *Chapter 4: Statewide NPS Programs and Initiatives* for further discussion).

Feature Story: Pennsylvania Creates NPS Subfund of CWSRF for Manure Management of Animal Feeding Operations

Pennsylvania relied on base 319 funds to create and manage a new NPS subfund within its Clean Water State Revolving Fund (CWSRF) program. In 2010, base 319 funds were used to hire a dedicated FTE within the authority that manages this low-interest loan program, PennVEST, to improve the quantity and quality of funded NPS projects. As a result of this use of base funds, the agency that manages the state's CWSRF assets, PennVEST, is now well integrated with the state's NPS program. For the first time ever, SRF funds are supporting agricultural BMPs. More than $14 million of American Recovery and Reinvestment Act (ARRA) funds went toward agricultural BMPs for manure management in 2010, and Pennsylvania is committed to continuing this program after ARRA funds expire.

A primary driver for the creation of this NPS subfund is to facilitate nutrient trading between point and nonpoint sources, and in particular to encourage trades with agricultural operators. Pennsylvania sees point-nonpoint nutrient trading as a central strategy for implementing the recently finalized Chesapeake Bay TMDL and creating options for renewals of wastewater treatment plant discharge permits. PennVEST has conducted at least three nutrient credit auctions to date, and while they have not yet generated much interest in the agricultural community, PennVEST plans to continue to hold auctions on a regular basis and expects the agricultural NPS nutrient credit market to grow once implementation of the Chesapeake Bay TMDL is ratcheted up, as expected (see also *Chapter 8: Use of Clean Water State Revolving Fund for NPS*).

Clean Water Act Section 401 Certification Review

Clean Water Act (CWA) section 401 water quality certification provides states and authorized tribes with an effective tool to help protect water quality, by providing them an opportunity to address the aquatic resource impacts of federally issued permits and licenses. Under section 401, a federal agency cannot issue a permit or license for an activity that may result in a discharge to waters of the U.S. until the state or tribe where the discharge would originate has granted or waived section 401 certification. The central feature of section 401 is the state or tribe's ability to either grant, grant with conditions, deny or waive certification. Many of the activities typically addressed through section 401 certification are point source

permitting under section 402 and dredge-and-fill permitting under section 404. However, some other activities subject to section 401 certification involve nonpoint source pollution.

As part of this study, EPA collected information from state NPS program coordinators regarding their program's participation with the state's section 401 certification program. The extent to which state NPS programs are involved with section 401 certifications varies greatly from state to state. At least 27 out of 50 states and the District of Columbia indicated that NPS program staff are involved in the review of section 401 certifications, either routinely or on an as-needed basis. Among these states, NPS program staff often provide technical assistance, including BMP recommendations (e.g., identifying the need for stream bank stabilization) to mitigate aquatic resource impacts from section 401 water quality certification-required activities.

Among the states whose NPS programs are not involved in section 401 certification, most indicated that this process is completed in another division of the water quality agency, or a state agency other than the agency managing the NPS program.

Chapter 3: State Regulatory Authorities to Control NPS Pollution

While state 319 programs are primarily non-regulatory, there are a modest number of states that possess substantial regulatory authority and actively use those authorities to achieve nonpoint source (NPS) pollution control on a statewide or watershed scale. In addition, other states rely on regulatory approaches to enhance certain portions (e.g., agriculture, forestry, or urban) of their NPS programs. Many of these authorities are administered by a different arm of state government than that of the NPS unit, and often by entirely separate state agencies—in particular for agricultural and forestry authorities. Occasionally, this has resulted in challenges in holistic NPS program administration. Other authorities are managed by the NPS program staff itself and are integrated with the state NPS management programs.

In order to obtain information on existing State regulatory authorities to control NPS pollution, as well as the role of the State NPS program in developing and/or implementing these authorities, EPA relied on the following sources: State NPS management program plans, annual program reports, State NPS program and other State agency websites, the statutes and regulations themselves, and correspondence with EPA regional, State NPS program, and other State agency staff.

Cross-cutting (broad regulatory authorities that cover more than one NPS category)

While many states have broad "bad actor" laws that authorize enforcement actions against activities that generate NPS pollution regardless of its source category (agriculture, urban, forestry, etc.), typically on a reactive complaint-driven basis, a few states proactively control activities across multiple NPS categories through a single law or connected series of regulations. The most progressive of these NPS authorities are described below:

- **California's** *Porter-Cologne Water Quality Control Act* (Porter-Cologne Act) provides broad authorities to regulate NPS pollution statewide. See feature story below, as well as separate descriptions of how this law is applied to control NPS impacts from agricultural, urban, and forestry activities in the sections of this chapter that specifically pertain to each of those categories of NPS.
- **Wisconsin**'s ***"****NR 151" Runoff Management Rules* (*Performance Standards and Prohibitions*) establish runoff performance standards for agricultural and non-agricultural sources. The law creates specific performance standards and prohibitions for agricultural facilities and practices and additional specific performance standards for nonagricultural practices, all of which are intended to achieve water quality standards. Wisconsin relies on performance standards rather than prescriptive practices to allow greater flexibility and more customized approaches to land management. To avoid undue economic burden, agricultural performance standards and prohibitions for existing facilities and practices cannot be required unless at least 70% cost sharing is made available to bring the land into compliance (90% in cases of economic hardship).

Wisconsin has provided very generous funding to help reach this cost share goal broadly across the state.

Feature Story: California's Porter-Cologne Act Regulates NPS Discharges, Provides TMDL Implementation Authority

California's *Porter-Cologne Water Quality Control Act* (Porter-Cologne Act) provides broad authorities to regulate both point and nonpoint sources of pollution. It requires the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs) to control all discharges, including NPS discharges, that either generate or have the potential to generate pollution. The SWRCB adopts statewide policy for water quality control and water quality control plans in addition to regulations that are binding on the RWQCBs. The RWQCBs each govern one of the nine hydrologic regions into which California is divided, adopting regional water quality control plans (basin plans) for their respective regions. The Porter-Cologne Act provides the SWRCB and RWQCBs with permitting authority in the form of three administrative tools to address ongoing and proposed waste discharges: waste discharge requirements (WDRs), waivers of WDRs, and basin plan prohibitions. Hence, all current and proposed NPS discharges must be regulated under WDRs, waivers of WDRs, or a basin plan prohibition, or some combination of these administrative tools. As such, the SWRCB and RWQCBs can, and have, used these administrative tools to regulate discharges associated with NPS land use categories (e.g.; agriculture, forestry, urban, and marinas and recreational boating). Currently, most forestry operations are exempt from Porter-Cologne but instead are subject to regulation under the State's Z'Berg-Nejedly Forest Practices Act, which comprehensively addresses NPS impacts from timber production. A significant share of California's allocation of CWA Section 319 base funds provides the backbone of support for implementing these regulatory authorities for the control of NPS pollution statewide.

Total Maximum Daily Load (TMDL) implementation has become a significant issue in California. The SWRCB has interpreted State law (Porter-Cologne Water Quality Control Act) to require that implementation be addressed when TMDLs are incorporated into Basin Plans (water quality control plans). The Porter-Cologne Act requires each regional board to formulate and adopt water quality control plans for all areas within its region. It also requires that a program of implementation be developed that describes how water quality standards will be attained. TMDLs can be developed as a component of the program of implementation, thus triggering the need to describe the implementation of that TMDL, or alternatively as a water quality standard. When the TMDL is established as a standard, the program of implementation must be designed to implement the TMDL.

- **North Carolina** relies on two significant regulatory authorities for systematically controlling NPS pollution.
    - *State Nutrient Strategy Rules* are state-level regulations designed to restore impaired waters in North Carolina. These comprehensive water quality restoration regulations have been developed for four large waterbodies that collectively comprise about a third of the state (Neuse River, Tar-Pamlico Sound, Falls Lake and Jordan Lake basins). In 1997, the North Carolina Environmental Management Commission (EMC) adopted the state's first mandatory plan to control both point and NPS pollution in the Neuse River basin. The plan, backed by figures in the Neuse River TMDL, called for a mandatory 30% reduction in nitrogen from point, urban, and rural sources by 2003. The agricultural community implemented best management practices (BMPs) that resulted in a 42% decrease in nitrogen loading to the estuary by 2003 (see the Neuse River Basin NPS Success Story for more details: http://water.epa.gov/polwaste/nps/success319/nc_neu.cfm). The state's NPS program spends a significant amount of time developing these nutrient strategies, coordinating implementation with the Natural Resources Conservation Service (NRCS), the state's Cooperative Extension Service, and other partners; and using 319 funds to support nutrient strategy development.
    - North Carolina's *Drinking Water Reservoir Protection Act* (2005) requires the development of water supply reservoir protections and further authorizes NPS-related rule development. Under the Act, the state's Environmental Management Commission is required to: (1) study water quality in drinking water reservoirs to determine whether the reservoirs meet current water quality standards, (2) identify any nutrient control criteria necessary to prevent excess nutrient loading in drinking water reservoirs, (3) restrict additional nutrient loading to drinking water reservoirs under certain circumstances, and (4) develop and implement nutrient management strategies for specific drinking water reservoirs.
- **Virginia** established *Chesapeake Bay Tributary Strategies* to comply with the multi-state Chesapeake 2000 Agreement (with EPA) and Virginia Statute by establishing nutrient and sediment reduction goals for the Potomac, Rappahannock, York, and James River Basins, and the portion of the Eastern Shore that drains to the Chesapeake Bay. These "trib strategies" are integrated with the state's NPS program to reduce nutrient and sediment loads for each of Virginia's large river basins within the Chesapeake Bay, with load reductions tracked annually. Additionally, Virginia has its *Water Quality Monitoring, Information and Restoration Act* (WQMIRA) of 1997 (§ 62.1-44.19:7), which requires the state to develop TMDL Implementation Plans. The Act states that "The Board shall develop and implement a plan to achieve fully supporting status for impaired waters, except when the impairment is established as naturally occurring. The plan shall include the date of expected achievement of water quality objectives, measurable goals, the corrective actions necessary, and the associated costs, benefits, and

environmental impact of addressing impairment and the expeditious development and implementation of total maximum daily loads…"

Some states, such as Florida, Maryland, Pennsylvania, Vermont and Washington have somewhat comprehensive sets of separate regulatory authorities that collectively cut across multiple NPS categories. Details on these programs are provided in the NPS category-specific sections below.

Agriculture

At least 23 states (AR, CA, DE, IA, ID, KS, KY, MD, ME, MN, NC, NE, NJ, NY, OH, OK, OR, PA, TX, VA, VT, WA, WI) have state statutes that regulate agricultural activities, either for animals (excluding regulatory programs for concentrated animal feeding operations (CAFOs)[4]), row crops, or for both. For most of these states, nutrient management is a major focus. Examples of these state laws include:

- **California** has several significant agricultural programs that operate under the general authority of its sweeping *Porter-Cologne Act* (see Feature Story above). More than 25,000 agricultural producers are regulated under the state's Irrigated Lands Program. Under this program, agricultural producers that generate runoff (generally up to the 25-year storm event) with sediment, nutrients, or other pollutants ultimately destined for state waters, whether from agricultural tile drains, piping or ditches, or runoff from one parcel to a neighbor's, must obtain coverage under an Individual Discharger Permit or a Coalition Group Conditional Waiver, which generally requires the discharger to: implement BMPs to protect water quality and comply with water quality standards; conduct monitoring or join a Coalition Group that conducts monitoring; prevent pollution of surface water; avoid nuisance conditions, such as odor; and pay applicable fees. California has also begun to apply this approach to grazing operations and regulatory programs for grazing exist in two RWQCBs, with more coming onboard. To be in compliance with watershed-specific WDRs for grazing operations, operators must complete a Range Water Quality Plan that describes BMPs to minimize loadings of sediment, pathogens and nutrients, and develop implementation schedules. More information is provided at www.waterboards.ca.gov/water_issues/programs/nps/encyclopedia/1e_graz.shtml. Since much grazing occurs on California lands managed by Bureau of Land Management (BLM), and the U.S. Forest Service (USFS), both the BLM and the USFS manage grazing allotments in accordance with a State Water Resources Control Board-certified water quality management plan. The plan sets forth an iterative process that governs the implementation, monitoring and revision (as needed) of BMPs used to control NPS pollution. If BMPs are not effective, even after revision, the BLM and the USFS can choose to mitigate the water quality impact, seek revised state water quality standards and/or cease the activity. With regard to waste from animal operations other than

[4] CAFOs are included in the CWA definition of point source (33 USC 1362(14)). Therefore, state CAFO programs are not part of this NPS program study. Federal regulations defining which animal operations are CAFOs are found at 40 CFR 122.23(b).

grazing, California designates Combined Animal Facilities (CAFs), which can be either CAFOs or AFOs, and has required that EPA's Coastal Zone Act Reauthorization Amendments (CZARA) management measures are met as minimum statewide standards. Specifically, facility wastewater and the runoff from CAFs that is caused by storms up to and including a 25-year, 24-hour frequency storm should be stored in reinforced structures (clay-lined or concrete). (A CAF is defined in California regulations as "any place where cattle, calves, sheep, swine, horses, mules, goats, fowl, or other domestic animals are corralled, penned, tethered, or otherwise enclosed or held and where feeding is by means other than grazing," and are not defined with any particular size thresholds.) Finally, all agricultural operations must develop, implement and update nutrient management plans. The nine RWQCBs may adopt more stringent standards than the state minimum standards (which are consistent with the CZARA management measures), and several have, particularly for dairy operations.

- **Wisconsin** –The state's *"NR 151" Runoff Management Rules* (2002, updated 2011) include the following Agricultural Performance Standards and Prohibitions: (1) Tillage setback: A setback of at least 5 feet and up to 20 feet from a waterbody or top of a stream bank; (2) Phosphorus Index (PI) limits to restrict the amount of phosphorus that may run off croplands (with PI restrictions to take effect on pasture lands on July 1, 2012); (3) Process wastewater handling to prohibit significant discharge of process wastewater from milk houses and feedlots; (4) Meeting TMDLs—this standard requires crop and livestock producers to reduce discharges if necessary to meet an approved TMDL load allocation; (5) Sheet, rill and wind erosion—all cropped fields shall meet the "Tolerable Soil Erosion Rate" established for that soil (with applicability for pasture lands starting in 2012); (6) Manure storage facilities—all new, altered, or abandoned manure storage facilities shall be constructed, maintained or abandoned in accordance with accepted standards; (7) Clean water diversions; (8) Nutrient Management Plan implementation required of all operations applying nutrients to agricultural fields; and (9) Manure management prohibitions—no overflow of manure storage facilities, no unconfined manure piles in water quality management areas, no direct runoff from feedlots or stored manure into state waters, and restricted livestock access to waters of the state where vegetative ground cover cannot be sustained. Compliance with the performance standards and prohibitions is not required for existing facilities and practices unless cost sharing is offered. At least 70% of the costs that qualify for cost sharing must be made available to an operation in order to require that a facility correct performance standard violations (90% in economic hardship cases). Fortunately, Wisconsin has consistently provided significant state cost share funds to agricultural operations in its NPS priority watersheds, as has NRCS through its Farm bill programs. For more information, see *Chapter 7: Coordination with USDA*, and *Chapter 6: Leveraging of State and Federal Funding for State NPS Programs*. There is no cost-sharing exemption for new operations, which are required to fully comply with all performance standards and prohibitions.

Feature Story: Maryland's Water Quality Improvement Act and Other NPS Regulations for Agriculture

In 1998 the Maryland General Assembly passed the *Water Quality Improvement Act*, landmark legislation designed to protect the health of Maryland's citizens and its waterways by establishing both short and long-term strategies for reducing nutrient levels in streams, rivers and Chesapeake Bay. The most significant feature of the *Water Quality Improvement Act* is a provision requiring all Maryland farmers grossing $2,500 or more annually or raising 8,000 pounds or more of live animal weight to run their operations using a nutrient management plan that addresses both nitrogen and phosphorus inputs. This far-reaching legislation also affects other interests, including those who apply nutrients, poultry growers and companies, and Maryland-certified nutrient management consultants, who must write nutrient management plans based on both soil nitrogen and phosphorus. Updated nutrient management plans are required every three years. The law also applies to commercial lawn care companies, landscapers, golf courses, and certain others. Annual implementation reports must be filed with the state. The Nutrient Management Program oversees a licensing and certification program for consultants, compliance activities and education and training programs necessary to implement the law. The Act includes a number of deadlines and requirements, such as filing of annual implementation reports, but it also offers many new incentives aimed at helping farmers comply. To learn more about Maryland's Nutrient Management regulations, see www.mda.state.md.us/resource_conservation/nutrient_management/.

Additionally, Maryland's Manure Transport Program, which was established by *Water Quality Improvement Act*, helps livestock farmers cover the costs of transporting excess manure off their farms to other farms or facilities that can use the product safely. Cost share grants for up to $20/ton are available through Maryland Agricultural Water Quality Cost Share Program. This mandated initiative is further described in *Chapter 4: Statewide NPS Programs and Initiatives*. To learn more about Maryland's manure transport program, see www.mda.state.md.us/pdf/manuretransport.pdf.

In addition to requirements and programs established under the *Water Quality Improvement Act*, Maryland has supplemental authorities for regulating agricultural activities. Maryland's *General Discharge Permit for Animal Feeding Operations*, 2009-2014, goes somewhat beyond the federal CAFO regulations. The state designates Maryland Animal Feeding Operations (MAFOs) as distinctly regulated AFOs that do not meet the criteria for CAFO regulations. MAFOs are non-CAFOs that are designated as "large AFOs" and may also include "medium AFOs", as defined by the regulations (see www.mde.state.md.us/assets/document/CAFO_AFO_General_Permit_Final_Determination.pdf). AFOs of a certain size not otherwise categorized as a CAFO or MAFO must submit a Certificate of Conformance. Every MAFO in Maryland is required to obtain a state discharge permit under state permitting authority even though they are not expected to discharge directly to state waters. MAFOs must develop and implement Nutrient Management Plans, as well as Soil Conservation and Water Quality Plans with very specific requirements to implement a suite of standard NRCS practices, and are regulated to minimize the impacts to groundwater.

Maryland's *Agricultural Sediment Pollution Control Act* (ASPCA) prohibits agricultural operations from adding, introducing, leaking, spilling, or otherwise emitting soil or sediment into waters of the state, or placing soil or sediment in a condition or location where it is likely to be washed into waters of the state. The MDE is responsible for regulating the ASPCA with the Maryland Department of Agriculture approval. Enforcement is complaint-driven and violators are not subject to penalties if they are using an approved soil conservation and water quality plan (SCWQP) or comply with an order for a corrective action water quality plan.

Finally, Maryland's *Critical Areas Law* of 1984 (updated 2008) mandates that local governments pass ordinances approved by the state's Critical Areas Commission to minimize water quality impacts from conveyances or NPS runoff from activities and development within 1000 feet of mean high tide. Soil conservation plans are required for agricultural lands to minimize impacts to water quality, protect habitat, and provide protection from shoreline erosion.

- **Pennsylvania** has several agricultural regulations of note for minimizing NPS pollution.
    - Pennsylvania's *Nutrient Management Act* (1993, updated 2005) requires development and implementation of nutrient management plans for high density AFOs with eight or more Animal Units (8000 pounds or more). High density is defined as at least 2000 pounds of animals per acre. Requirements for these AFOs include: agricultural erosion sediment control plans and restrictions on land application of manure near waterbodies through either a 100 foot setback or a 35 foot wide vegetated buffer.
    - Pennsylvania has *Agricultural Erosion and Sediment Control Requirements* (section 102.4; most recently amended Aug. 2010) under the state's Clean Streams Law. Written erosion and sediment control plans are required for agricultural plowing, tilling activities or concentrated animal operations that disturb 5,000 square feet or more of land. These plans must include implementation schedules and be implemented. Plans must include an inspection and maintenance component. For areas less than 5000 square feet, implementation and maintenance of erosion and sediment control BMPs are required to minimize erosion and sedimentation, even though written plans are not required. (These regulations also apply to any earth disturbance activity, including land development and road, highway, and bridge construction.)
- **Kentucky's** *Agriculture Water Quality Act* (1994) requires all landowners with 10 or more acres that are being used for agricultural (or silviculture) operations to develop and implement a water quality plan based upon guidance from the Kentucky Agriculture Water Quality Plan, a document that provide BMP manuals in six different areas: silviculture, pesticides and fertilizers, farmstead, crops, livestock, and streams and other waters.
- **Delaware's** *Nutrient Management Law* (1999, updated 2001) requires a Nutrient Management Plan (NMP) or Animal Waste Management (AWMP) for anyone who manages more than 10 acres of land on which nutrients are applied (including golf course operators and lawn care providers) and/or operates an animal operation in excess of 8,000 pounds of live animals. These

plans must be developed by a state-certified nutrient management specialist and address the amount, placement, timing and application method of nutrients. The law is overseen by Delaware's Nutrient Management Commission. Delaware also has a highly successful Nutrient Relocation Program that is supported with base 319 funds, which is further described in *Chapter 4: Statewide NPS Programs and Initiatives*. The purpose of the program is to remove excess animal waste (with excess nutrients) from high priority NPS watersheds and transfer them to farms in other watersheds that need the nutrients and will properly apply them.

Feature Story: Vermont Agency of Agriculture Food and Markets (AAF&M)

Vermont's Agency of Agriculture Food and Markets (AAF&M) implements programs which address management of discharges from agricultural operations. AAF&M and the Department of Environmental Conservation have a Memorandum of Understanding (MOU) that lays out the roles and responsibilities of each agency with respect to implementation of these programs.

State law requires a set of Accepted Agricultural Practices (AAPs) for implementation by all farms in Vermont. AAPs are statewide restrictions designed to reduce NPS pollutant discharges through implementation of improved farming techniques rather than investments in structures and equipment. The law requires that these practices must be technically feasible as well as cost effective for farmers to implement without governmental financial assistance. The AAP rules require a ten foot vegetated buffer along surface water, prohibit winter manure spreading (except in approved emergencies), and address livestock access to streams and mortality disposal. AAPs include these practices among others: erosion and sediment control, animal waste management, fertilizer management, and pesticide management. Accepted AAPs and BMPs are two different levels of practices to reduce agricultural NPS pollution. AAPs are distinguished from BMPs, which are more restrictive and prescribed on a site-specific basis.

State law established the Medium Farm Operation (MFO) permitting program, whereby all medium-sized animal feeding operations are required to obtain coverage under a state general permit. All dairies with 200-699 mature animals, whether milking or dry, qualify as a MFO. Other common MFOs include beef operations (300-999 cattle or cow/calf pairs), horse operations (150-499 horses), turkey operations (16,500-54,999 turkeys), and egg facilities (25,000-81,999 laying hens without liquid manure handling system). The MFO program enables medium sized farms to seek coverage under a single Vermont state General Permit. The General Permit prohibits discharges of wastes from a farm's production area to waters of the state and requires manure, compost, and other wastes to be land applied according to a nutrient management plan.

- **Virginia's** *Pollution Abatement Permit Program* (AFO Permitting) goes beyond CWA permitting requirements for CAFOs since it applies to AFOs that do not discharge, however, no permit is required if there are fewer than 200 dairy cattle or 20,000 chickens or 11,000 turkeys. Nutrient management plans (NMPs) are required for all permitted AFOs. NMPs must be developed by a

certified NM Planner and approved by the Virginia Department of Conservation and Recreation. Additionally, Virginia's Agricultural Stewardship Act (ASA) of 1996 establishes a complaint-driven system that requires resolution of water quality problems by giving farmers the opportunity to correct water quality problem voluntarily before any enforcement action is taken. The local Soil and Water Conservation District is contacted and given the opportunity to investigate. After a complaint is investigated, the Commissioner's Office reviews the findings and determines if the complaint is founded and requires further action under the ASA. If so, the farmer is required to develop a plan to correct the problem and then complete plan implementation within eighteen months. In 2009, 51 official complaints were processed as a result of the ASA process.

- **Oklahoma** has two poultry waste management regulations:
    - *Registered Poultry Feeding Operations Act* – every poultry producer that produces more than 10 tons of poultry waste a year is required to: register the poultry feeding operation annually; obtain an animal waste management plan (AWMP); keep reports and records of litter application, sales, soil/litter analysis; follow NRCS Waste Utilization Standards; attend waste management and annual update trainings.
    - *Poultry Waste Applicators Act* – Waste applicators that apply more than 10 tons of poultry waste to agricultural lands a year are required to: obtain licenses from the Oklahoma Department of Agriculture, Food & Forestry (ODAFF) to apply litter; obtain soil/litter tests; keep records of litter applied and where obtained; follow NRCS Waste Utilization Standards; and attend waste management and annual update trainings.
    - The Oklahoma NPS program is currently developing a 319 funded work plan revision to help ODAFF manage poultry management data in a GIS database (beginning in one priority watershed). The data will then be incorporated into an updated watershed model to help evaluate the progress toward TMDL goals, and finally, will allow updates of the currently approved watershed-based plan.

- **Washington's** *Dairy Nutrient Management Act* is administered by WA State Department of Agriculture (WSDA) in conformance with an MOU with Washington Department of Ecology (DOE - State NPS agency). The Act required all licensed cow dairies (pursuant to Chapter 15.36 RCW - http://apps.leg.wa.gov/RCW/default.aspx?cite=15.36) to develop and implement nutrient management plans, register these plans with WSDA, and participate in a routine inspection of the cow dairy (conducted by WSDA Nutrient Management inspectors) at least every 22 months. Dairy nutrient management plans were a key part of the restoration success in the Willapa and Chehalis River Basins, where DOE's NPS program staff produced and implemented TMDLs that informed dairies of the management actions required to eliminate pollution from their properties. The implementation plans targeted areas needing BMPs, some of which were funded with 319 funds. These Success Stories are responsible for restoring 78 impaired water segments in the 2,660 square mile Chehalis basin and 8 impaired water segments in the 260 square mile Willapa basin, and are documented further on EPA's Success Stories website at http://water.epa.gov/polwaste/nps/success319/wa_chehalis.cfm and http://water.epa.gov/polwaste/nps/success319/wa_willapa.cfm

- **Maine's** *Nutrient Management Law* (1998) requires a certified nutrient management plan (NMP) for any farm that meets the following criteria: (1) confines and feeds 50 or more animal units at any one time; (2) utilizes more than 100 tons of manure per year not generated on that farm; (3) is the subject of a verified complaint of improper manure handling; or (4) stores or utilizes regulated residuals. The law also prohibits manure spreading from Dec. 1 to Mar. 15 (unless the farmer seeks and receives a variance). The Maine Dept of Agriculture (MDOA), the lead state agency for agricultural NPS issues, administers the law and regulations. MDOA consults with the Maine Department of Environmental Protection regarding new issues, BMPs, and problem solving at specific sites.
- **North Carolina's** *"waste not discharged to surface water" rules* were amended on September 1, 2006 and contain rules aimed at protecting water quality from potential agricultural pollutant sources (see below).
    - *Section .1300* – Animal Waste Management Operations with more than 250 swine, 100 confined cattle, 30,000 poultry with a liquid waste management system, 75 horses, or 1,000 must be permitted. Of the approximately 2,400 permitted animal operations in the state, half are large CAFOs and half are AFOs that do not meet the large CAFO threshold (dry litter poultry operations are exempt). The NC NPS Program uses 319 funds to support three staff in the Nondischarge Permitting and Enforcement Section of the Division of Water Quality (DWQ) who review and issue permits to nondischarging AFOs. Permittees are required to submit an animal waste management plan (AWMP) that:
        - Is approved by a technical specialist designated by the Division of Water Quality, who must also certify that the BMPs in the plan will achieve the required standards;
        - Meets NRCS standards, or standard of practices adopted by North Carolina's Soil and Water Conservation Commission;
        - New and expanded animal waste treatment systems such as lagoons and waste storage structures, as well as animal feedlots that lack vegetative cover, shall be located at least 100 feet from a perennial stream or perennial water;
        - The animal waste shall not be applied to croplands at greater than acceptable agronomic rates.
    - *Section .1400* – Manure Haulers (any person who accepts or purchases animal waste and land applies the animal waste on land not covered by the generator's permit) are required to: (1) apply manure at no greater than acceptable agronomic rates, and (2) maintain a setback of at least 25 feet from a perennial stream or perennial waterbody during land application.
- **Oregon's** *Agricultural Water Quality Management Act* (ORS 568.909) gives the Oregon Department of Agriculture (ODA) authority to establish Agricultural Water Quality Management Plans (AgWQM Area Plans) and adopt rules regulating agricultural practices that contribute to water quality problems within the planning area if: (1) the state's Environmental Quality Commission has determined that a TMDL is necessary for a waterbody; (2) Oregon DEQ

establishes a groundwater management area; or (3) an agricultural water quality management plan is otherwise required by state or federal law. Pursuant to rules adopted under this section, the ODA may require any landowner whose land is located within an area subject to an AgWQM Area Plan to perform those actions on the landowner's land necessary to prevent and control water pollution from agricultural activities and soil erosion. These actions may include: construction or maintenance of any works or facilities; agricultural or cropping practices; or any other measure or avoidance necessary for the prevention or control of water pollution of the waters of the state. Landowners are provided flexibility of selecting BMPs to implement the area plans and rules. 319-funded basin coordinators review and provide input in revision of AgWQM Area Plans and associated rules.

- **Nebraska** Department of Environmental Quality (NDEQ) administers the Title 130 Livestock Waste Control Regulations, which cover CAFO National Pollutant Discharge Elimination System (NPDES) permitting and state construction and operation requirements for CAFOs and non-CAFOs that have, for example, 200 or more dairy cows, 300 or more beef cattle, 750 or more swine, or 37,500 dry litter chickens. Smaller operations are subject to the state construction and operation requirements if the animal feeding operation has discharged pollutants to waters of the state, or NDEQ has determined that such a discharge is more likely than not to occur. Requirements of this program include mandatory inspections prior to operation, land application of manure at agronomic rates and a prohibition on allowing animals to have direct contact with waters of the state. The inspection program also includes compliance inspections, which generate information relied on at NDEQ to determine the effectiveness of the BMPs. Eligible AFOs have the option of obtaining a conditional exemption letter instead of being subject to the construction and operating permit. The conditional exemption letter traditionally identifies BMPs that the operation can do to address a problem without going through the permitting process. If through future compliance inspections NDEQ finds that the BMPs are not working, they will require the operation to proceed through the permitting process. In 2010, NDEQ issued 10 construction and operating permits to non-CAFOs, requiring the operation to construct livestock waste control facilities (LWCF) or approving the operation of LWCFs that were completed and previously approved under a separate permit. In addition, NDEQ issued 32 conditional exemption letters to non-CAFO operations.
- **Kansas** regulates AFOs under the *Livestock Waste Management Law* and regulations. AFOs with 300 animal units or more and smaller operations that have potential for significant pollution are subject to the state's permitting and registration process. There are approximately 1500 state permitted facilities (non-NPDES) and another approximately 1600 certified facilities (small facilities below the state permitting threshold). These facilities are required to comply with state requirements and standards to protect water quality. Additional information about this program is available at www.kdheks.gov/feedlots.
- **Iowa** – Iowa has a manure application setback requirement that applies to anyone applying manure on land in the state. A 200 foot setback or 50 foot vegetated buffer is required from

"designated areas", i.e., "a known sinkhole or a cistern, abandoned well, unplugged agricultural drainage well, agricultural drainage well surface inlet, drinking water well, lake, designated wetland or water source." An 800 foot setback is required from a high quality water resource. A recent winter spreading law in Iowa prohibits the application of liquid manure on snow-covered ground from December 21 to April 1 and on frozen ground from February 1 to April 1, except under certain emergency situations. The Iowa Department of Natural Resources is required to submit an annual report to the legislature of all allowed emergency applications, including estimates of the water quality impact from the emergency applications and any efforts to ameliorate the impacts.

- **Ohio** addresses NPS impacts from agricultural activities in two sets of rules.
    - *Agricultural Pollution Abatement Rules* (OAC 1501:15-5) mandate that overflow and discharge to state waters from AFOs shall be prevented by implementing BMPs. The rules require that: seepage into state waters from AFOs be prevented through design, construction, operation and maintenance; AFOs minimize pollution from land application by implementing BMPs; and impacts of animal mortality composting be controlled by implementing BMPs. While the rules aim to prevent manure runoff, protect stream channels from AFOs, and maintain vegetative cover.
    - In 2010, Ohio also passed a *Distressed Watershed Rule* (OAC 1501:15-5-19 and -20) that allows the chief of the Ohio Department of Natural Resources (Division of Soil and Water Resources) to designate one or more watersheds-in-distress, and thus establish "requirements for the storage, handling and land application of manure; and/or the control of the erosion of sediment…; and associated nutrient management plans for land and operations within the designated watershed boundaries." Within designated watersheds, all livestock operations that generate 350 tons of manure/year or more (roughly equal to facilities housing 15 dairy cows or 25 steers and larger) or 100,000 gallons of manure/year or more are required to implement nutrient management plans. Also, land application on croplands or elsewhere between Dec. 15 and March 1 is generally prohibited. Outside this time frame, land application of manure on frozen ground is prohibited unless it is incorporated or injected. Currently, only the Grand Lake Saint Marys watershed has been designated as a distressed watershed.
- **Arkansas** adopted three nutrient management laws in 2003 to ensure that within nutrient sensitive watersheds, all nutrients (nitrogen and phosphorus) are applied by certified applicators and according to nutrient management plans (NMPs) developed by certified plan writers. NPS staff in the Arkansas Natural Resources Commission (ANRC) advised other agency staff during the development of these regulations, and one 319-funded full-time equivalent works with Conservation District staff to implement these nutrient management programs:
    - *Title 19* establishes the *Arkansas Poultry Feeding Operations Registration Program* to locate litter sources and estimate the amount of litter produced within the state. Poultry feeding operations where more than 2,500 poultry are housed or confined on any given day are required to register annually with ANRC.

- *Title 20* requires NMPs to be written by planners that have been certified by the state.
- *Title 21* requires that nutrients applied within specially designated Nutrient Surplus Watersheds (approximately 10% of the state) be applied by state-certified nutrient applicators.
- *Title 22* establishes the *Arkansas Soil Nutrient and Poultry Litter Application and Management Program*. It states that no person shall apply nutrients to soils or associated crops within the designated Nutrient Surplus Watersheds unless nutrients are applied in compliance with a NMP or a poultry litter management plan prepared by a certified nutrient planner or at the protective rate for commercial fertilizers set forth in section 2202.5 of Title 22. This title applies to both agricultural and residential land applications.
- Additionally, the *Surplus Poultry Litter Removal Incentives Cost Share Program* (Title 11) was developed, which is intended to provide financial incentives to encourage the removal of excess poultry litter from the state's nutrient surplus areas. The ANRC may provide cost share from the state's Water Development Fund of up to $15/ton for the purchase and transportation of surplus litter from any nutrient surplus area to be used or disposed of within Arkansas but outside designated nutrient surplus areas and outside specified watersheds.

- **Texas** – In 2001, the *Texas Water Code* was amended to require all persons owning or operating a poultry facility (of any size) to implement and maintain a water quality management plan (WQMP) that is certified by Texas State Soil and Water Conservation Board (TSSWCB). This regulation applies to both existing and new poultry farms. A poultry facility's failure to comply with the WQMP requirements could result in loss of WQMP certification, penalties, and requirement to obtain permit coverage from TCEQ.
- **New York's** *State Pollutant Discharge Elimination System Environmental Conservation Law General Permit (ECL General Permit)* requires all large CAFOs and medium-sized AFOs that do not discharge or propose to discharge to seek state permit coverage. An owner or operator may apply for eligibility to obtain coverage under this ECL General Permit by submitting a Notice of Intent NOI and either a *Comprehensive Nutrient Management Plan Certification* for a medium-sized AFO or an *Annual Nutrient Management Plan* submittal for a large CAFO.

Riparian Areas, Shoreland Protection, Wetlands and Hydromodification

As discussed in the Introduction of this report, hydromodification and habitat modification combined account for the second largest number of river and stream impairments nationwide, second only to agriculture. Subcategories of NPS activities under hydromodification and habitat modification include, but are not limited to: channelization and channel modification, dams, streambank and shoreline erosion, prevention of damage to wetlands that would cause NPS pollution and riparian areas protection. At least ten states (FL, MA, MD, ME, MN, MT, NH, NJ, VA, WI) have statutory or regulatory authorities to protect riparian areas, shores and/or wetlands from NPS pollution.

- **New Jersey** – The state's 2004 *Stormwater Management Rules* require 300 foot buffers along approximately 6,000 stream miles. The buffer, known as a "special water resource protection area," excludes "significant new development" (that disturbs one acre or more or increases imperviousness by at least a quarter of an acre) within 300 feet from the top of each stream bank for New Jersey's highest quality waters and their tributaries. An infill provision, consistent with New Jersey's previous smart growth commitments, allows for this buffer to be reduced to 150 feet in previously developed areas. Streams and waterbodies are designated for this buffer protection if they lie in critical drinking water supply watersheds or ecologically sensitive areas. New Jersey requires a 50 foot setback from development everywhere else in the state.
- **Virginia's** *Chesapeake Bay Preservation Act* (1988, regulations finalized in 1991) established a cooperative program between state and local governments aimed at reducing NPS pollution. Within Tidewater localities (84 in all), local Chesapeake Bay Preservation Ordinances are required to comply with minimum state standards. The local ordinance must meet state minimum requirements for controls on new development and existing development, and septic tanks must be pumped-out every five years. Agricultural lands shall have Soil and Water Conservation Plans. Shoreline and streambank erosion protections are required. Localities outside tidewaters may participate; to date, only one (Loudoun County) is considering it.
- **New Hampshire** – The *Comprehensive Shoreland Protection Act* requires a state permit for most new construction, excavation and filling activities with the "protected shoreland" (i.e., 250 feet from reference line). Permit restrictions address the amount of impervious surface, fertilizer use, septic system setbacks and ground cover. This is a key program in New Hampshire for implementing state water quality goals through limitations on the water quality impacts of shoreland development.
- **Florida's** *Joint Coastal Permit* (JCP) consolidated processing of applications for coastal construction permits, environmental resource permits, wetland resource permits (in the NW District/Panhandle), and sovereign submerged lands authorizations. The JCP, managed by the Florida Department of Environmental Protection's Bureau of Beaches and Coastal Systems, is required for activities that meet the following criteria: (1) located on Florida's natural sandy beaches facing the Atlantic Ocean, Gulf of Mexico, the Straits of Florida or associated inlets; (2) activities that extend seaward of the mean high water line; (3) activities that extend into

sovereign submerged lands; and (4) activities that are likely to affect the distribution of sand along the beach.

- **Maine** has a *Shoreland Zoning Act* that regulates land use activities within 250 feet of rivers, wetlands, lakes, the ocean, and within 75 feet of certain streams. The law protects water quality, limits erosion, and conserves wildlife and vegetation by restricting timber harvesting and urban development from these zones. Setbacks are also established for new parking lots, roads and driveways. New legislation in 2008 created a requirement that by 2015 any earth-moving activities in shoreland zones be overseen by contractors certified by the Maine Department of Environmental Protection (DEP) in erosion and sedimentation control practices. (In order to reduce erosion and sediment at smaller unregulated construction sites, Maine DEP NPS program created the Voluntary Contractor Certification Program in 2001, which is administered by the 319-funded NPS training and Resource Center at Maine DEP.)
- **Wisconsin** has *Shoreland Development Rules (NR 115).* Counties must adopt ordinances that include zoning regulations for shoreland−wetland zoning districts. Minimum state standards include: new homes must be set back 75 feet from the water; existing property owners wishing to expand their impervious footprint must mitigate the impacts, with options for adding no-mow buffers along the shoreline, installing rain-gardens to absorb storm runoff, or re-planting native vegetation near the shoreline. New agricultural tile drains or other agricultural drainage modifications within the shoreland-wetland zoning districts are not allowed. A new standard caps the total amount of impervious surfaces allowed on properties within 300 feet of lakes or rivers for new and redeveloped properties.
- **Minnesota** established *Shoreland Management Rules* in 1970, and has updated them since then. The rules provide limits to grading and filling and vegetation alterations in nearshore areas (at a minimum within 1,000 feet of a lake and 300 feet of a public watercourse). Impermeable surfaces are limited to 25% of lot coverage. Local governments must adopt ordinances with land use controls to provide for the orderly development and protection of Minnesota's shorelands (both rivers and lakes). Farms must provide a setback of 50 feet from the shores of state waters. Timber harvests within shorelands must be protective of water quality and require BMPs. The standards emphasize the importance of using existing natural drainages, wetlands, and vegetated soil surfaces to convey, store, filter, and retain stormwater runoff.
- **Maryland** passed a *Critical Areas Act* in 1984 (and updated in 2008), which mandates that local governments pass ordinances approved by Maryland's Critical Areas Commission to minimize water quality impacts from conveyances or NPS runoff from activities and development within 1000 feet of mean high tide. Soil conservation plans are required for agricultural lands. Local ordinances must include land use policies that minimize impacts to water quality and provide habitat protection as well as protection from shoreline erosion.
- **Massachusetts –** The *Rivers Protection Act* protects 200 feet of riverfront area by minimizing development along shorelines, which reduces development impacts to habitat and provides a buffer for overland runoff. Either the Department of Environmental Protection or the local

conservation commission reviews projects to ensure compliance with the Rivers Protection Act and the *Wetlands Protection Act*. Implementation of this law protects riparian areas and water quality by restricting clearing of riparian buffers and installation of impervious surface.

- **Montana** – See discussion of *Streamside Management Zone Law* above.

Forestry

At least 20 states (AK, CA, CO, FL, ID, KY, MD, ME, MN, MT, NC, NH, OK, OR, TX, VA, VT, WA, WI, WV) provide regulations or actively enforced policies to control runoff from forest harvesting operations through a State Forest Practices Act or similar rule that outlines best management practice (BMP) compliance requirements, including management of stormwater runoff from forest roads. Many state NPS programs coordinate with the State Forestry Commission or state forestry agency to implement a statewide silvicultural NPS program, which often includes BMP compliance monitoring. Examples of state laws include:

- **Washington** has one of the most comprehensive forestry programs for private and state forest lands in the nation. Timber activities are regulated under the *State Forest Practices Act* (Chapter 76.09 RCW) and by the rules established by the Washington Forest Practices Board (the Board) that are authorized under the Act. The *Forest Practices Act* applies to all non-federal and non-tribal forestland in Washington. The forest practices rules require the maintenance and restoration of aquatic and riparian habitat. The Washington Department of Ecology (the state's water quality agency) established and updates Clean Water Act assurances for the state's forest practices program originally established as part of the 1999 Forest and Fish Report developed by state and federal stakeholder agencies. These rules have been strengthened a number of times over the years and include requirements for: significant riparian protection around fish bearing streams; protection of landslide prone areas; and forest road management and abandonment program with completion milestones. The rules provide linkage between forestry practices and attainment of water quality standards. Additionally, strong adaptive management and monitoring elements were codified into the Act in 2005 (WAC 222-12-045). The adaptive management approach includes clear CWA and Endangered Species Act (ESA) related objectives, establishes a formal adaptive management process and program manager, identifies an independent scientific Coordinated Monitoring and Evaluation Research (CMER) Committee that conducts science reviews and provides a framework for science and policy interaction. The adaptive management approach establish a comprehensive program for developing, reviewing and providing science-based recommendations and technical information to assist the Board in determining if and when it is necessary or advisable to adjust rules and guidance for aquatic resources to achieve resource goals and objectives.
- **Vermont's** *Silviculture Accepted Management Practices* (AMPs) Program provides enforceable provisions applicable to logging activities. AMPs are designed to maintain water quality by eliminating discharges from logging operations. Enforcement is pursued where there is a discharge and AMPs have not been implemented. If there is a discharge and AMPs have been

implemented, the Department of Forests, Parks and Recreation works with the logging company to correct the cause of the discharge.

- **California's** *Z'Berg-Nejedly Forest Practices Act* (1973) and related *Forest Practices Rules* comprehensively address NPS impacts from timber production. In particular, the intent of Article 6 of the state's Forest Practices Rules "is to ensure that timber operations do not potentially cause significant adverse site-specific and cumulative impacts to the beneficial uses of water, native aquatic and riparian-associated species, and the beneficial functions of riparian zones; or result in an unauthorized take of listed aquatic species; or threaten to cause violation of any applicable legal requirements. This article also provides protection measures for application in watersheds with listed anadromous salmonids and watersheds listed as water quality limited under section 303(d) of the *Federal Clean Water Act*." Since the passage of the 1973 *Forest Practices Act*, there have been more than 16 significant rule packages adopted to address water quality, most dealing with erosion, logging methods, shade requirements, road construction and riparian protection. California's *Forest Practices Rules* are generally regarded as among the most comprehensive and protective of water quality in the U.S. Timber operations conducted under the *Forest Practices Act* are exempt from the *Waste Discharge Requirements* (WDRs) under California's *Porter-Cologne Act* provided the *Forest Practices Act* requirements are certified as BMPs by the EPA, unless the SWRCB makes a finding that compliance by forestry operations is not protecting water quality or the Forestry Board requests WDRs.

- **Oregon**'s *Forest Practices Act* (FPA), enacted in 1971, requires the Oregon Board of Forestry (BOF) to establish BMPs and other rules to ensure that to the maximum extent practicable NPS pollution from non-federal forest operations does not impair achievement and maintenance of water quality standards established by Oregon's Department of Environmental Quality (DEQ). Under the FPA rules the BOF also conducts a triennial review of the effectiveness of BMPs and independently, or in response to a request from DEQ's executive commission, can initiate a forest practice rule change to ensure that BMPs are adjusted as necessary to meet water quality standards. These rules are developed and administered by the Oregon Department of Forestry (ODF). As back-up authority, DEQ's Director can issue a TMDL as an enforceable order along with a Water Quality Management Plan (WQMP) to implement any such TMDL. In waters failing to meet DEQ established water quality standards, DEQ will develop and include BMPs or other control measures necessary to meet TMDL load allocations as part of the WQMP issued in conjunction with a TMDL. If the BOF fails to promulgate BMPs or other control measures that are as effective as DEQ's BMPs, DEQ has the authority to directly order compliance with the TMDL and WQMP via administrative order. Under this construct, Oregon has committed to preparing "implementation-ready" TMDLs starting with preparation of the Mid-Coast TMDL by 2012/13. Management strategies identified in a TMDL and/or a WQMP to achieve wasteload and load allocations in a TMDL will be implemented through water quality permits for those sources subject to permit requirements in ORS 468B.050, safe harbor BMPs, and or through sector-specific or source-specific implementation plans for other sources. TMDLs and WQMPs will identify the sector and source-specific implementation plans required and the persons,

including Designated Management Agencies, responsible for developing and revising those plans.

- **Minnesota**'s statutes and rules provide an assortment of restrictions to control NPS pollution from timber harvesting. An administrative rule on vegetative cutting (6105.0150) prohibits clear-cutting in wild, scenic, or recreational river land use districts where soil, slope or other watershed conditions are fragile. The rule also requires setbacks ranging from 40 to 200 feet from rivers with various protective designations (wild, scenic, or recreational) and tributaries within designated management plans. Statute 92.45 governing restrictions on state lands prohibits selling state forest land that "borders on or are adjacent to meandered lakes or public waters and water courses," and if the state harvests these state lands, it must "reserve the timber and impose other conditions deem(ed) necessary to protect watersheds, wildlife habitat, shorelines and scenic features." *Sustainable Forest Resources Act* of 1995 (most recently updated in 2002) provides for forest practice guidelines. Forest Practices BMPs are required for timber operations on the 2.9 million acres of publicly owned timberland in the coastal counties, which corresponds to roughly three-quarters of the total timberland acreage in these counties. On federal lands, Minnesota's forest management BMPs serve as the minimum standard for operation. Timber sale contracts on state lands specify that Minnesota's forestry BMPs are to be followed. On county lands beyond the coastal counties, Minnesota's forest management guidelines are either incorporated by reference into the timber sale contract, or the timber sale contract identifies the specific practices that are needed to protect water quality. Encouraging the use of BMP on Nonindustrial Private Forest (NIPF) lands relies upon an emphasis on voluntary programs promoted by economic incentives and public information and technical assistance. Compliance audits have been performed periodically since the 1990s, utilizing multi-stakeholder teams with a broad range of expertise and interests.
- **West Virginia's** *Logging Sediment Control Act* of 1992 (WVC Article 1B. Chapter 19. Section 1B) controls commercial timber harvesting activities that expose soil and subsequently result in sediment deposition in streams by establishing requirements for licensing, certification and harvest notification. While WV's Division of Forestry (WVDOF) has primary authority to adopt rules and procedures to implement the Act, the West Virginia Department of Environmental Protection (the state's water quality agency) may initiate action if WVDOF fails to appropriately act on forestry practices contributing to sedimentation. The Act applies to all timber operations, except when trees are harvested for personal use, harvested for purposes of rights-of-ways for public roads and utilities, and harvested for purposes of holiday decorations. WVDOF is responsible for a licensing and certification program, which includes education and examination on appropriate BMPs for timber practices. Harvest areas are to be reclaimed within seven days of completion. If BMPs are not properly applied, WVDOF may issue a written order requiring corrective action. WVDOF has authority to issue stop-work orders and take other actions, if necessary. Civil penalties may be assessed, not to exceed $2,500 for first offense and up to $5,999 for subsequent offenses. West Virginia is developing its Logging Operation Notification Inspection and Enforcement System (LONIE) with section 319 base funds to assist in enforcing

the Logging Sediment Control Act. The system uses a database, a mapping API, and web-based user interface to submit, track, and enforce timbering operation notifications and activities.

- **Maine** has multiple laws that regulate various aspects of forestry activities to protect water quality. Under Maine's *Forest Practices Act* (12 M.R.S.A. §§ 8867-A to 8888) landowners are required to notify the Maine Forest Service of planned timber harvest activity that involves greater than two acres of clear-cutting or greater than five acres of partial cutting. Clear-cuts over 50 acres require a summary of how water quality and wildlife habitat will be protected. Maine's *Natural Resources Protection Act* (38 M.R.S.A. §§ 480-A to 480-Z) requires the Maine Department of Environmental Protection to issue permits for certain forest management activities (e.g., stream crossings, location of landings, and general soil disturbances) occurring within 75 feet of coastal wetlands, great ponds, rivers and streams, and certain types of freshwater wetlands. All harvesting operations in forested wetlands (i.e., permitted and exempted) are required to meet stream crossing standards. Under the state's *Land Use Regulation Commission's Rules and Standards* (12 M.R.S.A., Chapter 206- A and LURC-Rules Chapter 10) standards have been established for timber harvesting operations and related activities within designated protection zones (subdistricts) of Maine's unorganized territories. *LURC Rules* include standards for road construction and maintenance, erosion control measures, use of filter strips, percent tree removals, minimum shade requirements, slash disposal, and soil disturbance limits. Permits are required for either timber harvesting and/or construction of land management roads in certain wetlands and in designated land use zones, depending on the level of impact. Maine's *Shoreland Zoning Act* (38 M.R.S.A. §§ 435 to 449) requires minimum guidelines for activities pertaining to timber harvesting, include those for selective cutting, tree removal, road construction, operation of machinery, stream crossings, slash disposal and soil disturbance. Under Maine's Erosion and Sedimentation Control Law (38 M.R.S.A. § 420-C), erosion control measures are required for activities, including road and landings construction, that involve filling and soil disturbance. Finally, under Maine's *Tree Growth Tax Law* (36 M.R.S.A. §§ 571 et seq.), landowners with more than 10 acres of forested land that is held for potential commercial use can have their property revaluated based on forest productivity rather than development value. This financial incentive allows landowners to save on local property taxes and helps to protect commercial forest land. Under this program, landowners must hire a licensed professional forester to prepare a forest management plan which outlines intended activities to regenerate, improve and harvest timber, and identifies the location of water bodies and wildlife habitat. In 2001, 19,692 parcels (3,849,690 acres) of land in the organized towns were enrolled in this program. In the unorganized towns, 22,823 parcels (9,036,172 acres) were enrolled in the program as of 2000.
- In **New Hampshire** timber harvesting is regulated by several statutes. All logging operations (excluding those logging less than 20 cords or 10,000 board feet for personal use) are required to file an "Intent to Cut Form" (see RSA 79:10). Though the form is used for timber tax purposes, it also requires the logger to acknowledge RSA 227-J, the state's timber harvest laws. The Basal Area law (RSA 227-J:9) requires that forested buffers be left along streams, rivers and ponds

following a timber harvest and it limits the percent of total basal area that can be cut near these waterbodies. Basal area is a measure of tree density on each acre of land – New Hampshire law states that no more than 50% of the basal area of timber within 150 feet of a fourth order river or pond 10 acres or larger, or within 50 feet of any other perennial stream or pond smaller than 10 acres may be cut or otherwise felled each year. The timber harvest laws are enforced by the Division of Forests and Lands. However, signing the Intent to Cut Form also acknowledges that the logger will comply with state wetlands laws (RSA 482-A) and alteration of terrain laws (RSA 485-A:17), which are enforced by the New Hampshire Department of Environmental Services. These laws and the agency activities supporting them have been included in New Hampshire's NPS Management Program Plan since the initial plan was adopted in 1989. Early on in New Hampshire's NPS program, section 319 funds helped publish guidance documents and BMPs for distribution to loggers through the New Hampshire Timberland Owners Association.

- **Montana –** *Streamside Management Zone Law* requires the creation of 50 foot wide "streamside management zones" for forest streams. Specific activities are prohibited within these zones and Montana Department of Natural Resources and Conservation has the authority to inspect federal, state and private lands for compliance. State forest practice law requires use of BMPs for forest harvest activities. Section 319-funded state staff has assisted with development and implementation of the regulations for this program.
- **Wisconsin's** county forests are governed by the *County Forest Law*, which requires they be managed in a sustainable manner for multiple uses, including timber production, recreation, wildlife habitat, and watershed protection. The county forests are also required to update their forest plans every 15 years, a process that includes approval both by each forest's county board and the Wisconsin Department of Natural Resources.
- **Virginia** – The *Silvicultural Water Quality Act of 1993* (updated 2002) authorized the Virginia Department of Forestry (VDOF) to act to prevent pollution of state waters from silvicultural activities. The intent of the law is to prevent silvicultural activities from occurring "in a manner that is causing or is likely to cause pollution." The law establishes a notification and an inspection program and authorizes VDOF to issue special orders for corrective measures "to prevent, mitigate, or eliminate the pollution." Notification is facilitated through a dedicated toll-free phone number and an online system maintained by the state. VDOF has the authority to issue stop work orders to correct problems. VDOF inspects all logging operations greater than 10 acres. Penalties for failure to notify VDOF and enforcement penalties go into the Virginia Forest Water Quality Fund, which is "to be used for education efforts, promoting the implementation of proper silvicultural activities, research, and monitoring the effectiveness of practices to prevent erosion and sedimentation." Virginia has a strong logger education program that serves as a companion to this law, which is described in *Chapter 4: Statewide NPS Programs and Initiatives*.

- **Kentucky's** *Agriculture Water Quality Act* (1994) requires all landowners with 10 or more acres that are being used for silviculture (or agricultural) operations to develop and implement a water quality plan based upon guidance developed by the state.
- **Florida**'s regulations under the Environmental Resource Permitting (ERP) program (Florida Administrative Code Chapter 62-341.500) require silvicultural operators to obtain a General Permit for Construction, Operation, Maintenance, Alteration, Abandonment or Removal of Minor Silvicultural Surface Water Management Systems. These general permits are intended for non-exempt persons "constructing, operating, maintaining (including repairing or replacing), altering, abandoning, or removing surface water management systems" and non-exempt U.S. Forest Service activities "to construct, operate, maintain, alter, abandon, or remove surface water management systems." For persons, this general permit is to be used only for those activities designed to "place the property into silvicultural use or to perpetuate the maintenance of this property in silvicultural use." In order to qualify for this general permit, silvicultural surface water management systems must meet a number of performance standards (Chapter 62-341.500(5)) to protect wetlands and other surface waters, maintain normal water flow, implement erosion control measures, etc. The applicant must also utilize BMPs set forth in the "Silviculture Best Management Practices Manual." The permit is valid for one year for the construction, alteration, abandonment, or removal of the silvicultural surface water management system and indefinitely for operation or maintenance of the silvicultural surface water management system.
- **Maryland** has several laws that regulate forestry activities that impose controls of silvicultural activities to protect water quality, including: limits on harvesting in designated critical areas under the state's *Chesapeake Bay Critical Areas Act*; requirements for reforestation of pine forests; and limits on harvesting in nontidal wetlands. Additionally, Maryland's *Sediment Control Law* and regulations require that a sediment control plan be developed and approved before undertaking any earth disturbing activity in excess of 5,000 square feet. To assist loggers and landowners in meeting this requirement, the Maryland Department of the Environment and the Department of Natural Resources have developed a Compliance Agreement for the Standard Erosion and Sediment Control Plan for Forest Harvest Operations. This plan lists the general sediment control requirements for each harvest and may be obtained at any Soil Conservation District office.

Urban NPS/Post-Construction Development

At least nine states (FL, MD, ME, NC, NH, NJ, RI, VT and WI) have regulatory authorities targeting urban stormwater runoff, beyond state or EPA NPDES permitting requirements. In a number of these states, the state law has been changed to reflect recent technical developments in treating and managing stormwater runoff, such as low impact development, that have been advanced through statewide NPS programs and activities (see *Chapter 4: Statewide NPS Programs and Initiatives* for further discussion).

- **Wisconsin –** The state's *"NR 151" Runoff Management Rules* include the following non-agricultural Performance Standards and Prohibitions (statewide; not just in MS4 urban areas). For site developments of one acre or more, post-construction stormwater management plans are required to be implemented to: (1) reduce total suspended solids (TSS) by 80%; (2) reduce peak runoff discharge rates using the 1-year 24 hour design storm and the two-year, 24 hour design storm as peak flow rates that must match the pre-development one- and two-year storms; (3) infiltrate initial runoff except where groundwater contamination could occur; (4) maintain a permanent 50 foot vegetative buffer area around lakes, rivers, streams and wetlands within the site (75 foot buffer requirement from specifically defined sensitive habitats); and (5) control petroleum products in runoff from fueling and vehicle maintenance areas. The Rules also require Wisconsin Department of Transportation road, highway and bridge projects of one acre or more to reduce post-construction TSS loads by 20% by 2008 and by 40% by 2013, and to educate WDOT staff and contractors on proper road salt and winter deicing chemical use.
- **Maryland** *Stormwater Management Act* of 2007 – Controls runoff from new development. Mandates "Environmental Site Design be used to Maximum Extent Practicable (MEP) for new developments statewide. Environmental Site Design is defined in the Act as "using small–scale stormwater management practices, nonstructural techniques, and better site planning to mimic natural hydrologic runoff characteristics and minimize the impact of land development on water resources." The Act requires that these regulations shall specify that "all stormwater management plans shall be designed to" include nine comprehensive elements, including: "prevent, to the maximum extent practicable, an increase in nonpoint pollution"; "maintain 100% of average annual predevelopment groundwater recharge volume for the site"; and "capture and treat stormwater runoff to remove pollutants and enhance water quality." As of September 2011, regulations to address requirements of the Act remain under development.
- **New Jersey** *Stormwater Management Rule, Tiers A & B,* comprehensively addresses runoff from all new development and existing development statewide. All coastal communities must comply with Tier A rules, which are designed to meet and exceed EPA's Phase II Stormwater Rule. Statewide, all new development that disturb at least one acre of land or that have increased imperviousness by at least a quarter acre must reduce the anticipated increase of TSS loadings by 80%, and nutrients must be removed "to the maximum extent feasible." Further, most new major developments must either maintain 100% of the average annual pre-construction groundwater recharge volume onsite or infiltrate the projected increase in stormwater volume from pre- to post-construction conditions for a two-year design storm. There are notable exceptions having to do with promoting infill and smart growth. To achieve all of these objectives (minimizing runoff volumes and pollutant loads and maximizing groundwater recharge), the rule strongly encourages low impact development practices. The rule also requires that storm drains be labeled and additional stormwater education be conducted.

Feature Story: New Hampshire Alteration of Terrain Program

New Hampshire regulates stormwater runoff from development projects under the *Alteration of Terrain* program. When the program was originally established it addressed water quantity and quality issues, with a primary focus on preventing downstream flooding and increased peak flows. Revisions to the regulations finalized in 2009 provide for infiltration and better treatment of runoff. These rules require development projects to treat the first inch of rainfall with BMPs and retain natural soil infiltration rates. An *Alteration of Terrain* permit is required for any project proposing to disturb more than 100,000 square feet of contiguous terrain (about 2.3 acres) or that disturbs an area having a grade of 25% or greater within 50 feet of any surface water. Projects within one mile of an impaired water or Outstanding Resource Water are subject to heightened standards.

Since 2007 NPS program staff has supported this program through efforts to improve use of low impact development (LID) BMPs, update the *New Hampshire Stormwater Manual* that applies to the *Alteration of Terrain* rules, and analyze the effectiveness of the rules in terms of pollutant load reductions. The Stormwater Manual provides detailed information about BMP design and effectiveness that supports compliance with the Alteration of Terrain program requirements. In addition, in June 2011 New Hampshire released an updated manual, New *Hampshire Homeowner's Guide to Stormwater Management: Do-It-Yourself Stormwater Solutions for Your Home*. Both of these manuals were funded in part with 319 grant funds and 319-funded staff contributed to their development.

An analysis of permit applications and approvals during 2009 and 2010, the years following adoption of the new *Alteration of Terrain* rules, shows that a direct result of base 319 funding assistance was significant load reduction compared to how those applications would have been permitted under the prior rules. The table below shows the resulting load reductions for TSS for permitted residential development during the years 2009 and 2010.

Table 8. TSS Load Reduction Achieved for Residential Permitted Projects, 2009-2010

	Load (no BMPs) (lbs/yr)	**Load** (with BMPs) (lbs/yr)	**Load Reduction Due to BMPs** (lbs/yr)	**Percent Removal**
Total	98,144.58	43,672.49	54,472.08	
Minimum	29.70	2.97	0.00	0.0%
Maximum	9,088.97	5,207.70	7,271.17	90.0%
Average	1,533.51	682.38	851.13	67.9%

For more information, visit NH Department of Environmental Management's Alteration of Terrain website at http://des.nh.gov/organization/divisions/water/aot/index.htm.

- **Florida's** *Environmental Resource Permitting* (ERP) Program (Rule 62-343.050) requires that an ERP permit be obtained "prior to construction, alteration, operation, maintenance, abandonment, or removal of any stormwater management system, dam, impoundment, reservoir, or appurtenant work or works, including dredging or filling in, on, or over wetlands and other surface waters, as determined by the methodology ratified by Subsection 373.4211, F.S., and codified in rule chapter 62-340, F.A.C." Each of Florida's six water management districts (WMDs) has its own rule for regulating the ERP program. Stormwater permit holders must achieve at least 80% reduction of the average annual load of pollutants that would cause or contribute to violations of state water quality standards; or achieve at least 95% reduction of the average annual load of pollutants that would cause or contribute to violations of state water quality standards in Outstanding Florida Waters. Additionally, since 2007, Florida DEP has been working to create and implement a uniform *Statewide Stormwater Treatment Rule*, which will amend its performance and design criteria for Environmental Resource Permitting program. The rule is intended to ensure that post-development nutrient loading does not exceed nutrient loading from natural landscapes, but must be ratified by the legislature. BMP effectiveness monitoring is being conducted during 2011 to provide additional data to establish final BMP design criteria. NPS staff are assisting in BMP effectiveness monitoring and BMP development.
- **Maine** – Maine has a *Stormwater Management Law* that establishes strict stormwater controls for developments above particular impervious area thresholds (depending on the development's size and location). The law generally requires the management of runoff from 95% of impervious areas as well as 80% of developed areas (e.g., areas that are mowed more than once per year) by the use of practices that detain a runoff volume of one-inch for the impervious areas and 0.4 inches for landscaped areas. The vast majority of these projects are not subject to NPDES stormwater regulation for post-construction runoff. Projects are reviewed by Maine DEP to assess whether they meet applicable standards addressing areas such as stormwater management, groundwater protection, and wildlife and fisheries. A range of LID practices are utilized by developers to meet the program requirements. Section 319-funded staff has been actively involved in developing and implementing these statutory and regulatory requirements, including development of stormwater BMP manual and compliance assistance.
- **North Carolina**'s stormwater rules (15A NCAC 02H .1000) apply a zoned approach statewide for controlling runoff from development that encourages LID. The *Clean Water Responsibility Act of 1997* requires the state's Environmental Management Commission to implement stormwater runoff rules statewide under a continuing program planning process. Priorities are weighted toward the coastal area and are as follows: 1) Classified shellfish waters; 2) water supply watersheds; 3) outstanding resource waters; 4) high quality waters; and 5) all other waters of the State to the extent that the Commission finds it necessary to control stormwater. Across the State's 20-county coastal region runoff controls must be provided for development activities disturbing more than 10,000 square feet (approximately ¼ acre) for non-residential developments or more than one acre for residential development. These controls must reduce TSS by at least 85% of their predevelopment loads (by design). Further, stormwater volumes

must be controlled on-site in accordance with either of the following requirements: the post development discharge rate shall be no larger than the predevelopment discharge rate for the one year, 24-hour storm; or the discharge rate following the one-inch design storm shall be such that the runoff volume draws down to the pre-storm design stage within five days, but not less than two days. Additionally, shoreline setbacks apply to new development along: designated trout streams; all coastal shorelines; all navigable waters in the 20-county coastal region; all designated Outstanding Resource Waters (ORW) and High Quality Waters (HQW); and nutrient-sensitive waters throughout the Neuse and Tar-Pamlico basins. Additional rules for controlling runoff and nutrient loads from new development apply in the Neuse and Tar-Pamlico basins. For example, Nutrient Strategy Rules require a 30% reduction in nitrogen from new development (by design). For areas draining to ORWs and HQWs, North Carolina distinguishes between low density development (defined for most of the State as an area that is less than 12% impervious or zoned for one home or less per acre) and high density development. Rules for development on low density sites are designed to reduce runoff velocities from any 10-year storm event and prohibit discrete runoff collection systems. All other development is deemed high density and requires a wet detention pond or equivalent infiltration practices to control water quantity and quality. Beyond these regulations, in 2009, the state released its *North Carolina LID Guidebook* to encourage implementation of LID. The *Guidebook* particularly promotes the LID performance goals of: controlling post-development runoff volumes to predevelopment conditions at the site level; and reducing targeted pollutants to the maximum extent practicable. North Carolina is encouraging adoption of these performance goals and the *Guidebook* through local ordinances.

- **Rhode Island –** The Rhode Island Department of Environmental Management updated the *Stormwater Design and Installation Standards* Manual in 2010 in accordance with the 2007 Smart Development for a Cleaner Bay Act. Under the authority of the Cleaner Bay Act, the revised manual requires new development to maintain predevelopment groundwater recharge levels, ensure that post-development peak discharge rates do not exceed pre-development rates, and use LID techniques as the primary method of stormwater control to the maximum extent practicable. Section 319-funded staff and other 319 funds were utilized to develop the 2010 revised stormwater manual.

- **Vermont's** "*Act 250*" was developed in part by NPS program staff, who also play a major role in implementation of the Act 250 regulations. Act 250 establishes a permitting requirement for new developments and subdivisions that involve construction on more than 10 acres, construction of 10 or more housing units or subdivision of land into six or more lots. Act 250 is administered by nine district commissions across Vermont and plays an active role in NPS management. The review of applications is conducted by the Land Use Panel of the Natural Resources Board and focuses on 10 criteria including impacts related to water pollution, wildlife habitat and soil erosion. A project's impact on water pollution (during construction and after completion) is considered along with soil erosion. The Act also applies to larger subdivisions and commercial, manufacturing and industrial projects. One area where the Act has an especially big impact on NPS reductions is expansion projects. Projects covered by an Act 250 permit must go

back for special permission if they wish to expand, as often occurs with ski resorts, for example. If the permitted project has contributed to a downstream water quality impairment, Act 250 can require development and implementation of a water quality remediation plan as conditions of the permit for any expansion. This process has resulted in restoration of several impaired waters that have been published as NPS Success Stories on EPA's website.

Non-Agricultural Fertilizer Use

In addition to state laws that address stormwater runoff from development, at least nine states have passed or updated laws in recent years that address nutrient pollution through regulation of non-agricultural use of nitrogen and phosphorus fertilizers. These laws typically apply to residential and commercial land uses, and occasionally golf courses.

- **New Jersey's** *2011 Fertilizer Statute* (Chapter 112) – In 2011, New Jersey's new fertilizer law took effect. The law is considered to be the most restrictive fertilizer content standards in the U.S. for nitrogen and phosphorus, and is aimed at protecting water quality. The law bans phosphorus in fertilizer for non-agricultural uses unless a soil test confirms that phosphorus is needed or unless new vegetation is being established. It also establishes restrictions from applying fertilizer within 10 feet of streams, and prohibits application of fertilizer to frozen ground or when heavy rain is forecasted. By November 2011, professional landscapers must be trained and landscape companies must be licensed for applying fertilizers. By January 2012 fertilizer must include 20% slow-release nitrogen.
- **Maryland's** *Fertilizer Use Act* of 2011 restricts phosphorus in lawn fertilizer with exceptions for specially labeled starter fertilizer and organic fertilizer products. The law also decreases the total amount of nitrogen that may be applied to turf and specifies that 20% must be in a slow-release form. The law prohibits labeling fertilizer product as de-icers and requires them to include the following statement on the label: "Do not apply near water, storm drains or drainage ditches. Do not apply if heavy rain is expected. Apply this product only to your lawn and sweep any product that lands on the driveway, sidewalk, or street, back into your lawn." Lawn fertilizer use is prohibited between November 15 and March 1, when the ground is frozen, and within 10-15 feet of waterways and is prohibited from being applied to impervious surfaces. The law contains substantial penalties ($1000-$2000) per violation.
- **Wisconsin** passed its *Turf Fertilizer Restrictions Law* in 2009 (Statute Chapter 94.643). The law restricts use of lawn fertilizers with phosphorus on lawns, golf courses and turf, unless used to establish grass or to correct a soil phosphorus deficiency identified by a soil test. Fertilizer spread or spilled on impervious surfaces must be cleaned up. Fertilizer is prohibited from being applied on frozen ground. Stores are prohibited from displaying phosphorus lawn fertilizer, but can post signs saying it is available upon request for permitted uses. Fines are $50 the first time and $100-$200 after that.

- **New York's** *Dishwater Detergent and Nutrient Runoff Law* (1) prohibits the use of phosphorus-containing lawn fertilizer unless establishing a new lawn or a soil test shows that the lawn is phosphorus-deficient, (2) prohibits the application of lawn fertilizer on impervious surfaces and requires pick up of fertilizer applied or spilled onto impervious surfaces, (3) prohibits the application of lawn fertilizer within 20 feet of any surface water (except where there is a vegetative buffer of at least 10 feet; or where the fertilizer is applied with a spreader guard, deflector shield or drop spreader at least three feet from surface water, (4) prohibits the application of lawn fertilizer between December 1st and April 1st, and (5) requires retailers to display phosphorus containing fertilizers separately from non-phosphorus fertilizers and to post an educational sign where the phosphorus-containing fertilizers are displayed. Additionally, the law prohibits the sale of phosphorus-containing dishwasher detergents for household and/or commercial use.
- **Vermont** passed the *Turf Fertilizer Law* in 2011. This law regulates application of nitrogen and phosphorus commercial fertilizer on turf (excluding crops, fields for sod production, etc.). Application of nitrogen is not allowed; application of phosphorus is restricted (can be allowed if soil test shows deficiency). Application of phosphorus fertilizer during the winter or on frozen ground is prohibited.
- **Minnesota's** *Phosphorus Turf Fertilizer Restrictions,* (Statute Ch. 18C.60) updated 2006 – Fertilizers containing phosphorus cannot be used on lawns and turf in Minnesota, except for establishing new lawns or when a soil test or plant tissue test shows a need for phosphorus. Golf courses are also exempted if fertilizer is applied by trained staff. The law was enacted to reduce over-enrichment of lakes and other waterbodies with phosphorus. Restriction on phosphorus fertilizer use on lawns and turf started in 2004 in the 7 county Twin Cities metro area and in Minnesota's other 80 counties in 2005. It was the first law of its kind in the U.S.
- **Michigan** – *Public Act 299* of 2010 (Statute 324.8512b) prohibits the use of phosphorus fertilizers on residential or commercial lawns, beginning January 1, 2012. Excluded from this law are: phosphorus applications for agriculture; for new turf establishment; based on soil test results; for certain types of manure; and golf courses whose operators complete an approved training course.
- **Virginia** passed its *Fertilizer Act* in 2011, which is scheduled to take effect in 2014. The law distinguishes between fertilizer for lawn maintenance and for starting or repairing lawns. The law prohibits the sale, distribution and use of lawn maintenance fertilizer containing phosphorus beginning December 31, 2013 unless a soil test identifies a phosphorus deficiency. The law also: requires the Virginia Department of Agriculture and Consumer Services to establish reporting requirements for contractor-applicators and licensees who apply lawn fertilizer to more than 100 acres of nonagricultural lands annually; requires golf courses to implement nutrient management plans by 2017; adopt precautionary labeling guidelines to prevent fertilizer runoff

into waterways; and prohibits the sale of deicing agents containing urea, nitrogen or phosphorus intended for application on paved surfaces.

- The **Florida**-*Friendly Landscaping Program* is a partnership between University of Florida and Florida Department of Environmental Protection (FDEP) NPS program to develop quality landscapes that conserve water, protect water quality, are adaptable to local conditions, and are drought tolerant. Several Florida State regulatory authorities support the implementation of *Florida-friendly landscaping*:
    - Senate Bill 2080 (2009) requires water management districts to provide model *Florida-friendly landscaping* ordinances to local governments, and requires each district to use materials developed by FDEP and *Florida-friendly* partners. Additionally, the legislation says that (1) a deed restriction or covenant may not prohibit any property owner from implementing *Florida-friendly landscaping* on his or her land, (2) a local government ordinance may not prohibit any property owner from implementing *Florida-friendly landscaping* on his or her land, and (3) local governments must use the *Florida-friendly landscaping* standards and guidelines when developing landscape irrigation and *Florida-friendly* ordinances.
    - Florida's *2010 Fertilizer Statutes* require every county and municipal government in a watershed containing a nutrient-impaired waterbody to adopt a model ordinance for *Florida-Friendly Fertilizer Use* on urban landscapes. The statutes also require trainings for all commercial fertilizer applicators.

- **Illinois** passed a law in 2010 (Statute 415 ILCS 65/5a) to restrict phosphorus from fertilizers used by lawn care companies, except for use on new lawns (during the first two growing seasons), or unless a need for phosphorus is indicated by a soil test. Golf courses and farm lands are exempt, and the new law does not apply to homeowners who apply their own fertilizer.

- **Arkansas** promulgated *Title 22* (effective 2010) Rules Governing the Arkansas Soil Nutrient and Poultry Litter Application and Management Program that applies to eight HUC-8 watersheds in the northwest corner of the state (about 10% of the state) that restricts phosphorus in fertilizers for residential areas. Within these specially designated "nutrient surplus watersheds," fertilizers must not be applied in excess of "protective rates" (no phosphorus except where indicated by a soil test; not to exceed 40 pounds of phosphate application per acre for medium soil test phosphorus level and not to exceed 80 pounds of phosphate application per acre for high soil test phosphorus level (defined in Appendix B of rule). Alternatively, a nutrient management plan may be developed and approved by the Arkansas Natural Resources Commission, and shall govern protective application rates.

<u>Decentralized Wastewater Treatment Systems</u>

During the past 15 years, at least five state NPS programs have upgraded state requirements relating to the maintenance and inspection of decentralized wastewater treatment systems (DWTS) and are

actively implementing these requirements. Highlighted below are brief descriptions of these laws that either add requirements to property transfers or require systems to be designed in accordance with latest technologies.

- **Minnesota** – All DWTS system components, including the tank and drainfield, must be inspected every three years, although inspections may be conducted by the homeowner. Septage levels in tanks must be recorded as part of these inspections and pumped when needed (Rule 7080.2450). The Rule precisely defines the levels of sludge and scum that dictate if the tank needs to be pumped.
- The **Iowa** legislature passed a law that took effect in July 2009 that requires time of sale inspection for septic system that applies to all real property sales. Any inadequacies discovered during the inspection must be addressed before transfer of title. Within the short life of this program there have already been approximately 9000 inspections, which have resulted in replacement or repair of 2500 systems. Additionally, in 2009, Iowa updated the regulations for "private sewage disposal systems" to incorporate new standards for septic system technologies that are used for upgrades in Iowa, increasing consistency and reducing septic system leakage across the state. The revised regulations incorporate specifications for new septic system technologies, including drip irrigation systems, mound systems, and packed-bed media filter systems, and revised the specifications for previously-approved systems. All new systems do not require new technology, but are subject to new specifications.
- **New Mexico's** operation, maintenance, and inspection requirements (effective September 1, 2005 per Title 20 Chapter 7 Part 3 – 20.7.3.902 NMAC) require septic system inspection when there is a transfer of ownership. In their 319 Federal Fiscal Year (FY) 2010-2011 work plan, the New Mexico Environment Department was awarded 319 funding for activities to address NPS pollution in groundwater that may be attributed to septic systems. The Ground Water Quality Bureau reviews and approves groundwater discharge permits for discharges that have the potential to impact groundwater water quality. Bureau staff also enforce permits to ensure compliance with state regulations cited at NMAC 20.6.2.
- **Washington** passed rules (WAC 246-272A) in 2005 to require owners of DWTS to: evaluate conventional gravity-flow septic systems once every three years and all other systems at least annually; hire an approved septic tank pumper to pump the septage when indicated; and to "provide maintenance and needed repairs to promptly return the system to a proper operating condition." State guidance notes that inspections should be conducted by a qualified sewage system inspector or a homeowner that has demonstrated knowledge by receiving a certification or passing a test. Many counties have adopted local ordinances that require a qualified inspector either for all routine inspections, at the time of property transfer, or for routine inspections within targeted areas of special concern such as shellfishing or drinking water supply areas. Additionally, state law (RCW 64.06.020) requires that at the time of property transfer, an owner provide a buyer with a statement that discloses when the system was last inspected and pumped out and any problems that may exist with the system. In

addition to these statewide rules, under RCW 70.118A, the 12 counties bordering Puget Sound must also develop an enhanced local DWTS program to provide even greater protection in designated marine recovery areas. As part of the marine recovery program, these 12 counties must develop and implement onsite waste management plans that the Washington Department of Health (DOH) reviews and approves and ensure systems are inspected and repaired as needed. Outside of the Puget Sound area, two other coastal counties require a qualified inspector to inspect every system within areas of special concern such as shellfishing areas and drinking water supplies, at least every three years and report the results of the inspection to the Health Officer. And other counties require proof that the system was inspected by a certified professional within 36 months of property transfer. Also, where nitrogen has been identified as a contaminant of concern in the local health management plan, nitrogen contributions must be addressed in the DWTS design through lot size and/or treatment. Under WAC 246-272A-0110, Washington requires that nitrogen reducing technologies achieve a 20 mg/L total nitrogen threshold, and that DOH must review and register these technologies before local governments can permit their use.

- **Rhode Island's** *Onsite Wastewater Treatment System Rules* require that all new, altered or repaired systems in the Narrow River and Salt Pond Critical Resource Areas be denitrification systems in order to limit nitrogen loading to these coastal resources. The rules also provide a means for state review and approval of advanced treatment systems used on constrained lots and in sensitive areas. Rhode Island Department of Environmental Management NPS program staff have played a key role in the development and implementation of this program.

<u>Ground Water</u>

While ground water is valued in every state, and most or all states have regulations to protect ground water from contamination, certain states use these authorities as a basis for controlling NPS pollution broadly. Two states (AZ, NB) are offered as examples:

- The **Nebraska** *Groundwater Management and Protection Act* requires the state's 23 Natural Resource Districts to develop and implement plans for the management of groundwater quality and quantity. Plans must be approved by the Nebraska Department of Natural Resources. The law provides that each District plan shall "identify, to the extent possible, the levels and sources of ground water contamination within the district, ground water quality goals, long-term solutions necessary to prevent the levels of ground water contaminants from becoming too high and to reduce high levels sufficiently to eliminate health hazards, and practices recommended to stabilize, reduce, and prevent the occurrence, increase, or spread of ground water contamination." The plans are used to target and prioritize groundwater projects. NPS program staff at the Nebraska Department of Environmental Quality review plans on a rotating basis. This authority has resulted in nutrient controls, including restrictions in several Natural Resource Districts on fall nitrogen application for row crop production, including a prohibition on fall and winter application on sandy soils.

- **Arizona** is an arid state that is extremely dependent on groundwater. Its *Aquifer Protection Law* (AAC R18-9) establishes Aquifer Protection Permits (APPs) for any facility that discharges a pollutant in such a manner that there is a reasonable probability that the pollutant will reach an aquifer. Facilities subject to APPs include: mine tailings piles and ponds; mine leaching operations; and decentralized wastewater treatment systems (septic systems). The Arizona Department of Environmental Quality is also authorized to issue general permits under the Aquifer Protection Program requiring the use of BMPs and addressing silviculture and certain other activities.

Local Ordinances

At least eight state NPS programs play a key role in developing and promoting model ordinances for localities. Examples include:

- **South Carolina** – Several counties have local buffer ordinances that address stream flow volume control, LID, and other NPS priority areas. For example, Jasper County is currently working to develop a BMP manual, which is partially funded by 319 through a watershed-based plan implementation project.
- **New Mexico** – the City of Santa Fe developed local ordinances (including a stormwater ordinance), which prohibit development in flood plains and require developers in specified areas to maintain pre-development hydrology. NPS Program 319 funding supported the development of these ordinances.
- **Oregon** – *Oregon's State Land Use Planning Program* provides regulatory authority requiring all land development ordinances to comply with Oregon's Comprehensive Land Use Planning Process. Oregon's NPS program has helped to reduce air, water, and land quality development impacts by preservation of natural resource lands and urban growth management policies. NPS Program Regional Basin Coordinators work with cities and counties to develop land use plans and development ordinances, which address erosion control, riparian area protection, etc.
- **Maine** - *Shoreland Zoning Law* requires that municipalities protect shoreland areas through adopting shoreland zoning maps and ordinances. Zoning ordinances provide for what types of activities can occur in certain areas (e.g., within 250 feet of the normal high-water line of any great pond, river or saltwater body, and upland edge of a coastal wetland). The Maine Department of Environmental Protection Shoreland Zoning Unit, in conjunction with NPS program staff, administers the program, determines if town ordinances comply with the minimum statewide standards and responds to complaints. Existing municipal ordinances address building size and setbacks, clearing land for development, timber harvesting, septic disposal, driveways and roads, and creation of zones for resource protection, general development, residential, stream protection, etc.
- **Kansas** – The Local Environmental Protection Program (LEPP) is administered by the Kansas Department of Health and Environment and has been providing grants to counties since 1992 for implementation of county environmental protection plans. LEPP regulations require each

county participating in LEPP to adopt and implement ordinances addressing on-site wastewater management systems and water supply wells. All ordinances must be reviewed and approved by KDHE. All but one county in Kansas participates in this program.

- **Montana** – The *Lakeshore Protection Law* requires "a person who proposes to do any work that will alter or diminish the course, current, or cross-sectional area of a lake or its lakeshore must first secure a permit for the work from the local governing body." Local governments are thus required to adopt regulations, including criteria for issuing and denying permits for work in lake areas. Local regulations are judicially enforceable. Factors for consideration include water quality, fish and wildlife habitat, navigation and recreation, public nuisance, and visual and aesthetic values. While the scope of this law is broader than the NPS program, 319-funded staff at DEQ provide input at the local level to support development and implementation of local regulations developed pursuant to this law.
- **Iowa** – 319-funded educational programs and BMP demonstration projects have led local governments to adopt stormwater management ordinances that rely on LID practices for new development and/or require the management of stormwater volume through infiltration-based BMPs for all new development. Five such local ordinances were adopted in 2008.
- **Connecticut –** Under the *Aquifer Protection Area Land Use Regulations*, Connecticut DEP has developed model ordinances associated with requirements that all “areas of contribution” and “recharge areas” to major well fields be mapped, including inventories of all potentially regulated facilities and agricultural activities. The municipalities in the aquifer protection program are required under Connecticut statutes (Section 22a-354p) to adopt regulations at the local level to regulate land use within the identified aquifer protection areas. So far, aquifer protection areas have been mapped in 66 towns, and of these, 60 have adopted the local land use regulations required. This is a new program and in the future information developed through this program may be used to support the development and implementation of watershed-based plans.
- **Hawaii –** Under CZARA, which is well integrated with the state’s 319 program, Hawaii is working with the four primary counties to develop strong local ordinances to address impacts from new development. Under these ordinances, the City and County of Honolulu and the County of Hawaii have begun controlling total suspended solids by encouraging low impact development practices. For example, the County of Hawaii requires infiltration of all post-development runoff increases up to a 10-year design storm. Maui County is very close to passing a similarly stringent ordinance.

Chapter 4: Statewide NPS Programs and Initiatives

Statewide nonpoint source (NPS) initiatives and programs play a key role in reaching broad audiences of stakeholders (public, landowners, partner agencies, etc.) to increase understanding of nonpoint source pollution and to reduce its impacts. In most states, base 319 funding provides support for the implementation of these statewide efforts, either through "start up" funding or ongoing support.

This study highlights statewide NPS initiatives and programs that were supported by state NPS programs in Federal Fiscal Year 2010 (FY10). A statewide initiative/program was included in the study if it received more than $100,000 in section 319 grant or match funds in a recent year, involved more than 0.5 NPS program full-time equivalents (FTEs), and/or was considered by the state to be a key part of its NPS program. The information in this chapter is summarized from a number of sources, including state NPS management program plans, grant work plans, annual program reports, state NPS program websites and correspondence between EPA regional and state NPS program staff.

Agricultural Programs:

As characterized in the most recent national report on the state of the nation's water quality, agriculture is the leading source of impairments in assessed rivers and streams (approximately 38%), and the leading known/specified source of impairments in assessed lakes, ponds, and reservoirs (approximately 17%). Virtually every state has programs that support controls on pollution from agriculture. Many of these support regulatory authorities, including those that bring states into compliance with state requirements for animal feeding operations. This study found at least 24 state NPS programs and initiatives (AL, AR, CA, DE, FL, GA, IA, ID, IN, LA, MD, MN, MS, NC, ND, NY, OH, OK, OR, PA, TX, UT, VA, WI) that provide significant support for state and local efforts to address the impacts of NPS agricultural activities on water quality. Among these states, this study found that at least 15 (AL, DE, GA, HI, ID, IN, LA, MD, MN, MS, NY, PA, TX, VT, WI) devote resources to their state agriculture agencies or soil and water conservation commissions to implement agricultural NPS programs or initiatives. Examples of these statewide agricultural programs include:

- **New York's** Agricultural Environmental Management (AEM) Program is led by the New York State Soil and Water Conservation Committee (SWCC) and the New York State Department of Agriculture and Markets (NYSDAM). AEM is a voluntary, incentive-based program that helps farmers install agricultural best management practices (BMPs) with funding support from the state's *NPS Abatement and Control Grant Program* and United States Department of Agriculture's Conservation Reserve Enhancement Program (CREP). The state NPS program's 2010 annual report indicates that the AEM program has: over 12,000 participating farms, with local programs established in 54 counties; allocated more than $81 million to local AEM programs to assess, plan, and implement BMPs on New York farms; certified 46 planners to develop Comprehensive Nutrient Management Plans (CNMPs) and trained over 300 resource

professionals on conservation planning by the SWCC since 1999, and has coordinated with the state NPS program and NPS partner agencies to address agricultural NPS issues.

- **Maryland's** Manure Transport Program, which was established by its Manure Management Law, helps livestock farmers cover the costs of transporting excess manure off their farms to other farms or facilities that can use the product safely. Under the program, animal producers with high soil phosphorus levels or farmers who have inadequate cropland to fully utilize their manure may apply for grants to transport excess waste to other farms or alternative use facilities that can use the product safely. Cost share grants up to $20/ton are available through Maryland Agricultural Cost Share (MACS). Because of the state's good working relationship with the burgeoning poultry industry centered in Maryland's Eastern Shore, poultry companies provide 50 % of the cost to transport poultry litter. To support Maryland's goal of transporting 20% of the poultry litter produced on the Lower Eastern Shore to other areas of the state, cost share mileage rates to transport poultry litter from Dorchester, Somerset, Wicomico or Worcester counties to other areas of the state may be provided at higher rates. Farmers interested in participating can either contact their local Soil and Water Conservation District or call the state's toll free hotline at 1-877-7MANURE. This program is in addition to the traditional MACS, which provides more than $16 million to implement farm-specific BMPs. See *Chapter 6: Leveraging of State and Federal Funding for State NPS Programs* for more information on how Maryland leverages state funds.
- **Delaware's** Nutrient Relocation Program provides financial reimbursement to farmers, brokers, and trucking businesses for the transportation cost of relocating litter from a Delaware farm to an alternative use project or another farm for land application. In 2010, the Nutrient Relocation Program accounted for the transportation of 4.9 million pounds of total nitrogen and 3.7 million pounds of phosphorus as phosphate out of Delaware's priority NPS watersheds. This program would not exist without base 319 funding. In 2010, it was funded at $200,000 from federal base 319 grant and $100,000 from EPA's Chesapeake Bay Program. This program accounts for the largest nutrient load reductions reported nationally through EPA's Grants Reporting and Tracking System (GRTS). This is one important example of cross-agency coordination between Delaware Department of Natural Resources and Environment Control (DNREC), which manages the state's NPS program, and Delaware Department of Agriculture, which both signed a Memorandum of Understanding in 2000. Since then, EPA and Delaware's Nutrient Management Commission have been working cooperatively to reduce nutrients from key agricultural sectors, including the poultry industry, which is a dominant player in Delaware in terms of water quality.
- **Michigan** – The Michigan Agriculture Environmental Assurance Program (MAEAP) is an innovative and proactive program that helps farms of all sizes and all commodities voluntarily prevent or minimize agricultural pollution risks. It is a collaborative partnership between Michigan Department of Agriculture, Michigan's Environmental Assurance Advisory Council and the agricultural community that reduces farmers' legal and environmental risks through education, the completion of a farm-specific risk assessment, and an on-site verification that

ensures that the farmer has implemented the environmentally-sound practice. Farms that are verified as meeting program standards can display signs announcing their MAEAP compliance. Michigan also runs an MAEAP grant program that helps farmers protect the environment. The program began in 1998 and was codified into law by Public Acts 1 and 2 of 2011. One of the new laws establishes an MAEAP grants program for uses such as technical assistance, educational programs, demonstration projects to implement conservation practices, and removal of potential contamination sources. The program incentivizes comprehensive nutrient management program planning and implementing agricultural BMPs. It is responsible for reducing the amount of phosphorus from entering waterways by nearly 260,000 pounds each year. It further enhanced water quality by encouraging the installation of approximately 4,300 acres of filter strips and the stabilization of about 1,000 gullies. Annually, an average of 5,000 Michigan farmers attend an educational session geared toward environmental stewardship and MAEAP verification. To date, nearly 10,000 Michigan farms have started the verification process. Nearly 1,000 Michigan farms have become MAEAP verified or have requested verification.

- **North Carolina** base 319 funds are used to support two staff members who are directly involved in addressing agriculture-related NPS issues:
    - *NPS Planning Coordinator* assists Soil and Water Conservation Districts (SWCDs) across the state in helping to identify water quality needs specific to their individual counties. This staff member holds training sessions and assists SWCDs in writing and developing grants for an array of funding opportunities, including section 319 grants, Farm Bill funds, the state's Clean Water Management Trust Fund (a grant program), and other North Carolina-specific water quality-related funding sources.
    - The *Neuse and Tar-Pamlico Basin Coordinator* facilitates nutrient load reductions from agricultural operations to meet the regulatory goals established in the Neuse, Falls Lake (when adopted) and Tar-Pamlico agricultural rules, including the development of required annual agriculture reports for these basins. This NPS program staff member works closely with USDA Natural Resources Conservation Service (NRCS), SWCDs, EPA, and North Carolina NPS program.
- The **Texas** State Soil and Water Conservation Board (TSSWCB) implements a couple of statewide agricultural programs.
    - TSSWCB used FY10 base 319 funding to support three Soil and Water Conservation District (SWCD) technicians. These technicians provide technical assistance to livestock operators in developing and implementing water quality management plans. These efforts help promote the utilization of USDA Farm Bill funds in a manner that furthers the mutual interests of the NPS program and NRCS in implementing projects and activities that protect water quality (see *Chapter 1: Base 319 Funding Summary* for more information).
    - The TSSWCB also supports a Statewide Resource Management (SRM) Team, which monitors and provides technical assistance to section 319 project cooperators. The SRM Team coordinates with SWCDs to engage with landowners and works with agricultural

and silvicultural producers in targeted watersheds to develop and implement Water Quality Management Plans.

- **Pennsylvania** has various agricultural BMP cost share programs available for agricultural producers: the state's Plan Development Incentives Program offers 75% cost share for plan development ($1,500 max); the state's Plan Maintenance Program provides funding for annual plan updates; the State's Plan Implementation Grant Program provides for installing conservation practices on farms up to 80% cost share funding ($75,000 maximum per year per farm) for farmers with a financial need. Pennsylvania also has an Alternative Manure Technology Program, which provides funding for new technology installation on farms, as well as a Cover Crop Program, which provides funding for cover crops to allow for fall applications on bare fields. Pennsylvania's environmental financing agency, PennVEST, recently established and facilitates a nutrient trading market. Currently in a nascent stage, the market has significant potential once implementation of the Chesapeake Bay Total Maximum Daily Load (TMDL) kicks in. PennVEST conducted its first auction in October 2010, which will result in the annual removal of 21,000 pounds of nitrogen from the Susquehanna River watershed for the next three years at a price of $3.04 per nitrogen credit. PennVEST conducted its second auction in November 2010, which will result in the annual removal of 41,000 pounds of nitrogen from the Susquehanna River watershed at a price of $2.75 per nitrogen credit.
- **Virginia** has at least two notable agricultural initiatives:
    - Virginia has used its Water Quality Improvement Fund in recent years to substantially support agricultural BMP cost share statewide. For example, in 2010, within the Chesapeake Bay basin, Virginia invested $7.3 million in priority agricultural BMPs in priority watersheds, $1.8 million in agricultural BMPs in other watersheds, and $1.5 million to develop nutrient management plans for farms. Outside the Chesapeake Bay basin, Virginia invested $4.9 million in priority agricultural BMPs in priority watersheds, $1.2 million in agricultural BMPs in other watersheds, and $1.0 million to develop nutrient management plans for farms.
    - Virginia's Poultry Litter Transportation Incentive Program encourages transfers of poultry waste by subsidizing transportation costs ($15/ton) out of the Chesapeake Bay basin areas of heavy waste concentration (Page & Rockingham Counties) and into croplands outside the Chesapeake Bay basin that need fertilizer, thus reducing nutrient loads to the Chesapeake Bay. This is a new program within Virginia's NPS Management Program that has supported up to $100,000/year from Virginia Department of Conservation and Recreation and up to $100,000/year from the Virginia Poultry Federation. It began with a National Fish and Wildlife Foundation grant in 2007 to fund a poultry litter hotline and "market maker" position with the Shenandoah Resource Conservation & Development Council.
- **Mississippi's** Commission on Environmental Quality (MCEQ), the state NPS agency, provides Mississippi Soil and Water Conservation Committee with annual base 319 funds to implement

an *Agricultural Implementation Assistance* program. This program includes the following activities: agriculture watershed projects; Basin Team meetings; 50 Conservation Carnivals per year; annual conservation youth camp; two teacher workshops per year; outreach to all conservation districts regarding the Clean Water State Revolving Fund; and conservation education poster and essay contests in all conservation districts.

- **Alabama's** NPS program supports two interagency staffing positions – *Agricultural Water Quality Protection Coordinator* and *Education and Outreach Specialist* – between the Alabama Soil and Water Conservation Commission (ASWCC) and the Alabama Department of the Environment (ADEM), the state nonpoint source agency. These positions provide an integral partnering link between state and federal agricultural resource agencies (e.g., NRCS, Resource Conservation and Development Councils, ADEM, and Soil and Water Conservation Districts) and the agricultural community (e.g., landowners, land users, farmers, producers, etc.). The *Agricultural Water Quality Protection Coordinator* maintains and populates the statewide NPS watershed assessment database, participates in citizen advisory committees, coordinates registrations for animal feeding operations (AFOs) and concentrated animal feeding operations (CAFOs), provides voluntary complaint resolution assistance to ADEM, and offers agricultural BMP expertise for watershed management plans and to the Alabama Clean Water Partnership. An *Education and Outreach Specialist* promotes statewide public/private sector partnering opportunities while delivering agricultural water quality protection and watershed management activities to the state's 67 Soil and Water Conservation Districts.
- **Pennsylvania** uses its "Growing Greener" state fund to fully support 66 county-based conservation district watershed specialists (FTEs) across all counties with agriculture. Pennsylvania also devotes nearly $4 million/year from its Conservation District Fund Allocation Program to each conservation district to cover salaries for conservation district managers and to provide administrative funding assistance to districts, to finance Commission mandated or authorized activities, and to provide financial assistance for technical staff and programs of districts.
- **Louisiana** section 319 funds are used to support the *Master Farmer Program*, a statewide collaboration between Louisiana Department of Forestry (LDAF), Louisiana Cooperative Extension/Louisiana State (LSU) Agricultural Center, and NRCS. The program educates farmers and landowners about water quality impact of agriculture, the state's programs to address water quality and NPS pollution, and the role of BMPs in addressing agriculture-related water quality issues. Thus far, over 3,000 farmers and landowners have participated in the program and over 200 individuals have gained certification by implementing a comprehensive farm management system. NPS program staff coordinate with LSU Agricultural Center and NRCS to plan and present *Master Farmer* workshops.
- **Utah** - In FY10 the Utah Department of Environmental Quality awarded $344,000 in state NPS funds to the Utah Farm Bureau and the Utah Association of Conservation Districts to fund the state's AFO Strategy Program, which has been in place since 2001. This program identifies

animal feeding operations that have a risk of discharging to waters of the state. The organizations then work with these producers to develop nutrient management plans for their farms and help them come into compliance with state water quality standards. In FY10, $44,000 went toward education of landowners, including publishing pamphlets and fliers and holding producer workshops on rules and regulations associated with manure management.

- **North Dakota –** North Dakota provides a significant amount of funding to North Dakota State University for the *Discovery Farms Project*. The goal of the project is to establish a network of working farms to evaluate the water quality impacts associated with animal feeding operations, tile drainage, and common farming practices and, more importantly, measure the effectiveness of BMPs applied to address those impacts. A Discovery Farm is a working farm or ranch voluntarily cooperating with the project to demonstrate and evaluate the effectiveness of various BMPs. A Discovery Farm is enrolled in the program for a minimum of five-six years to ensure sufficient data collection to accurately evaluate the benefits and impacts of specific BMP's. As the program evolves, more farms will be enrolled to address future water quality issues that are identified. With this grass-roots focus, the results from each Discovery Farm will have local application, as well as relevance to a broader range of the farm/ranch population. North Dakota NPS program coordinator is a member of the Discovery Farm steering committee, which provides guidance for the project. The project has the support of local organizations, landowners and North Dakota agricultural trade associations. In addition, over a five-year period, this project will leverage nearly $300,000 of other federal resources through the United States Geological Survey's participation in the project.
- The **North Dakota** *Livestock Pollution Prevention Program* (LP3) is funded by section 319 and administered by the North Dakota Department of Agriculture. LP3 coordinates the implementation of BMPs at discharging facilities by providing technical assistance and funding for up to 60% of approved expenses. The project began in 2000 with a focus on dairies and recently expanded to other animal sectors. The long-term goal of the project is preventing and eliminating water quality impairments associated with the majority of medium and small animal operations in the state. To date, more than 300 producers have participated in the program.
- **Iowa**'s NPS Program supports several statewide education and information activities for the agricultural sector.
    - Iowa launched the Iowa Learning Farm (ILF) in 2005 to foster conservation partnerships across the state and develop innovative conservation practices. The ILF is a project of the Iowa State University Cooperative Extension and it is supported through base 319 funding (more than $149,000 annually from FY08-10). Key ILF partners include: Iowa State University (ISU), Iowa Department of Agriculture and Land Stewardship, Iowa Department of Natural Resources, Leopold Center for Sustainable Agriculture, USDA Natural Resources Conservation Service, Iowa Water Center, conservation districts and Iowa Farm Bureau Federation. As of 2010, farmers accounted for between 30-50 partners out of 100 total partners. A goal of the ILF is to create long-term continuity and

a “culture of conservation.” Iowa’s FY10 section 319 grant work plan provides, “In 2011, the Iowa Learning Farm program will continue to focus on four main areas: 1) nurturing of our farmer/non-farmer partners (including Soil and Water Conservation District commissioners), 2) broad outreach efforts, including working with K-12 schools and community colleges throughout the state, 3)one-on-one educational opportunities that made the ILF project originally distinctive, and 4) evaluation which will continue to cover all aspects of the ILF program, a critical component of feedback, and ensure the messages fit the means, the audience and our goals.”

  - The *Statewide Manure Management Education Initiative* provides resources to producers and service providers regarding management of manure nutrients. The initiative provides useful resources that feed into other NPS agriculture programs in Iowa, such as the Iowa Manure Management Action Group, the Small Feedlot Education Project, ISU Extension’s Manure and Nutrient Management Workshops, and the Iowa Learning Farm and Conservation Station. The Water Quality Initiatives for Small Iowa Beef and Dairy Feedlots provides guidance, training and other technical assistance to small feedlot operators in geographic areas with high concentrations of small beef or dairy operations, where water quality problems are severe, where local watershed protection projects already exist, or where producer and public interest is high. Iowa Department of Natural Resources (IDNR) credits the programs described above with creating a culture of conservation in the agriculture community. One reason these programs are effective is that the state surveys the farmers and uses the feedback to improve their targeting of outreach, trainings, etc.

- **Indiana** has two new statewide agricultural initiatives:
  - The *Indiana Conservation Partnership* (ICP) is "an innovative partnership dedicated to land and water stewardship assistance that will improve the water quality of Indiana's streams, rivers, and lakes." It is formalized through a signed ICP Agreement, affirmed by eight parties on January 12, 2010. Indiana’s NPS staff is heavily involved in working cooperatively with multiple state agencies, the state’s Soil Conservation Board, Association of SWCDs, Purdue Cooperative Extension, FSA and the NRCS to achieve the ICP objectives. The stated objectives are “to cooperatively promote programs that will: reduce soil erosion and sedimentation into Indiana’s streams, rivers and lakes; reduce the runoff of nutrients and pesticides into Indiana’s streams, rivers and lakes; and improve the quality of the habitat of Indiana’s streams, rivers and lakes.” There are seven active ICP work groups, including one to develop a dedicated funding source for ICP initiatives. The ICP is a well-structured framework for achieving water quality and strives to effectively partner with NRCS and others to deliver results in the agricultural community.
  - Indiana’s *On-Farm Network* program was created in 2010 when the Indiana Department of Agriculture was awarded a Conservation Innovation Grant (CIG) by NRCS. Indiana’s On-Farm Network is an off-shoot of similar programs in Iowa and Chesapeake Bay

states. The On-Farm Network is a group of crop producers interested in economics, stewardship, and reducing their environmental footprint. The end result is farmer-driven adaptive management in real time – farmers gathering and making beneficial changes based on data from their own fields and those of others. The farmers are in the driver's seat, which significantly increases buy in to the results and willingness to make long-term changes. Key tools include the cornstalk nitrate test (CSNT), aerial imagery, and replicated strip trials. This is being funded with base 319 funds in FY2011 and potentially beyond. The On-Farm Network encourages peer-to-peer networking among farmers. The original focus is on reducing nitrogen loads to the Wabash River, an NPS priority area with significant agricultural tile drainage issues. The goal is to change practices to reduce nitrogen loads and saves farmers money, which is supported by data.

  - Indiana is also home to the *Conservation Technology Information Center* at Purdue University, which is recognized as a national leader that provides and promotes information on technologies and sustainable agricultural systems that conserve and enhance soil, water, air and wildlife resources and are productive and profitable. It has received previous support from section 319 base funds.

- **Oregon**'s Department of Environmental Quality (ODEQ) has supported *Pesticide Stewardship Partnerships* (PSPs) across the state with section 319 funds since 1999. PSPs are aimed at providing local in-stream pesticide water quality data (collected and interpreted by ODEQ) to local and regional experts to inform the voluntary implementation of agricultural pesticide management practices to improve water quality. The PSP approach's tracking of legacy and current use pesticides has also contributed to the leveraging of USDA Agricultural Water Enhancement Program (AWEP) funds in Zollner Creek, an area of intensive, diverse irrigated agriculture in the Pudding River subbasin of the Willamette Basin. The NRCS-AWEP project (approximately $1.5 million) is aimed at reducing water use and enhancing water quality through improved irrigation practices, as well as implementing conservations practices to reduce in-stream pesticide levels. This project was selected by USDA in part due to the strong advocacy of ODEQ and direct involvement in the project review process. See *Chapter 7: Coordination with USDA* for more information on leveraging of USDA funds.

- **Arkansas** Natural Resources Commission (ANRC) section 319-funded NPS program staff, as required by the state's 2003 nutrient management laws (see *Chapter 3: State Regulatory Authorities to Control NPS Pollution* for more information), support nutrient management programs:
  - *Nutrient Applicator Certification Program* – ANRC certifies and provides training to nutrient applicators on the proper application of nutrients. The state requires ANRC certification nutrient application in Nutrient Surplus Areas.
  - *Nutrient Management Planner Certification Program* – ANRC trains and certifies persons who prepare nutrient management plans.

- **Florida** has Agricultural BMP Outreach Teams, which are supported by section 319 funding and match from the Department of Agriculture and Consumer Services and local Watershed Management Districts, as well as in-kind support and supervision from the University of Florida. The teams are an integral part of the state's agricultural NPS program and provide targeted one-on-one outreach, education, and technical assistance to growers in prioritized watersheds on successful selection and implementation of agricultural BMPs. Several teams are located in the citrus and vegetable areas in the southern and central part of the state as well as in the Suwannee River basin (see *Chapter 7: Coordination with USDA* for more information).

State Forestry Programs:

At least 15 state NPS programs (AL, AR, CA, GA, KY, LA, MT, NC, OK, OR, SC, TX, VA, WV, WY) support *Statewide Forestry Programs* aimed at addressing NPS problems associated with forest harvesting operations. At least ten of these states (AL, AR, GA, KY, LA, NC, OK, SC, VA, WV) provide section 319 funding to the state forestry agency to support NPS management of forestry activities. In many of these states, the NPS agency works closely with the state Forestry Commission via a contract and/or memorandum of agreement (MOU) to implement the NPS forestry program. Some of the common programs/initiatives completed as part of these programs are:

- **Virginia** Department of Forestry (VDOF) has a well staffed Water Quality Unit to perform inspections of all logging operations greater than 10 acres and implement statewide initiatives to protect water quality from forestry activities. Virginia has implemented a toll-free phone number and online notification system to facilitate loggers to comply with the law (see Virginia's *Silvicultural Water Quality Act* in *Chapter 3: State Regulatory Authorities to Control NPS Pollution*). Loggers can learn about and use Virginia's Pre-harvest Planning Mapper, a free and handy online Geographic Information System (GIS) tool that "helps loggers prevent water quality issues before they happen," and includes a feature that automates stream culvert sizing recommendations. VDOF used CWA section 319 funds to develop and update *Virginia's Forestry Best Management Practices for Water Quality*, which is now in its fifth edition. Since forestry operations contribute more than $27 billion to Virginia's economy, the state has invested in a robust education program called SHARP (Sustainable Harvesting and Resource Professionals) through Virginia Tech to teach and certify loggers on how to protect water quality and operate responsibly. Virginia incentivizes participation by offering a 50% BMP cost share, up to $2,000, to certified SHARP loggers. The maximum cost share amount doubles to $4,000 if it includes a portable steel bridge, which has proven superior to other types of stream crossings commonly used in logging operations. The cost share program is supported by Virginia's Water Quality Improvement Fund. To date, Virginia has trained more than 6,000 loggers in applying water quality BMPs to their operations and inspected more than 6,000 harvesting operations. Virginia's forestry program is well coordinated with the state's NPS program.
- **Louisiana's** *Statewide Forestry Educational Program* is a coordinated effort between Louisiana Department of Environmental Quality (LDEQ), Louisiana Forestry Association (LFA), Louisiana

Office of Forestry, USDA – NRCS and USFS, and Louisiana State University. Over the past several years, LFA and NRCS have worked on a series of workshops for loggers, foresters, and landowners, which have provided information on erosion control methods and forestry BMPs. More than 5,300 people have been trained on forestry BMPs and how they should be implemented for timber management and harvesting. NPS program staff give presentations at these workshops and coordinate with partner agencies in planning these workshops. As a result of the educational program, BMP compliance has increased statewide from 56% to 95%.

- The **South Carolina** NPS program provides a base 319 grant to the South Carolina Forestry Commission to implement the Statewide Forestry BMP Compliance Program. The program prevents NPS pollution through offering voluntary courtesy BMP exams to provide forest landowners, foresters, and forestry operators with site-specific recommendations regarding BMP implementation that can be included in timber sale contracts. A monthly summary report of completed courtesy BMP exams is provided to the South Carolina NPS program and forest industry. Additionally, BMP Specialists conduct BMP training throughout the state, including the Timber Operating Professional (TOP Program) course, given in cooperation with the South Carolina Forestry Association and Clemson University.
- **Wyoming** 319 funding supported BMP forestry audits and training for the Wyoming State Forestry Division and Wyoming Timber Industry Association (WTIA) in 2001, 2003 and 2006. Funding through these years resulted in auditing processes to support development and evaluation of effective forestry BMPs. In addition, the Forestry Division and WTIA have provided BMP training sessions in the classroom and in the field to private, state, and federal timber representatives to promote the use of effective BMPs. Grant funding in past years laid the foundation for these efforts to continue. For example, in 2011, the State Forestry Division again hosted a week-long forestry audit of several sites around the State with participation of 319-funded staff from the Wyoming Department of Environmental Quality Watershed Section.
- **Montana** – NPS program staff actively participate in the Montana Forestry BMP Audit program. This is a voluntary program established to audit forest practices that protect water quality on both public and private forest lands.
- **Georgia** NPS program lists “achieve 100% compliance of recommended BMPs for silviculture” as one of its NPS program goals. The Georgia Forestry Commission (GFC), which receives section 319 funding to implement the Silvicultural NPS Management Program, engages in BMP education (including Master Timber Harvester Workshops), private landowner assistance, forestry complaint investigation and mediation, and forestry BMP implementation monitoring. GFC’s program, which conducts a biennial silviculture BMP survey, noted a 2.4% increase (to 94.15%) in BMP implementation between 2007 and 2009. The GFC coordinates with the forestry associations, forestry/natural resource universities, and the United States Forest Service (USFS), who provides data for BMP Implementation and Compliance Surveys. The section 319 program also funds a portable timber bridge demonstration project to show how bridges can be used to

provide ideal temporary stream crossings that protect water quality from NPS associated with forestry operations.

- **Oregon's** NPS program at ODEQ works with Oregon's Department of Forestry (ODF) under the terms of an MOU to evaluate whether current forest practices rules comply with state water quality standards and TMDL load allocations. In 2002, ODEQ and ODF co-authored a statewide sufficiency analysis focused on evaluating the Forest Practices Act effectiveness in protecting water quality, with a primary focus on temperature. This report included monitoring recommendations, including the need to monitor effectiveness of riparian and forest road management practices. As a result, ODF is currently conducting the Riparian Function and Stream Temperature (RipStream) study to quantify the effects of current riparian management practices on private and state forest lands. Since 2009, DEQ has provided section 319 grant funds to ODF to continue analysis of RipStream data. This study will be used to evaluate and revise riparian BMPs on private lands. ODEQ is also committed to implementing enforceable TMDLs with required WQMP/implementation plans and BMPs to control logging impacts. See *Chapter 3: State Regulatory Authorities to Control NPS Pollution* for more information.
- In 2010, **Kentucky** Division of Forestry (KDOF) completed a section 319-funded *Silvicultural Best Management Practices Implementation Study* aimed at determining: the rate at which forestry BMPs are put to use within the state; the effectiveness of KDOF inspection and enforcement; and how best to use the resulting study information to improve logger and inspector training programs. Results from two statewide surveys identified areas for improvement in the timber harvest compliance process, and KDOF inspector and supervisor training was developed to address these areas.
- **West Virginia** – All logging operations must have a state-certified professional logger on site at all times. A requirement of certification is to complete training forestry BMPs. Certified loggers must attend a training course every three years to maintain certification, and more than 1,000 loggers complete this training each year. The West Virginia Division of Forestry (WVDOF) inspects all forestry operations for compliance with mandatory BMPS to protect water quality. WVDOF developed the *Best Management Practices for Controlling Soil Erosion and Sedimentation from Logging Operations in West Virginia* publication and distributed it to every certified professional logger in the state. To help enforce its *Logging Sediment Control Act*, the state is using FY10 base 319 funds to develop its Logging Operation, Notification, Inspection and Enforcement (LONIE) tracking database system to improve and streamline enforcement of the *Logging Sediment Control Act*. The LONIE system uses a database, a mapping API (such as Google Maps), and a web-based interface that will provide improved service to land owners, logging operators and WVDOF. This system, which is being developed by West Virginia University's Appalachian Hardwood Center, is easily expandable to provide future benefits and water quality protections tailored to specific logging sites.

State Urban NPS/Post-Construction Development Programs

Urban NPS pollution has been a key category of the national NPS program since its inception. Over time, a portion of urban NPS pollution has been regulated nationally under the National Pollution Discharge Elimination System (NPDES), including Municipal Separate Storm Sewer Systems (MS4s) for U.S. Census-designated urbanized areas (generally, any area with a population of at least 50,000 and an overall population density of at least 1,000 people per square mile) under EPA's Phase 1 and Phase 2 Stormwater Rules.[5] EPA's NPS program has long taken a leadership role in controlling urban runoff and brought significant financial support and national attention to the practice of Low Impact Development (LID). LID and related tools (e.g., Better Site Design, Green Infrastructure, and Smart Growth) remain central to controlling urban runoff, both within the roughly 1750 regulated MS4s and the large number of unregulated urban and urbanizing places. Importantly, activities that directly implement regulatory components of the national NPDES Stormwater regulations are not eligible to receive any section 319 funding, although activities that indirectly support the regulatory components are eligible for section 319 funding. A number of states have programs and initiatives in place to promote LID and other tools for systematically controlling urban NPS pollution. For many states, these efforts support the state's own regulatory efforts, which are described in *Chapter 3: State Regulatory Authorities to Control NPS Pollution*.

- **New York** NPS program works with SWCDs to train interested parties in stormwater concepts, rules, and regulations. NYS Department of Environmental Conservation (NYSDEC) developed a 4-hour course titled "Protecting New York's Natural Resources with Better Construction Site Management" for delivery through county SWCDs across the state. During FY09-10, SWCDs held these four-hour training events across the state. Over 10,000 contractors and inspectors have completed training. NYSDEC also worked with the NYS Builders' Association to produce an on-line version of the four-hour course, which trained 220 contractors during FY09-10.
- **Florida** NPS Program's award-winning *Florida-Friendly Landscaping Program* is a partnership between the University of Florida and Florida Department of Environmental Protection (FDEP) NPS program to develop quality landscapes that conserve water, protect water quality, are adaptable to local conditions, and are drought tolerant. The program, which has been integrated in 52 of Florida's 67 counties, consists of three sub-programs (see *Chapter 3: State Regulatory Authorities to Control NPS Pollution* for more information):
    - *Florida Yards and Neighborhoods Homeowner Program*, which educates homeowners about how to design, install, and maintain *Florida-Friendly* landscapes;
    - *Florida Yards and Neighborhoods Builder and Developer Program*, which educates builders and developers, landscape architects, homeowner associations, and property managers; and
    - *Green Industries: Best Management Practices Program*, which trains and certifies landscape professionals.

[5] See www.epa.gov/npdes/stormwater for more information on the point source stormwater program.

- **Massachusetts** NPS program provides section 319 funding for the Massachusetts Stormwater Technology Evaluation Project (MASTEP), which is administered by University of Massachusetts – Amherst. This project provides a clearinghouse of innovative stormwater BMPs for users (i.e., Massachusetts Department of Environmental Protection, conservation commissions, local officials and developers) throughout the state. The project's objective is to assist communities with selection of technologies that have the greatest potential to achieve water quality goals. The project website provides a searchable database, additional information about stormwater technologies and a data entry feature for users who want to share information about BMPs. Any information entered on the site by a registered user is screened by MASTEP according to verified studies.
- **New Hampshire**'s NPS program provides section 319 funding for outreach and education activities of the University of New Hampshire Stormwater Center. Activities include LID demonstration projects, tours, and trainings, all targeted at developers, consultants, municipalities and watershed organizations. The NPS program has also been involved in the development of the New Hampshire Homeowner's Guide to Stormwater Management, the New Hampshire Residential Loading Model and the New Hampshire Stormwater Manual. Results of these efforts include increased understanding of LID practices among practitioners, increased capacity of stormwater management expertise throughout the state, scientific advancement, and incentivizing wider adoption of LID practices through integration into section 319 grant criteria.

Decentralized Sewage Systems:

Approximately 20% of households nationwide are served by septic systems and alternative individual on-site and cluster (*decentralized*) wastewater systems and the number of these decentralized wastewater treatment systems (DWTS) continues to grow. These systems are viable and can be managed in ways that minimize impacts on the environment. However, EPA estimates that 10-20% of existing DWTS are malfunctioning at any given time. Even properly functioning conventional septic systems contribute excess nitrogen to the environment. EPA actively promotes proper septic system design, operation and maintenance, as well as nitrogen-reducing DWTS where needed. Many state NPS programs provide support for this important subject. Two examples are provided here:

- **Massachusetts** - The Massachusetts Septic System Test Center (MASSTC) serves as a resource for quality third-party performance information regarding advanced onsite septic system technologies. In addition, the existence of the MASSTC promotes the trial of new technologies to reduce nitrogen and phosphorus from wastewater. This continuing project supports the state's TMDL program by providing environmental decision makers with the tools to achieve the goals of the TMDL and the Massachusetts estuaries programs, especially where wastewater is a major source of pollutant loading. The MASSTC endeavors to investigate three areas of concern identified by Massachusetts DEP personnel and wastewater planners: (1) pharmaceutical and personal care product (PPCP) treatment in onsite septic systems; (2) the effects of septic system

remediation technologies on the overall treatment ability of septic systems; and (3) a continued assessment of nutrient removal technologies and their applicability in comprehensive wastewater/nutrient management plans.

- In 2010, **New York** NPS program funded the Onsite Training Network (OTN), a training program for homeowners, design engineers, contractors, and municipal officials on the proper design, construction, operation, and maintenance of onsite wastewater treatment systems. OTN coordinated its efforts with watershed protection programs for high quality waters. OTN helped with the installation of advanced treatment systems for homes located within 100 feet of waters and with the development of inspection and pump-out programs for these watersheds.

Capacity Building Programs:

For many NPS projects to be successful there must be sufficient expertise, funding and desire at the local level. One key role of base 319 funding is building capacity at the local level to more effectively and efficiently achieve water quality results. State capacity building programs may be part of the state's NPS education and outreach efforts, involve technical assistance, such as training programs, or provide tools or information resources that support watershed-based water quality efforts. Several examples of statewide efforts specifically designed to increase local capacity for NPS projects are provided below. Many statewide programs described elsewhere in this chapter of the report, including outreach, training and volunteer monitoring, also result in greater local capacity for watershed planning and implementation.

- **Indiana** – The Indiana Watershed Leadership Academy was created in 2005 to increase the capacity of watershed leaders to lead community-based watershed groups to manage watersheds and improve water quality. The academy works in collaboration with numerous conservation partners throughout the state and is offered through Purdue University under the leadership of Dr. Jane Frankenberger. It is supported by base section 319 funds to increase creation and implementation of nine-element watershed-based plans. Since the Academy began, nearly 200 people have participated in the Academy, through which they have learned skills in organization and communication, watershed technology, GIS, policy, watershed science, and leadership. The Academy has been instrumental in developing viable watershed groups to develop nine-element watershed plans that, in turn, attract incremental 319 funded projects in priority watersheds.
- **Utah** has developed a framework for local watershed steering committees and local watershed coordinators that results in increased local capacity for watershed planning and implementation and improved relationships with key partners. NPS program staff at Utah Department of Environmental Quality/Division of Water Quality (DWQ) and Utah Department of Agriculture and Food work closely with existing watershed organizations, conservation district boards and others at the local level to establish watershed steering committees. The steering committees are the primary planning entities in watersheds across the state. In most cases, the salaries of

local watershed coordinators are paid through section 319-funded contracts. This geographically focused approach to local coordination is designed to reduce or eliminate redundancy in program activities. The Utah FY09 Annual Report included the follow status update: "Approximately 24 local watershed committees are organized and functioning with DWQ in the development and implementation of TMDLs. Local chairs and sponsors vary, including counties, Conservation Districts and Water Districts."

- **West Virginia**'s legislature established the state's Stream Partners Program (SPP) in 1996 as a cooperative effort of WV Conservation Agency, WV Department of Environmental Protection (WVDEP)/Division of Water and Waste Management, WV Department of Forestry and WV Department of Natural Resources. WVDEP makes seed grants up to $5,000 for stream stewardship capacity building. The legislature appropriates $100,000 annually from general revenue funds to be distributed as $5,000 seed grants to these organizations to complete watershed improvement projects. These grants are awarded with the approval of all four state agency directors. Also, the state provides base 319 funds to support the West Virginia Watershed Network, an informal association of state and federal agencies and nonprofit groups committed to providing resources and support for watershed management across the state. As a result of these investments, West Virginia has built up a base of watershed groups and stakeholders capable of leading restoration efforts and providing matching funds for section 319-funded implementation projects.
- **Illinois** uses base 319 funds and state funds appropriated to Illinois Environmental Protection Agency (IL EPA) to develop and conduct a series of workshops designed to build the capacity of state watershed groups to create and implement effective watershed plans. For this effort, IL EPA selected to work through a partnership between a well-established grassroots advocacy group, Prairie Rivers Network, and the Illinois Lake Management Association. This team crisscrossed the state holding workshops on many aspects of watershed planning. The workshops, held from February 2009 to March 2011, addressed a range of topics such as building partnerships, collecting watershed data, securing funding, and how to develop a third-party TMDL. Six topics in all were selected based on a 2008 survey of the needs of local watershed groups statewide conducted by the Prairie Rivers Network. The state's NPS program invested in the Prairie Rivers Network because of the Network proven ability as an incubator of local watershed groups across Illinois. The Network continues to innovate through effective use of social media (e.g., blogging, Facebook, Twitter) to bring about positive environmental change.
- In 2011, the **Maine** NPS program developed a new tool called the NPS Site Tracker in order to enhance the effectiveness of watershed surveys. Many successful NPS protection and restoration projects in Maine begin with either a lake watershed survey or stream watershed survey. Watershed surveys are conducted at the local level, often by volunteers, and identify sources of NPS pollution and solutions for addressing these sources. Part of the process involves surveyors walking the watershed and documenting NPS sites, such as a site where erosion is contributing to a sediment impairment. The new NPS Site Tracker is an easy-to-use tool to assist

local watershed groups with long-term watershed survey development and follow-up actions. The NPS Site Tracker will make the NPS program in Maine more efficient and effective by allowing watershed groups to better track their past efforts and target future efforts, including monitoring, BMP implementation and BMP maintenance. This tool addresses the relationship between quality tracking and quality local watershed work and extends the useful life of a single section 319-funded watershed survey.

- Through the **Vermont** Rivers Management Program, section 319-funded Department of Environmental Conservation staff oversee the collection and analysis of stream geomorphic data and an online database. The program's website provides "The objective is to guide and encourage projects that provide increased property and infrastructure protection and maintain or restore the ecological functions and economic values of the river system" (http://www.anr.state.vt.us/dec/waterq/rivers.htm). The program provides regulatory review and technical assistance for protection, management and restoration projects that affect streams and rivers. The online database includes data associated with impaired waters restoration projects, stream alterations and healthy watersheds protection projects. In addition to maintenance of the database in support of water quality projects, the program also increases local capacity and inter-state consistency through training and skills transfer.

Education/Outreach and Training Programs:

While it is likely that all states engage in education and outreach efforts to promote awareness of NPS issues and actions to control NPS pollution, a smaller number of states prioritize education and outreach efforts to strive for large scale behavior change that can lead to wholesale reductions in NPS pollution. At least 13 state NPS programs (AK, CT, FL, HI, IA, KS, LA, ME, NM, NV, SC, TX, UT) prioritize NPS education/outreach statewide and aim for behavior change that can make a difference broadly. Examples include:

- **Florida**'s NPS program partners with the University of Central Florida's (UCF) Stormwater Management Academy and other cooperating organizations to implement statewide pollution prevention education programs. This base 319-funded project implements and evaluates a number of targeted education and outreach programs that reduce individuals' contributions to NPS pollution. The *Stop Pointless Personal Pollution Stormwater Education Toolkit*, for example, includes a number of resources including: the Stormwater Management Academy's website, a quarterly *Florida Stormwater Education* newsletter, the Florida Stormwater Education Toolkit – a Web-based resource library of social marketing research tools with a repository of NPS outreach materials. The Academy tests and assesses the effectiveness of pollution education slogans and programs through marketing research. This statewide education program also informs and publicizes the *Florida-Friendly Landscaping Program*, which is aimed at reducing NPS impacts from lawns.
    - The City of Tallahassee's "Think About Personal Pollution" (TAPP) campaign, which has been supported by a series of section 319 grants, uses a variety of means (billboards,

radio, television, online newspaper, www.tappwater.org, publications, etc.) to make citizens aware of personal sources of pollution. The campaign has used pre- and post-campaign surveys to evaluate effectiveness. The most recent post-campaign survey documented that there was an increase in specific actions taken to reduce yard runoff six months after the campaign, including: a 29% increase in households who picked up their pet's waste; a 10% increase in the number of households who skipped a fertilizer application they would have otherwise taken, and; an 18% increase in the use of phosphorus-free fertilizers among households that still applied fertilizer.

- **Louisiana** Department of Environmental Quality's (LDEQ) uses base 319 funds to develop its statewide "Be the Solution" NPS education campaign. The campaign conveys the "Be the Solution" message via educational billboards, a website, and TV and radio public service announcements (PSAs) which were aired across the state. LDEQ's "Be the Solution" television PSA is available at www.digitalfx.tv/reels/be-the-solution (free Adobe Flash Player plug-in required).
- **New Mexico**'s NPS program uses section 319 funds to host a biennial *Watershed Forum* for existing and future watershed groups to exchange ideas, learn how to prepare watershed-based plans, and discuss other tasks associated with maintaining a watershed group. The 2010 *Watershed Forum* had approximately 250 registered attendees, including watershed restoration specialists, watershed planners, watershed groups, educators, federal, state and tribal agency representatives, and concerned citizens. The state NPS program values the *Forum* as an opportunity to strengthen professional relationships and discuss future collaborative opportunities with NPS stakeholders.
- **Texas** NPS program implements a "triple-option" approach to educate NPS stakeholders on watershed planning:

    1) As Texas initiates the development of a watershed-based plan, the Texas State Soil and Water Conservation Board's (TSSWCB) Texas Watershed Steward Program (which is funded, in part, by section 319 funds) hosts a day-long, watershed-specific public outreach event to train attendees about NPS and watershed planning.

    2) The Texas Commission on Environmental Quality (TCEQ) utilizes section 319 funds to conduct an annual Watershed Planning Short Course (WPSC). The course provides tools, training, and coordination opportunities for watershed planners and coordinators throughout Texas to ensure consistent, high quality watershed-based plans are developed, and implementation and water quality improvements are achieved and sustained. The Texas Water Resources Institute, with assistance from the Project Team, identifies key speakers for the course, makes arrangements for facilities, advertises the WPSC, conducts registration, and facilitates the delivery of each WPSC to a total of 80-120 water resource professionals in Texas and other states in the surrounding region. Past WPSCs have included federal, state, local officials, and consultants.

3) TCEQ uses section 319 funds to organize and facilitate two Watershed Coordinator Roundtables a year. These face-to-face Roundtables build upon the fundamental knowledge conveyed through the WPSC and establish a continuing dialogue between watershed coordinators in order to facilitate interactive solutions to common issues being faced by watershed coordinators statewide. This "triple-option" approach engages multiple stakeholders in learning about, developing, and implementing watershed-base d plans.

- **Maine** – Maine Department of Environmental Protection (MDEP) and its partners increasingly apply social marketing principles to design statewide and watershed level outreach actions engaging target audiences to take action to reduce polluted runoff. DEP applied the Logic Model & McKenzie-Mohr Behavior change matrix to analyze the issues, audiences, solutions, etc to develop more cost-effective outreach to accomplish specific objectives.[6] The award-winning Think Blue Maine partnership aims to solve "people pollution" by changing human behaviors throughout the community in neighborhoods, business and municipal services. The Think Blue Maine partnership is comprised of the 28 regulated stormwater municipalities, nested regulated entities, Soil and Water Conservation Districts, State Planning Office, MDEP, and the University of Maine Cooperative Extension. Partnership members work together to address water quality issues throughout the state and in four local clusters. Partnerships and collaboration across programs and agencies have increased due to DEP's leadership in the use of social marketing/strategic methods to design and implement NPS outreach. In addition to Think Blue, MDEP's approach to outreach has benefitted other NPS programs including LakeSmart, YardScaping, University of Maine Cooperative Extension Watershed Stewards Program, and the New England Cooperative Extension lawn care project. DEP has used phone surveys & focus groups to become better informed and evaluate outreach effectiveness. MDEP's Unpaved Private Road pilot project is the result of applying the logic model/social marketing to an old outreach effort to evaluate the impact the different outreach tools have on prompting people to use BMPs.
- **Connecticut** NEMO (Nonpoint Education for Municipal Officials) is an award-winning statewide natural resources outreach effort that was created in 1991 to address water quality issues in Long Island Sound and has since expanded across the state and spurred 30 other state NEMO programs and the National NEMO Network. NEMO provides NPS educational information to municipalities, organizations, agencies and citizens. Funding from Connecticut Department of Environmental Protection (CT DEP) through the section 319 program from the 1990s through 2007 has allowed CT NEMO to flourish. Recent NEMO activities include:
    - Developing a statewide database of Low Impact Development (LID) practices and LID workshops for contractors and installers.

[6] *Fostering Sustainable Behavior: An Introduction to Community-based Social Marketing* by Doug McKenzie-Mohr, William Smith, 1999; New Society Publishers; see also, www.toolsofchange.com and www.cbsm.com.

  - A targeted Municipal Initiative to support CT DEP's TMDL program, including outreach, education and technical support for municipalities implement TMDLs for waterbodies in their jurisdiction.
  - Developing an LID training program that targets communities that have been involved in watershed-based plan for TMDL implementation with the goal of helping towns implement LID practices in their plans and regulations.
  - Developing a bioretention training program that will target homeowners and utilize existing resources such as the NEMO publication, "Rain Gardens in Connecticut: a Design Guide for Homeowners."

- **Hawaii** – Each section 319-funded project also includes an outreach component to help raise awareness and change behavior relative to polluted runoff. Hawaii also uses base funds for several projects that primarily focus on NPS outreach each year with the goal of achieving behavior change. Hawaii has a long tradition of working with school children to instill an ethic to prevent NPS pollution through personal commitment. Examples include investments with the Youth Conservation Corps, the Hawaii Watershed Experience (for elementary education students), fairs, expos and school plays. Hawaii dedicates one full-time position to outreach, which is funded by its base 319 grant.

- **Nevada** has a multi-pronged outreach and education program supported by base and incremental 319 funds. Base funds have provided consistent support for Nevada's NEMO program. Nevada NEMO helps communities protect their natural resources while still accommodating growth through NPS education of land use decision makers. Nevada NEMO is designed to address issues related to water quality or quantity statewide. Nevada NEMO also provided the state with its first set of nine-element watershed-based plans, which is now being followed up with more specific nine-element plans at a more refined watershed level. Nevada also provides regular support for annual watershed fairs and K-12 educational programs such as Project WET (Water Education for Teachers) with base 319 funds. Significantly, Nevada also requires every funded incremental 319 project to include an educational or public outreach component (often provided through grant match). This required component is scored separately through Nevada's section 319 project solicitation and award process, which favors urban and riparian projects located in priority watersheds that have educational longevity and involve key stakeholders. Effectiveness monitoring is a required component of many of the outreach programs and projects supported by section 319 funds.

- **Utah** - Every year since FY06 the State of Utah has provided roughly a $35,000 section 319 grant to Utah State University to fund its statewide information and education effort. This includes oversight of volunteer monitoring, educational workshops and publications of NPS documents such as a BMP Monitoring Manual, and watershed implementation fact sheets. In addition, Utah's NPS program has funded one FTE in the Department of Agriculture and Food (UDAF) to support a state education and outreach specialist. This position has produced newsletters, water quality conferences, and videos, public service announcements and other water quality

outreach materials using social marketing techniques, which are geared toward achieving behavior change. In 2007, UDAF released the section 319-funded guidebook *Getting Your Feet Wet with Social Marketing: A Social Marketing Guide for Watershed Programs*, which has since received national recognition and influenced NPS outreach efforts in other states.

Volunteer Monitoring Networks:

At least five states (OR, WV, ME, MT) implement volunteer water quality monitoring programs. In addition to educating a broad public audience about NPS pollution and water quality, these networks provide state NPS programs with a valuable source of water quality information that furthers watershed planning and implementation efforts and/or aids prioritization of funding for NPS program activities. Among these programs, some use the water quality data to better inform state NPS program decisions. Some of the more robust state-supported volunteer monitoring networks also serve to increase stakeholder involvement and capacity of local partners to help implement state NPS programs.

- **Oklahoma's** *Blue Thumb Education Program* is a statewide NPS education program, which engages volunteer citizens to conduct monthly monitoring at more than 100 sites statewide. Blue Thumb participants take part in public education, groundwater screening, stream monitoring, and other water quality-related activities. Volunteers attend quarterly quality assurance checks to assure data collected is of acceptable quality to the Oklahoma Conservation Commission. Blue Thumb also directs and implementation public education and outreach in priority watershed project areas. The Blue Thumb Program reaches thousands of Oklahoma citizens each year through water quality and NPS pollution education activities and thus builds capacity and stakeholder involvement.
- **West Virginia's** Save Our Streams (WV SOS) is a network of voluntary monitors. The statewide program coordinator for WV SOS is funded by base 319 funds. An MOU between WV SOS and WVDEP sets the terms for support for certified volunteer monitoring groups and WV SOS. First and foremost, WV SOS is a statewide capacity-building effort that collects water quality data and promotes statewide water quality awareness through workshops, demonstrations, presentations, and other means. The program reaches schools, businesses and community leaders, volunteer organizations, and citizens. The program's objective is to encourage volunteer monitors to adopt sections of their local streams, thus taking responsibility for their protection and preservation through their monitoring and other outreach activities. Volunteer monitors often participate in meetings to develop watershed-based plans or TMDLs. First and foremost the data is used by the volunteer groups themselves. Volunteer monitors determine baseline conditions and often conduct long-term monitoring programs for trend analysis. Some high quality volunteer data is also used in WVDEP's Integrated Report.
- **Maine** has one of the oldest volunteer monitoring programs in the country, with its lakes monitoring program of 40 years. The state attributes much of the program's success to consistent base 319 funding over the years. The fact that Maine DEP, watershed groups and

conservation districts all have access to long-term data increases capacity for identifying water quality issues that need to be addressed, including impaired, threatened and healthy waters. DEP relies on this data for the first step in determining which waters to list as impaired. The program is wide-reaching. For example, in 2010, samples were collected from over 42% of Maine's total lake surface area. In addition, this program has been credited with allowing the state and local experts to protect healthy lakes from invasive species. The state expanded volunteer monitoring efforts four years ago with the creation of the volunteer monitoring program for rivers.

- **Missouri** Department of Natural Resources supports the Missouri Stream Teams, a network of citizens involved in stream conservation, and the Volunteer Water Quality Monitoring Program (VWQMP). This program increases capacity at the local level through public education efforts and brings together public and private resources to implement water quality solutions. Program offerings include training and equipment for water quality monitoring, educational workshops, supplies for litter pick-ups, trees for riparian corridor restoration, and networking of citizens within a watershed. Volunteers often work in conjunction with section 319-funded projects, thereby increasing the resources available to an implementation project. This is a successful and growing program in Missouri, currently with over 3700 stream teams, 1700 trained water quality monitors and 55,000 citizens served by the program. In FY09 alone 218 new stream teams were formed. Two state agencies, the Department of Conservation and the Department of Natural Resources, and the Conservation Federation of Missouri jointly sponsor these programs.
- The **Montana** Voluntary Monitoring Partnership is managed by Montana State University (MSU) with support from a section 319 grant. Additionally, NPS program staff at DEQ provide training and arrange financial support for volunteer monitoring efforts across the state. The partnership assists Montana DEQ with efforts to achieve water quality standards by providing resources and technical assistance at the local level. The Voluntary Monitoring Partnership helps local groups with project development, implementation and tracking. Montana has established a tiered approach to watershed group certification: level 1 is not technical; level 2 includes instruction on what to look for and proper protocol; and level 3 covers developing and implementing a sample analysis. The monitoring data are entered into STORET and/or the MSU database.

Miscellaneous Statewide Initiatives

States engage in a broad variety of statewide initiatives that are customized for a particular state NPS emphasis. A couple of representative statewide initiatives that fall outside of the bounds of the categories captured earlier in this chapter are described briefly here.

- **Kansas** NPS program staff work with the Kansas Water Office on implementation of the recently established "Reservoir Sustainability Initiative" and "Reservoir Roadmap," State Water Plan initiatives intended to protect and restore the state's federal reservoirs that provide public

water supply storage. There are 13 reservoirs that contain state owned storage for municipal and industrial water supply as well as other reservoirs with non-state owned public water supply storage. These reservoirs provide drinking water for two-thirds of Kansas residents and many are experiencing sediment-related problems. The initiative covers a broad range of strategies, including watershed restoration and protection activities in the drainage area above these reservoirs. It is credited with improving efforts in Kansas to reduce sediment loads to federal reservoirs and improving the quality and quantity of drinking water supplies. Additional information on the Reservoir Sustainability Initiative and Reservoir Roadmap is available on the Kansas Water Office website at: www.kwo.org/reservoirs/Reservoirs.htm.

- **New Hampshire** – In 2009, the state's NPS program staff launched the BMP implementation tracking initiative. Through this initiative staff employ a systematic approach for site inspections of BMPs implemented with section 319 funds with the goal of assessing the condition of the BMP and any maintenance requirements. This initiative and the associated BMP inspections have provided information that the NPS program utilizes to inform future BMP funding decisions and develop BMP operation and maintenance requirements for section 319 grantees. To date, NPS staff have completed inspections of approximately 266 BMPs, which have prompted improved operation and maintenance resulting in improved water quality performance.

Chapter 5: Key NPS Partnerships (including MOAs/MOUs)

State nonpoint source (NPS) programs coordinate with other local, state, and/or federal agencies through interagency partnerships and more formal memoranda of agreement/understanding (MOA/MOU). While state NPS programs rely on interagency agreements to accomplish an array of NPS program goals, this study found that, nationally, most NPS-related agreements address the following areas: federally administered national forests and public lands, agriculture, water quality monitoring, and decentralized wastewater treatment systems.

The information in this chapter is summarized from a number of sources; including state NPS program management plans, grant work plans, annual program reports, MOA/MOU documents, state NPS program websites, and correspondence with EPA regional and state NPS program staff.

Federally Administered National Forests and Public Lands

At least 18 state NPS programs (AL, AK, AR, AZ, CA, CO, GA, ID, KY, MS, MT, NM, OR, SD, TX, UT, WA, WY) have MOUs with federal agencies related to forestry and/or water quality management on federal lands. All of these MOUs involve the United States Forest Service (USFS). Additionally, at least seven states (AZ, CO, ID, NM, NV, OR, UT) have federal MOUs with the Bureau of Land Management (BLM). Examples include:

- **Montana –** Montana DEQ has MOUs with USFS and BLM related to NPS program implementation and ensuring federal consistency. DEQ relies in part on MOUs to clearly articulate desired outcomes, specify mechanisms for communication between agencies, and formalize and strengthen relationships.
    - A 2008 MOU between Montana DEQ and USFS was developed consistent with the Montana NPS Management Plan "to foster interagency cooperation that will result in greater efficiency and quicker restoration of impaired waters and will help implement projects that will substantially achieve water quality standards for beneficial uses in waters on federal and State lands." In Montana, the Forest Service manages approximately 17 million acres, which include 32,000 miles of road, and 37,850 miles of streams. Some waterbodies on NFS lands do not meet state water quality standards. Therefore, a key function of the MOU is to outline how TMDL development and implementation will be accomplished on Forest Service lands, with an emphasis on strong partnerships.
    - Montana DEQ also has an updated MOU with BLM regarding "water quality management on BLM lands in Montana," which was signed in 2010. Specific objectives of the MOU are to: (1) strengthen the cooperation between the DEQ and BLM to reduce NPS pollution from BLM managed lands and authorized activities; (2) develop, extend, and sustain partnerships that support the purpose of this MOU; (3) extend and sustain the BLM's participation in TMDL development and water quality restoration efforts in watersheds affected by BLM authorized activities; (4) implement a watershed restoration program that emphasizes

reducing water quality impacts by addressing the sources and causes of NPS pollution, including restoring both the hydrologic and riparian functions within the watershed; (5) ensure adequate data exist to assess water quality and to evaluate restoration activities; and (6) to the extent possible, work together to utilize the strengths of both agencies to improve water quality.

- **Oregon** - About 46% of Oregon's land base and about 60% of all forestlands in Oregon are federal lands that are managed by the US Forest Service (USFS) and the Bureau of Land Management (BLM). In 2002 and 2003, the Oregon DEQ, the USFS, and the BLM outlined a process to work in a proactive, collaborative, and adaptive manner to meet state and federal water quality rules and regulations. These memoranda require that a 5-year progress review and report on the implementation and effectiveness of the BLM MOA and the USFS MOU with DEQ be prepared and used as the basis for change to future agreements. On USFS and BLM lands throughout Oregon, from 2003 to 2007, over $80.3 million dollars was spent on active restoration. Over 1,600 miles of road have been improved, 484 miles have been decommissioned, riparian treatment was completed on 452 miles or approximately 25,000 acres, upland areas have had approximately 32,000 acres treated through various methods including slope stabilization, revegetation, and silvicultural treatments, or livestock exclusion fencing and freshwater and coastal wetland restoration occurred on 4,807 and 1,500 acres (see *Chapter 6: Leveraging of State and Federal Funding for State NPS Programs* for more information). ODEQ's MOU with BLM was revised and renewed in April 2011. ODEQ is currently working with USFS to update and renew its MOU.
- **Washington** – In 2000 The U.S. Forest Service (USFS) and the Washington Department of Ecology (Ecology) reached a landmark agreement to repair, maintain, and close federal forest roads to better protect water quality. National Forests that are within the State of Washington include Olympic, Gifford Pinchot, Mount Baker- Snoqualmie, Wenatchee, Okanogan, Colville, and Umatilla. The Memorandum of Agreement (MOA) is aimed at improving water quality for people and fish. Forest roads are the most significant contributor to water quality degradation in the forests, which is why the most significant element of the agreement is an aggressive commitment to a road maintenance schedule that mirrors the requirements of the state's 1999 Forests and Fish legislation.
- **Utah** DEQ has a 2009 MOU with federal and state land management agencies (Utah Forestry, Utah Agriculture, USFS, BLM and the National Park Service), to coordinate state and federal activities for NPS water quality protection and monitoring. The MOU provides specific responsibilities of each signatory agency. DEQ oversees implementation of the MOU, in part through annual tours, annual program coordination meeting and quarterly task force meetings.
- **Wyoming** – Wyoming DEQ and USFS have a 2005 MOU that provides the framework for federal consistency and program coordination efforts between the NPS program and USFS. The MOU covers monitoring, BMP selection, periodic meetings, etc. (WDEQ and USFS are in the process of updating the MOU.) WDEQ NPS program staff indicate that the language in the 2005 MOU is being followed and accurately describes the coordination between DEQ and USFS.

- **Arizona**'s Department of Environmental Quality (ADEQ) has an MOU between the US Forest Service which was updated in 2008. The USFS manages more than 11 million acres in Arizona and one purpose of the MOU is "to foster a collaborative effort in implementing a watershed approach to restore those watersheds not meeting clean water, natural resource, and public health goals and to sustain healthy conditions in other watersheds." The MOU contains very specific language about incorporating Arizona's NPS Management Program Plan goals into USFS program planning and budgeting, cooperating on TMDLs, and working together to implement site-specific BMPs on Forest Service lands. ADEQ and Arizona Department of Agriculture also share a very general MOU with 20 state and federal agencies on "coordinated resources management" signed in 1998. Signatories include BLM, USFS, USFWS, BOR, National Park Service, US EPA, USDA FSA and NRCS, among others. The MOU establishes an interagency executive group, a task group, field groups, and special working groups. ADEQ's NPS program is currently working to update agreements with USFS, BLM, AZ Fish and Game Department and AZ State Lands Department to better reflect updated priorities in its new NPS Management Program Plan. Finally, ADEQ has a separate MOU with the National Park Service from 1992 that establishes a framework for cooperation on investigations of environmental problems, including water quality investigations.
- **Nevada** – The U.S. Bureau of Land Management administers just over two-thirds of Nevada's land base (47.9 million acres). In 2009, Nevada DEP renewed an MOU with BLM for "Water Quality Management Activities." In the 5-year MOU signed in 2004, the parties pledged to "identify the responsibilities and activities to be performed by each agency in carrying out water quality and NPS pollution control programs as related to activities on BLM lands" and "to coordinate efforts to facilitate development of complementary NPS control and abatement programs." The parties agreed to meet at least annually and to form an interagency work group "to develop a policies and procedures guidance document." BLM has been a key partner in funding restoration projects for Lake Tahoe in particular, through sales of public lands in Clark County around Las Vegas. The U.S. Forest Service manages more than 8% (roughly six million acres) of Nevada's lands as protected national forests. NDEP renewed its MOU with the USFS "to prevent, mitigate and control NPS pollution on National Forest System lands within the State of Nevada through development of mutual priorities, improved communication and collaboration, and leveraging of resources and information." NDEP describes its relationship with USFS as effective on a project-specific level.

At least 15 state NPS programs (AL, AR, CA, FL, GA, KS, LA, MS, NC, OR, SC, TN, TX, UT, WA) have partnership agreements or MOUs with the state forestry commission, state department of forestry, or a similar state agency responsible for statewide forestry operations. Most of these agreements address coordination of BMP implementation, BMP compliance monitoring, and/or water quality management on state forest lands. Examples include:

- **Oregon** DEQ has an MOU with the Oregon Department of Forestry (ODF), which outlines management activities on private and state-owned lands. DEQ staff actively implements TMDLs by working with ODF, for implementation on state and private forestlands, through the Oregon Forest Practices Act and long-range management plans.

- **California** – In 2003 California's Water Resources Control Board and the four largest regional water quality control boards signed an MOU with CA's Department of Forestry and Fire Protection "to prevent adverse effects on beneficial uses of water from silvicultural activities… and to assist in restoring beneficial uses…" in impaired watersheds. Among other provisions, the MOU states that "proposed timber operations must be consistent with the provisions of the TMDL implementation plan" where such plans have been adopted, and where they have not been adopted, proposed timber operations "must be in compliance with applicable provisions of the relevant Basin Plan regarding degradation of water quality by controllable factors."
- **Utah** – DEQ has an MOU with state and federal land management agencies, including USFS and BLM. See description above.
- **Kansas** – KDHE partners with the Kansas Forest Service's efforts to provide technical assistance to landowners for proper management of private forestland to protect land and water resources, including the establishment and management of healthy riparian forest buffers to provide water quality benefits.
- **Alabama** – an MOU (updated January 2008) between the Alabama Department of Environmental Management (ADEM) and the Alabama Forestry Commission (AFC) provides a number of opportunities for collaboration, including: annual meetings to discuss agency plans and initiatives to abate and control NPS pollution; joint agency assessments (on-site field reviews) of silvicultural sites to assess BMP compliance with the state's forestry BMPs; and coordination to provide to the other technical and professional expertise and support.

Agriculture

At least 29 state NPS programs (AL, AZ, DE, FL, GA, HI, ID, IL, IN, KS, LA, ME, MI, MN, MS, MT, ND, NE, NY, NV, OK, OR, PA, TN, TX, UT, VT, WA, WY) have agriculture-related partnerships or formal MOUs with local (e.g., conservation districts), state, and/or federal agencies. State partnerships/agreements are often developed between the state NPS agency and either the state agricultural agency or the state soil and water conservation commission to coordinate the implementation of its agricultural NPS program. Examples of agreements between state NPS programs and USDA are listed immediately below, with other examples of agreements to control NPS impacts from agriculture listed after that.

Agreements with USDA

- **Oregon** – the *Conservation Effectiveness Partnership* MOU was signed in 2010 between USDA-NRCS, Oregon Water Enhancement Board (OWEB), and ODEQ. The Partnership is aimed at collaboratively monitoring, evaluating, and reporting the effectiveness of cumulative conservation and restoration actions. The goals of the MOU are: 1) Build an understanding of the extent of the investment in watershed improvement actions through the agencies' collective grant programs; 2) Develop a better understanding of how local organizations are utilizing the agencies respective grant programs, in concert; 3) Conduct an evaluation of the impacts of grant investments on water quality

and watershed health; 4) Produce a description of gaps in the treatment of priority limiting factors in a watershed; 5) Design tools and methods of reporting accomplishments to the public. In 2010, the Partnership identified 2 pilot areas to begin monitoring and evaluating projects (Tillamook Bay watersheds and Upper Deschutes sub basin). The MOU allows NRCS to share certain confidential information about conservation projects funded under the Food, Conservation, and Energy Act of 2008 (2008 Farm Bill), including project locations and types of projects funded. This information is used to evaluate the relationship between water quality trends and conservation investments, report natural resource outcomes, and improve implementation of agency programs such as, where to monitor, conduct analysis, and prioritize conservation investments. See the Oregon feature story in *Chapter 2: Staffing Summary* for more information on this partnership.

- **Wyoming –** In 1998 Wyoming DEQ and USDA/NRCS entered into an MOU for "Agricultural Waste Management System Review." The MOU specifically applies to animal operations that are not CAFOs, thereby limiting the applicability of the MOU to NPS animal agriculture. The purpose of the MOU is to provide assistance to small animal operations with development and implementation of waste management system plans and related construction plans that are subject to DEQ permitting. The MOU provides that DEQ will accept work certified by NRCS, in accordance with specific provisions in the MOU for the protection of water quality, in lieu of a separate construction permit for agricultural wastewater conveyance and storage ponds. It also provides that NRCS and DEQ will work together on updates to the Wyoming Field Office Technical Guide.
- **Oklahoma** – MOU with USDA addressing delivery of Farm Bill programs, technical assistance for state programs, and the state implementation of CREP program (see *Chapter 7: Coordination with USDA* for more information).
- **Kansas** – In 2010 the Kansas Technical Assistance Partnership MOU became effective. Signatories include KDHE, USDA/NRCS, Kansas Conservation Commission, Kansas Dept of Wildlife and Parks, Kansas Forest Service, Kansas Association of Conservation Districts, Quail Forever, Pheasants Forever, and Playa Lakes Joint Venture. The MOU "establishes a framework that will enable the parties to pool resources for the purpose of increasing technical assistance available to Kansas agricultural producers for conservation activities. It also documents the intent and commitment of the Parties to actively support that framework to further their shared conservation goals." Therefore, through participation in this partnership, NPS program staff are leveraging additional resources to meet technical assistance needs for water quality projects throughout the state.
- **Vermont** – The Vermont Agency of Agriculture, Food and Markets is party to a 1998 MOU that created the Vermont Conservation Partnership. Agencies and organizations involved in working with Vermont agriculture to address NPS issues signed the MOU and are members of the Partnership. These groups include USDA NRCS, USDA FSA, Vermont Association of Conservation Districts, Vermont Natural Resources Conservation Council, University of Vermont Extension and the Lake Champlain Basin Program. The Vermont Secretary of Agriculture has been delegated the legal responsibility for agricultural NPS pollution in Vermont and convenes the Vermont Conservation Partnership when necessary to further the goals of the NPS program.

Agreements and Partnerships with State Agriculture Agencies

Examples of agreements or partnerships between the state NPS agency and the state agriculture agency are provided below:

- **Louisiana** Department of Environmental Quality (LDEQ) has an MOU with the Louisiana Department of Agriculture and Forestry (LDAF) to coordinate implementation of the state's NPS program. LDAF implements the incremental portion of the 319 funds in agricultural watersheds that have been included on the state's section 303(d) list. Prior to BMP implementation, LDEQ and LDAF work closely to discuss impaired waters that are in agricultural watersheds; develop a watershed-based plan ; select a 12-digit HUC or set of HUCs that are agricultural "hot spots" in the watershed where BMPs need to be implemented; determine what type of water quality monitoring may be necessary to evaluate whether BMP implementation is achieving water quality goals; implement BMPs in critical areas of the watershed; and continue efforts and assess effectiveness of BMP implementation and education/outreach activities in the target watershed until a Success Story can be written.
- **Georgia** has a partnership with the Georgia Soil and Water Conservation Commission (GWCC), which serves as the lead agency for implementing the agriculture component of NPS program. In 2010, GWSCC managed six active 319(h) projects. GSWCC administers the state's Erosion and Sedimentation Control training and certification program.
- **Utah** DEQ has an MOU with the Utah Department of Agriculture and Food (UDAF). Through the MOU and a yearly contract between the two agencies, UDAF has delegated authority for agriculture-related 319 funding projects and education and information efforts. The MOU also specifies that UDAF has authority for devising and implementing measures related to soil erosion, hydromodification and riparian projects.
- **Vermont** – A 1993 MOU between Vermont DEC and Vermont Agency of Agriculture, Food and Markets (AAF&M) is still current and applicable to the state's NPS program. The MOU provides authority to AAF&M for administration of the NPS program for the agriculture sector. Implementation of the MOU involves an annual 319 grant (typically approximately $200,000) from DEC to AAF&M.
- **Texas** Commission on Environmental Quality (TCEQ) has an MOU with the Texas State Soil and Water Conservation Board (TSSWCB), which facilitates cooperation between these two primary TX NPS control agencies in achieving program goals. A separate MOA has been developed to outline each agency's responsibility and authority regarding the development of TMDLs.
- **Tennessee**'s Department of Environment and Conservation TDEC maintains an MOA with TN's Department of Agriculture. TDEC is responsible for the abatement of ground/surface water pollution, reclamation of polluted waters, and prevention of future pollution. TDA and TDEC consult one another to assess actual and alleged water pollution from agricultural and silvicultural activities to determine appropriate follow-up actions.

- **Mississippi** Department of Environmental Quality (MDEQ) has a 1997 MOU with the MS Soil and Water Conservation Commission (MSWCC) to assist MDEQ in developing and implementing the state's voluntary agriculture NPS pollution control program. The MOU provides MSWCC with $200,000 annually in 319 funds to conduct: district assistance, conservation carnivals, surface mine permit reviews and reclamation assistance, agricultural BMP implementation and educational assistance. A portion of 319 funds is provided to MSWCC to support two FTEs. Mississippi's Agriculture Implementation Assistance project provides support to conservation districts for implementing educational, restoration, and demonstration projects.
- **Washington** Department of Ecology maintains an MOU with the State Department of Agriculture to coordinate response to livestock-related water pollution issues. Washington established and maintains a referral and response system to facilitate a first-responder process so that each agency will know who is responding to a complaint, and provides a mechanism by which the partnering agencies may refer complaints to one another.
- **Idaho** maintains two MOUs to control NPS pollution from agriculture.
    - Idaho DEQ has an MOU with the State Department of Agriculture (ISDA), the state agency with the lead role in regulating the dairy industry, regarding dairy waste management. ISDA monitors ground water under these facilities and ensures operations and dairy waste systems are in accordance with provisions in ID Waste Management Guidelines for Confined Feeding Operations. Working arrangement between agencies.
    - IDEQ also has an MOU with three parties: USEPA, Idaho Soil and Water Conservation Commission (ISWCC), and Idaho Department of Water Resources. The MOU provides a broad outline of the responsibilities of each agency in implementing the state's NPS program. This MOU supersedes an MOA between Idaho DEQ and ISWCC (1981), which addressed issues pertaining to agriculture and grazing practices as they relate to water quality. The ISWCC, as a Designated Management Agency for the state NPS program, has played a key role in planning and implementing programs needed to reach water quality goals since the inception of the NPS program. For example ISWCC is responsible for drafting certain TMDLs and for developing TMDL Implementation Plans.
- **Texas** Commission on Environmental Quality maintains an MOU with Texas Department of Agriculture, which sets forth cooperation, responsibility, and authority regarding development of TMDLs.
- **Montana** – Montana Department of Environmental Quality (MDEQ) is part of the Montana AFO/CAFO Outreach Partnership, a working group composed of state and federal agency staff, trade organization representatives, technical service providers and others involved in working to prevent pollution from livestock operations. The partnership was formed in 2007 and meets quarterly to better coordinate educational campaigns, foster partnerships and increase technical expertise throughout the state. MDEQ devotes one FTE to agriculture NPS issues and collaborating with local, state, and federal agencies, and private entities to promote implementation of agricultural BMPs. Past outputs of the AFO/CAFO Outreach Partnership include a newsletter publication, *AFO*

Stewardship News, and the 2010 AFO/CAFO Roundtable meeting that provided program, outreach, and technical information to participants.

Agreements with Conservation Districts – Statewide and/or Local

In addition to agreements and partnerships with state and federal agencies, at least four state NPS programs (ME, NE, ND and UT) have agreements or partnerships with conservation district associations to improve collaboration on agricultural issues at the local level.

- **Maine** – There are 16 Soil and Water Conservation Districts (SWCDs) in Maine. Since the first year of section 319 funding, the SWCDs have played a vital role in Maine's NPS program. The NPS program partners with the SWCDs on programs including Lake Smart, contractor certification, and the Front Runner Gravel Road Maintenance Program. Agreements help to maintain positive working relationships between the Maine Department of Environmental Protection and SWCDs. For example, districts currently provide technical assistance on most 319 projects, and they serve as the actual subgrantee (project sponsor) for roughly half of all 319 projects. The work of district staff related to the NPS program includes, but is not limited to: working closely with landowners to troubleshoot erosion problems; designing best management practices; drafting local land use and phosphorus control ordinances; generating outreach materials and host workshops to build awareness about NPS; calculating pollutant load reductions; and sharing their experiences with other SWCDs, through final 319 project reports, Maine's annual NPS report, and at Maine's annual Watershed Roundtable.
- **Nebraska –** The Nebraska Association of Resources Districts (NARD) is the coordination organization for the state's 23 Natural Resources Districts. For the past seven years, Nebraska DEQ has supported a liaison position that works out of offices at NARD and NDEQ. Section 319 funds 90% of this position. This position is important given NRDs are the primary sponsor of most section 319 projects. NPS program is involved in NARD monitoring strategy; all NPS program staff maintain good working relationships with the NRDs. For information about other Nebraska liaison positions, see *Chapter 7: Coordination with USDA*.
- **Utah –** Eight local watershed coordinators funded by section 319 play a key role in Utah's NPS program. The local watershed coordinators are often co-located with a conservation district or USDA Extension Service. While salaries and benefits are usually provided by UDEQ, the office space and operating materials are often provided by the Utah Association of Conservation Districts (UACD), the local conservation districts or the NRCS. Local coordinators are actively involved in planning or designing NPS projects, identifying resources for NPS projects, and coordinating with key partners, often serving as liaisons between UDEQ and conservation districts.
- **North Dakota –** In North Dakota, projects funded by section 319 grants have a Local Project Advisory Committees. These committees are partly responsible for overseeing operation and maintenance of local NPS projects, including project implementation plans, project administration, technical and

financial assistance, and local education activities. Committee membership generally includes representatives from soil conservation districts, USDA Extension, NRCS and water resource boards.

Water Quality Monitoring

At least two state NPS programs (IN, MS) have partnerships with the United States Geological Survey (USGS) to coordinate NPS water quality monitoring projects.

- **Mississippi** – MDEQ maintains a supplemental monitoring agreement with the U.S. Geological Survey (USGS). Under this agreement, the USGS provides a 50% cost share with section 319 NPS funds to develop pre- and post-implementation monitoring plans in priority watersheds to quantify water-quality improvements where section 319 NPS implementation funding is used. These plans are developed in collaboration with local watershed implementation teams (WITs) and serve as the monitoring component of the WIT's watershed implementation plan (WIP). Development of a QAPP for each monitoring plan is also required. The recurring annual agreement calls for approximately $255K from each participating organization.
- **Indiana** maintains an MOU with the USGS for continuous nitrogen monitoring in priority NPS watersheds.

Decentralized Wastewater Treatment Systems

At least four (ID, FL, MS, NY) state NPS programs have MOUs with the State Department of Health to coordinate inspection and enforcement of decentralized wastewater treatment systems.

- **New York** – MOU between NYSDEC and NY Department of Health regarding the inspection and enforcement of septic systems.
- **Florida** – MOU with the State Department of Health. NPS program 319 funds to support a tracking system for septic system inventorying and management, including inspections, tank pumping and other maintenance activities. The NPS program also funds and supports inspection programs and compliance/enforcement activities. 319 funds also support educational efforts for proper septic system maintenance.
- **Mississippi** – MOU with MS State Department of Health (MSDH) defines the jurisdiction of each agency with regard to wastewater treatment and interagency coordination. MSDH regulates all residential onsite wastewater disposal systems and commercial on-site wastewater disposal systems (excluding industrial waste) with flow less than 1,000 GPD and do not discharge to waters of the state. MDEQ regulates commercial systems that receive flows greater than 1,000 GPD or discharge to waters of the state. NPS staff member serves on the State Technical Committee for MSDH, which evaluates septic system regulations.

- **Idaho** – MOU between IDEQ and the state's District Health Departments. Agreement clarifies roles/responsibilities and authority of two agencies for enforcing water quality, sewage disposal, public water systems, and solid waste management.

In addition to interagency agreements, at least ten NPS agencies (AR, CA, KS, MT, ND, NY, OK, SD, UT, WY) have also developed a NPS Working Group, Committee or Task Force to oversee statewide implementation of the NPS program. These working groups/committees generally include representation from local, state, and federal NPS-related entities, and assist in some or all of the following activities:

- Assist in the revision of the NPS Management Plan;
- Promote consistency between state-state and state-federal NPS policies;
- Assist in prioritization of statewide NPS control programs/initiatives and projects; and
- Review project proposals for 319 funding and otherwise participate in selection process.

Examples include:

- **New York** – the NPS Coordinating Committee includes representation from EPA Region 2, State Department of Health, Department of State, Department of Transportation, SWCD, regional planning boards, and Cornell University Cooperative Extension Service. The Committee meets quarterly to coordinate statewide NPS activities to ensure consistency in program policy, prevent duplicative efforts and focus limited resources to the highest priority NPS issues and problems in the state.
- **Arkansas**'s NPS Stakeholder Group includes more than 75 people representing 36 different organizations that participated in the development of the 2011-2016 NPS Pollution Management Plan. The analysis/deliberation cycle of developing the Management Plan included consultation with individual agencies and interest groups. The core team included the University of Arkansas Cooperative Extension Service, which provided policy proposal analysis and input into BMPs and management measures, etc.
- **Oklahoma**'s State NPS Working Group includes state and federal agencies, tribes, nonprofit groups, industry representatives, and all other NPS-related entities. The Working Group helps set priorities for state's NPS program by guiding update of NPS Management Plan and, at times, reviewing project proposals. There are five purposes of NPS Working group: (1) assist in revision of NPS Management Plan, (2) confirm process of selecting priority watersheds, (3) provide consensus in planning of work in priority watersheds, (4) develop in-state leadership regarding NPS issues, and (5) promote consistency between state-state and federal-state NPS policies.
- **Montana –** The Montana Watershed Coordination Council (MWCC) was formed 18 years ago and formalized in 1994 when federal, state and local natural resources agencies signed an MOU to "establish a framework for cooperation and coordination to sustain ecosystems, watersheds and communities in Montana." The MOU is still operational today. In addition, organizational

operating guidelines were established in 1994 and have since been regularly updated. Membership of the MWCC includes conservation district staff, state and federal agency staff, private consultants, and other water resource professionals. The mission of the MWCC is to enhance, conserve and protect natural resources and sustain the high quality of life in Montana for present and future generations using a collaborative watershed approach. The MWCC supports the growth and activities of over 60 watershed groups throughout the state (e.g., provides training for members and assists with efforts to obtain funding) and is a leader in applying the watershed approach to addressing water quality issues. The MWCC is also involved in reviewing 319 project applications and supporting volunteer monitoring efforts. For more information, see http://mtwatersheds.org/AboutUs/Governance.html.

- **California** has an Interagency Coordinating Committee (IACC) that is a cooperative working group composed of 28 state agencies involved in implementing California's Nonpoint Source Pollution Control Program (NPS Program Plan). The IACC's goals are to: The IACC's primary goals are to: (1) Improve interagency coordination and promote statewide consistency in implementing the NPS Program Plan; (2) Promote the watershed approach in addressing nonpoint source pollution; and (3) Provide a forum for resolving policy and programmatic conflicts among state agencies. The IACC meets regularly to: develop/update their agency's five-year implementation plans for implementing the state's NPS Program Plan; coordinate with local watershed groups, federal agencies and others; help assess progress implementing the NPS Program Plan.

Chapter 6: Leveraging of State and Federal Funding for State NPS Programs (Beyond 319 Grants and Match)

Funding is a critical component of a successful state nonpoint source program. Therefore, as part of this NPS program study, EPA examined the extent to which state NPS programs apply significant additional resources (beyond their 319 grant and 40% non-federal match contributions) from state or federal funding sources. Examples of how states obtain and utilize additional resources for implementation of their NPS program include:

- Directly providing legislated state funds (beyond the state's 319 match) for implementation of NPS programs and projects;
- Coordinating NPS program implementation with other state and federal programs such that non-319 funds are directed to NPS projects, including state environmental trust funds, Clean Water State Revolving Fund, and federal land management agencies' programs;
- Providing seed money to support a larger project, such as a public event or the roll-out of a new initiative, where additional (non-319) funds are then used in accordance with NPS program goals and objectives; and
- Working with current or potential 319 project sponsors to identify additional sources of funding for a significant watershed project.

This study defines leveraging of funds as those portions of state or federal funds that squarely align with a state's own NPS program priorities, and that are exclusive of section 319 grants and their required non-federal match. When evaluating various funds and programs for this study, many were clearly aligned with state NPS priorities either through the authorizing language for the funding program or through implementation, such as the criteria for awarding or allocating the funds. This could include a funding program administered by a state agency or department other than the NPS program agency where NPS program priorities are factored into decisions about how all or part of the funds will be utilized. In other cases, decisions on which funds and programs constitute true leveraging were more difficult. Examples that required more scrutiny include state monies for conservation easements and land preservation, which may inherently have some goals in common with the NPS program but are not necessarily aligned with a state's NPS program priorities. On the federal side, Farm Bill programs proved particularly challenging to scrutinize on a per-state basis, and the study team worked to understand the ways in which state NPS programs coordinate with United States Department of Agriculture (USDA) (discussed in *Chapter 7: Coordination with USDA*) and the success of that coordination to align those substantial federal dollars to state NPS program priorities. These cases typically involved considerable back-and-forth between EPA Headquarters, regional offices and the states. In some cases, portions of funds were credited as true leveraging. In all cases, EPA exercised its best professional judgment given the information and time available.

It is important to note that the availability of state, federal and private-sector funding for NPS implementation is volatile in general and in the recent and current economic climate is even more volatile than it has been in the past. Therefore, state funding sources and amounts discussed in this section are a less than clear indicator of the availability of resources to further NPS program goals in the future as states face difficult decisions during budget shortfalls, at least for the near future. Indeed, some of the funding programs or sources relied upon for reporting in this section, while painting a reasonably accurate picture of funding availability until the recent past, may not fully reflect recent reductions or potential near-future reductions. For example, several states which had been relying on sizeable bond funding established by state referendums to supply stable NPS funding had their bond funds frozen in 2010 due to state budget crises.

Furthermore, as is discussed elsewhere in this report, one of the significant functions of base 319 funds is to support the staff who work with other state and federal agencies (and other partners) to cooperate in the implementation of programs and projects, thereby creating opportunities for leveraging additional state and federal dollars for NPS water quality projects. Reductions in 319-funding in Federal Fiscal Year (FY) 2011 have already resulted in reduction of state staff and thus is adversely impacting state 319 programs' capacity to cooperate with other agencies or work with the private sector to leverage activities and funding to support state 319 programs and projects.

Finally, it is worth noting that the information summarized below is based on state NPS program documents such as annual reports and other state records of various programs' expenditures. Many NPS program managers are not routinely tracking state funds spent on NPS program activities (beyond 319 match), and are not allowed access to certain federal funding for NPS projects (e.g., due to legal and/or policy restrictions that preclude states from obtaining a considerable amount of information regarding USDA funding expenditures that may be supporting state programs and watershed projects). To the extent that a state did not have information available about the amount of funding being leveraged for NPS activities, these funds are not captured in the quantitative findings below; however, the findings in this chapter provide some information, where available, about states that are leveraging state or federal funds even if the amount of funding is unknown.

State Funding (FY10)

The primary findings with regard to NPS program leveraging of state funding are:

- The most common sources of additional state funding are state appropriations for BMP loan or grant programs (often focused on agriculture), state-based environment or natural resources trusts

(commonly funded by lottery or license plate fees), state bond initiatives, and state-earned interest, fees or repayment on Clean Water State Revolving Fund (CWSRF) loans.[7]

- **In FY10, 8 states (MD, MN, NC, OH, OR, PA, UT, VA) more than quadrupled their 319 grant allocation through leveraging of other state funds.** For example**:**
    - **Maryland** provides funding support for a variety of NPS program activities, which collectively amount to more than $80 million per year. In 2010, Maryland provided more than $8.6 million to fund statewide and targeted Soil Conservation and Water Quality Planning efforts in the form of full-time equivalent (FTE) support. Maryland's Agricultural Cost-Share program provided $10.7 million to implement agricultural BMPs in targeted NPS priority watersheds and another $5.7 million to implement agricultural BMPs in other watersheds. Maryland's Bay Restoration Fund provided approximately $5 million in 2010 for septic system upgrades across the state. This fund, also known as Maryland's "flush tax" is generated by a $30 fee added to annual property tax bills for residential properties. Finally, and perhaps most significantly, Maryland recently created its Chesapeake and Atlantic Coastal Bays Trust Fund, which is supported through a gas tax and rental car tax. The new fund will support implementation efforts of the Chesapeake Bay Total Maximum Daily Load (TMDL) for agricultural and urban BMPs, monitoring and water quality innovation (through the Innovative Technology Sub-Fund). Maryland's stated intent for this trust fund is to "allow Maryland to accelerate Bay restoration by focusing limited financial resources on the most effective nonpoint source pollution control projects." While the new fund provided approximately $20 million in State Fiscal year 2011, it is expected to generate $50 million annually when fully funded. Maryland also provides nearly $2 million of dedicated funding annually to support its nutrient management statewide program. Maryland also provides more than $7 million in a variety of other programs, ranging from $1.3 million to support its Critical Areas Commission, $1.8 million to support state-funded NPS program staff, and lesser amounts to support shoreline conservation and management, NPS outreach and education, and several other NPS programs.

Feature Story: Minnesota Clean Water Fund and Other State Leveraging Boost 319 Funding

On November 4, 2008, Minnesota voters approved the Clean Water, Land and Legacy Amendment (CWLA) to the State Constitution. The Amendment increased the sales tax rate by three-eighths of one percent on taxable sales, starting July 1, 2009, continuing through 2034. Approximately a third of this revenue is being dedicated to a Clean Water Fund (CWF) to protect, enhance, and restore water quality in lakes, rivers, streams, and groundwater, with at least five percent of the fund targeted to protect drinking water sources. **For the 2010-11 biennium, the Minnesota Pollution Control Agency (MPCA)**

[7] The CWSRF program provides loans that spread project costs over a repayment period of up to twenty years. Repayments are cycled back into the fund to pay for additional clean water projects and are no longer considered a federal source.

received $51.16 million from the new fund (**and $47.77 million for the 2012-13 biennium), which included:**

- **$18.5 million for TMDLs watershed-based plans, and TMDL implementation plans ($21.9 million for the 2012-13 biennium);**
- $16.74 million for water quality monitoring & assessment ($16.5 million for the 2012-13 biennium);
- $8.67 million for protection and restoration ($5.1 million for the 2012-13 biennium); and
- $7.25 million for ground water assessment and drinking water protection ($4.27 million for the 2012-13 biennium).

The new CWF also provided $38.22 million for the 2010-11 biennium (and $55.07 million for the 2012-13 biennium) to Minnesota's Board of Water and Soil Resources (BWSR) for NPS protection, restoration, and preservation by working in partnership with over 240 localities. This funding is then allocated to projects based on TMDL, restoration, or protection plans, and is partly used as matching funds for section 319 TMDL implementation projects. An additional $14.53 million from CWF for the 2010-11 biennium was appropriated to the Minnesota Department of Natural Resources for similar activities ($20.72 million for the 2012-13 biennium), including $6.6 million for NPS restoration, protection and preservation ($7.05 million for the 2012-13 biennium). Further, the Minnesota Department of Agriculture received $4.5 million from the fund for agricultural BMP loans ($9 million for the 2012-13 biennium) and another $4.5 million for other water quality investments ($6.4 million for the 2012-13 biennium)**.**

In addition, Minnesota has several other significant dedicated revenue streams for addressing nonpoint sources, such as its Clean Water Partnership (CWP), which finances agricultural BMPs and other NPS projects with Clean Water State Revolving Funds (see *Chapter 8: Use of Clean Water State Revolving Fund for NPS*) and the state's Environment & Natural Resources Trust Fund. For the 2010-11 biennium, the MPCA received $3.9 million ($2 million for the 2012-13 biennium) of Minnesota General Fund money and $2.5 million ($800,000 for the 2012-13 biennium) of CWF money for the CWP program. In 2010, BWSR received from the state's Environment & Natural Resources Trust Fund: $9.1 million for ecosystem protection, land preservation/easements and restoration; $1.6 million for water quality monitoring and assessment; $800,000 to improve water quality from agricultural tile drainage and related research and model development; and another $800,000 to address shoreline development and erosion from agricultural croplands, and mine runoff.

According to Minnesota's 319 State Program Manager, Doug Wetzstein, **"Steady 319 base funding over the years created the [human resources] infrastructure to allow us to push nonpoint source issues to the fore. This experienced staff allowed us to build our program and shifted attitudes through education, which served as a catalyst to aid passage of the CWLA."**

For more information on Minnesota's Clean Water Legacy funds, see www.legacy.leg.mn/funds/clean-water-fund and www.pca.state.mn.us/dm0r92d.

Feature Story – North Carolina State Funding Programs Address Nonpoint Source Pollution

North Carolina has four state-based funding sources for NPS activities: (1) Agriculture Cost Share Program, (2) Clean Water Management Trust Fund, (3) Environmental Enhancement Program, and (4) Community Conservation Assistance Program. Combined, in 2010 these funding sources provided $4.5 million for NPS program activities, which is nearly eight times North Carolina's FY10 section 319 allocation.

The North Carolina *Agriculture Cost Share Program (ACSP*) helps address nonpoint pollution by providing technical and financial resources. Funding is appropriated annually to share costs of implementing BMPs with farmers and to provide technical assistance for practice design and installation. ACSP and funding priorities are managed by the North Carolina Department of Environment and Natural Resources - Division of Soil and Water Conservation (DSWC). All 96 Soil and Water Conservation Districts in the state submit an annual strategy plan, which is used to assess allocation level for that program year. The districts are provided information, such as the number of miles of impaired waters in their county during the strategy planning process. As a part of the Strategy Plan, the districts also submit a priority ranking form to fund those projects that are in alignment with the strategy plans. The majority of districts have impaired waters as a high ranking priority and therefore "weight" the contracts they perform toward impaired waters. NPS staff in DENR Division of Soil and Water Conservation serves as staff to the technical review committee for ACSP.

Approximately $8,000,000 is annually appropriated for the ACSP. The funds are appropriated by State Legislature, with recent years' cost share appropriations fluctuating between $3.5 million and $9 million. ACSP is often used as a match for 319 and the cost share program requires a 25% match from the landowner/operators involved in the program. Additionally, the NPS program often seeks to use ACSP and other state/federal cost share programs to implement NPS initiatives. These include 319, Clean Water Management Trust Fund, Conservation Innovation Grant, Environmental Enhancement Grant, and others. In FY2011, $500,000 of ACSP funds were disbursed to address water quality issues in targeted watersheds where known sediment from agricultural lands were causing water quality problems.

The *North Carolina Clean Water Management Trust Fund (CWMTF*) was established by the state General Assembly in 1996 and has awarded over $960 million to date. Funding level has varied from $10 million to $100 million annually. CWMTF receives direct appropriation from the state General Assembly to issue grants to local governments, state agencies, and conservation non-profits to finance projects that address water quality problems. A 21 member Board of Trustees has full responsibility of allocating money from the Fund. CWMTF will fund projects that (1) enhance or restore degraded waters, (2) protect unpolluted waters, and/or (3) contribute toward a network of riparian buffers and greenways for environmental, educational, and recreational benefits. CWMTF grants have reduced the number of

failing septic systems and straight pipes directly discharging waste into N.C. streams, and protected more than 454,375 acres of important watersheds and more than 4,863 miles of riparian buffers. The CWMTF has also awarded $95.7 million to fund 168 stream and wetland restoration projects.
The state NPS program often receives 319 proposals with CWMTF as a match; CWMTF applications often have 319 as a match. NPS Program Section of Division of Soil and Water Conservation is responsible for implementing NPS projects/programs using CWMTF funds. The NPS Planning Coordinator assists SWCDs across the state in identifying water quality needs, assists with grant development for 319, CWMTF, and other funders.

North Carolina's *Environmental Enhancement Program (EEP)* is a DENR initiative that primarily offers 4 In-Lieu Fee (ILF) mitigation programs to assist private/public entities comply with state and federal compensatory mitigation for streams, wetlands, riparian buffers, and nutrients. The EEP funds livestock exclusion, riparian buffer restoration, and other streamside BMPs as mitigation activities. North Carolina Department of Transportation (NCDOT) and other developers voluntarily use EEP to move projects forward.

EEP also plays a valuable NPS Program role by conducting full watershed assessments on prioritized watersheds and completing Local Watershed Plans (LWPs) for use by others as well as itself. LWP watersheds merge the interests of high priority for protection or restoration with projected road-building (primarily NCDOT) impacts and mitigation needs, to provide the greatest aggregate benefit for the state. To date EEP has completed 28 LWPs across the state. LWPs are used by state agencies, local governments, and area non-profits to guide watershed improvement and protection actions. The LWPs mirror EPA 9-Element Watershed Plan requirements and are adapted frequently by 319 applicants. EEP funding is also used as match for 319 projects. In 2010, $21 million total was leveraged, of which $2.1 million specifically went towards 319 Grant Projects (including creation of LWPs, implementation of existing LWPs, land acquisition/watershed protection). The funding stream for EEP is a combination of: in-lieu fee mitigation payments and fee receipts (both coming from combination of private and public developer applicants including DOT), and legislative appropriations. Thus, it is partly economy-dependent but is also supported by diverse, generally stable funding streams.

Community Conservation Assistance Program is a voluntary, incentive-based program designed to improve water quality through the installation of various best management practices (BMPs) on urban, suburban and rural lands not directly involved in agricultural production. CCAP consists of educational, technical and financial assistance provided to landowners by local soil and water conservation districts. Funds come from different sources and are managed separately from Ag Cost Share Program funds. In FY2010, the CCAP program funding totaled approximately $240,000.

- **Virginia** provided $18.8 million in FY2010 through its Water Quality Improvement Fund (WQIF), which was established by the state's Water Quality Improvement Act. WQIF funding fluctuated between $0.5 million and $60.7 million from FY2006-10, but has dropped to $1.8

million in FY2011. This fund is projected to run out of money sometime in early FY2012. For FY2010, the $18.8 million was split between funding within the Chesapeake Bay basin ($11.0 million) and outside the Chesapeake Bay basin ($7.8 million). Within the Chesapeake Bay basin: $9.1 million was allocated for Virginia's Agricultural BMP Cost-Share Program, including $7.3 million on priority BMPs and $1.8 million on other agricultural BMPs; $1.5 million for nutrient management contracts; $0.3M for other TMDL implementation activities; and $90,000 for Forestry BMPs. Outside the Chesapeake Bay basin: $6.1 million was allocated for Virginia's Agricultural BMP Cost-Share Program, including $4.9 million on priority BMPs and $1.2 million on other agricultural BMPs; $1.0 million for nutrient management contracts; $0.2 million for other TMDL implementation activities; and $60,000 for forestry BMPs.

- **Pennsylvania** Environmental Stewardship and Watershed Protection Act supports its "Growing Greener" fund, which was originally created from bonds in 1999 and 2005. To sustain the fund for a longer term, the debt is serviced by $4.25 tipping fee surcharge imposed per garbage truck that dumps in Pennsylvania landfills. $7-30 million per year goes toward the NPS share, but Growing Greener covers more than NPS. In 2010, Growing Greener contributed $11.8 million toward NPS priority efforts. The fund supports 66 county-based conservation district watershed specialists (FTEs) in addition to supporting other state NPS efforts.
- **Oregon** Water Enhancement Board (OWEB) distributed $12.4 million in FY2010 to fund 163 water quality projects throughout the State. The OWEB state watershed restoration grant program offers two competitive grant cycles each year, as well as a competitive Small Grant Program that awards up to $10,000 for on-the-ground restoration projects. There are five general categories of competitive projects eligible for OWEB funding: on-the-ground watershed management (restoration, small grants, and acquisition); technical assistance to develop watershed restoration projects; assessment and/or monitoring of natural resource conditions; opportunities for learning about watershed concepts (education/outreach); and watershed council support. The state NPS program leverages these funds through match (OWEB and 319 dollars can be used as match for one another) and through NPS program staff participation on regional boards to assist in the review of OWEB project proposals. Additionally, OWEB's Oregon Watershed Restoration Inventory contains more than 13,000 records of OWEB (including 319 projects and OWEB projects with 319 match), Bureau of Land Management (BLM) and US Forest Service (USFS), and other state-funded watershed restoration projects completed through Oregon. Users can search for projects by restoration area (road, riparian, wetland, instream, etc.), geospatially, and by funding amount and source. This statewide water quality project database allows multiple agencies to coordinate when prioritizing their funding, thereby maximizing leveraging of funds to address water quality issues throughout the state. See the Oregon feature story in *Chapter 2: Staffing Summary* for more information.

- The **Utah** Wastewater Loan Program Subaccount is funded through interest from CWSRF loans and, at the rate of $1 million, provides additional funding for monitoring studies, 319 projects in targeted watersheds, and outreach with animal feeding operations. See Feature Story in *Chapter 8: Use of Clean Water State Revolving Fund for NPS* for additional information. Also, the Agriculture Resource Development Loan program, administered by Utah Dept of Agriculture and Food (UDAF) and the Utah Conservation Commission, provided over $4.4 million in FY10 loans for conservation-related agriculture projects, including improving water quality. Funds from this loan program are often combined with other sources of funding for agriculture projects. UDAF also administers the Grazing Improvement Program, which directs state revenue to improve upland and riparian areas throughout the state. FY10 funding for this program exceeded $1 million.

- **In FY10, 6 states (FL, IA, KY, NH, NJ, WI) and the District of Columbia tripled their 319 grant allocation through leveraging of other state funds.**[8] For example:

Feature Story – Florida's State Funding Directed at Nonpoint Source Pollution

Florida has five state-based funding sources for NPS activities, which in 2010 provided over $7.5 million for NPS program activities, nearly quadrupling Florida's FY10 319 grant allocation.

Between 2000 and 2011, approximately $587 million in special state appropriations supported stormwater and NPS projects. Most of the priority waterbodies that receive this state funding are identified in Surface Water Improvement and Management program plans developed by the state's water management districts.

TMDL Water Quality Restoration Grant: Annually, the state legislature provides funding for the implementation of best management practices, such as regional stormwater treatment facilities, designed to reduce pollutant loads to impaired waters from urban stormwater discharges. This funding is administered by the Florida Department of Environmental Protection as the TMDL Water Quality Restoration Grant, which is set out by rule in Chapter 62-305, F.A.C. and authorized by Section 403.890(2), F.S. If there is a strong 319 applicant that does not qualify for funding or if a 319 application requests more funding than the 319 grant can offer, the application is forwarded to the TMDL water quality restoration grant review and the TMDL grant (state funds) are used to match the 319 grant. The

[8] FY10 funding amounts for DC, FL and WI are based in part on taking an average of funding over a period of years, based on the information provided by each state to EPA for the purposes of this study. Also, the funding amounts provided in the Florida feature story were calculated by taking averages of funding information provided by Florida about the amount of funds for NPS in each of five programs over a span of several years. For example, state-appropriated funds of $48 million for the TMDL program between 2006 and 2011 was averaged over six years, resulting in an assumed value of $8 million in 2010.

grant funded four projects in FY2010 for approximately $2.14 million, and a total of $56,333,026 from FY 2000 to FY2010. Grants provide funding to local governments for urban stormwater retrofit projects to reduce stormwater pollutant loadings from impaired waters and to fund best management practice (BMP) development and demonstration projects. The criteria for project evaluation and ranking include: impairment status of the receiving water body; estimated load reduction of the pollutants of concern; percentage of local matching funds; cost effectiveness based on the cost per pound of Total Nitrogen and/or Total Phosphorus removed per acre treated; inclusion of a robust educational component; and whether the local government sponsor has implemented of a dedicated funding source for stormwater management, such as a stormwater utility fee. Funding is based on documentary stamp fees and has decreased with housing crisis; legislature remains committed to funding and has provided funding each year.

Between 2004 and 2010, the FL Department of Health committed approximately $2 million to administer the statewide septic tank evaluation program.

Between 2006 and 2011, the state appropriated nearly $48 million to support its TMDL program. NPS program staff manages and direct BMP development activities necessary for TMDL implementation, and work with state-funded Basin Management Action Plan coordinators (TMDL Implementation coordinators) to analyze BMP information, such as BMP efficiencies and cost effectiveness. This research and analysis is used to implement TMDLs throughout the state.

Department of Agricultural and Consumer Services Office of Water Policy: The Office of Agricultural Water Policy (OAWP) was established in 1995 by the Florida Legislature to facilitate communications among federal, state, local agencies, and the agricultural industry on water quantity and water quality issues involving agriculture. In this effort, the OAWP is actively involved in the development of BMPs, addressing both water quality and water conservation on a site specific, regional, and watershed basis. As a significant part of this effort, the office is directly involved with statewide programs to implement the federal Clean Water Act's TMDL requirements for agriculture. The OAWP works cooperatively with agricultural producers and industry groups, the Florida Department of Environmental Protection (FDEP), the university system, the Water Management Districts, and other interested parties to develop and implement BMP Programs that are economically and technically feasible. The Office of Agricultural Water Policy spends 100% of its time and state-appropriated funding on NPS management in the agricultural sector. Between 2007 and 2011 the Office spent $32,395,027. Funding is provided annually by the legislature to support the Department of Agricultural and Consumer Services OWAP program. The legislature appropriated $5 million in the FY10-11 budget.

- **Wisconsin** provided at least $12.7 million of funding for NPS in FY2010 through several state programs. State Rule NR 153 authorizes Wisconsin's Targeted Runoff Management (TRM) Grant Program, which provided $3.5 million in FY2010 (and $4.9 million in 2008) to reduce NPS pollution from both agricultural and urban sources. Funded projects must match the state's criteria for targeting and be consistent with NPS priorities identified by Wisconsin Department of Natural Resources (WDNR). Grants may be used for BMP cost share or to support a variety of local administrative and planning functions. 2011 revisions to the TRM program modify the grant criteria and procedures to increase the state's ability to support performance standards implementation tied to Wisconsin's regulatory authorities and TMDL implementation. Under the state's Agricultural BMP Cost Share program, the Wisconsin Department of Agriculture, Trade, and Consumer Protection has been providing more than $5.1 million annually. These funds included: $1.8 million to cost share on 78,000 acres in nutrient management plans; $0.52 million for 32,000 feet of streambank protection; $0.5 million for 180 acres of waterways; $0.49 million for 26 manure storage structures; and $0.32 million for 20 barnyard practices. Additionally, Wisconsin provides funding for its Farmland Preservation Program, which includes the state's Working Lands Program. The Working Lands Program established a new sub-program in 2010 to provide up to 50% of the cost of Purchasing Agricultural Conservation Easements. In its first year, 5779 acres of agricultural lands were placed in conservation easements as a result of this initiative, with an initial investment of $12 million. Finally, Wisconsin provided $4.1 million for its Urban NPS and Stormwater Management Grant Program in 2008, the most recent year for which funding levels are available. This reliable WDNR grant program covers both planning and construction projects to address polluted urban runoff. In 2008, $2.8M went toward urban BMP construction and $1.3M for planning, ordinances and education. Planning grants can include stormwater management planning, education, ordinance and utility development and enforcement. An unknown portion of this funding source is spent on projects within federally regulated MS4 municipalities.
- **Kentucky's** *Agriculture Water Quality State Cost Share Program* committed $9 million in State FY2010 for agriculture BMP implementation on NPS projects. The state NPS program leverages this funding in two ways: (1) agricultural producers who are applying to install water quality BMPs on impaired waters receive priority funding and, (2) Kentucky Division of Water (KDOW), the state NPS program office, frequently awards sub-grantee contracts to local Conservation Districts to employ technical personnel within the district, who then assist local agricultural producers in applying for state cost share funding. This method concentrates state cost share funding into targeted geographic boundaries.
- **Iowa** NPS program leverages $10.6 million from six different state funding sources, including: the Lakes Restoration Fund, the Watershed Improvement Review Board, the

Water Protection Fund, the Watershed Protection Fund, the Publicly Owned Lakes Program and the Integrated Farm and Livestock Management Fund.

- **In FY10, 7 states (DE, KS, NY, RI, TN, VT, WV) doubled their 319 grant allocation through leveraging of other state funds.**[9] For example:
    - **New York** leverages funds from the state's Environmental Protection Fund via three programs to address NPS issues: (1) the state Department of Agriculture and Market's *Agricultural Environmental Management (AEM) Program* (approximately $13 million in FY2010) supports small farm NPS pollution control projects; (2) the state's Department of Environmental Conservation's *Water Quality Improvement Projects (WQIP) Program* (approximately $3.7 million in FY2010) non-agricultural NPS pollution control projects. Together, the AEM and WQIP programs leveraged approximately $12.4 million beyond the 319 match requirement in FY2010; and (3) The NYS Department of State's *Local Waterfront Revitalization Program* funds watershed planning and management and green infrastructure projects (approximately $2 million in State FY2009-2010).
    - **Vermont** has several programs that have provided a reliable source of funding for NPS program activities. State law created the BMP Cost Share Grant Program, which is administered by the Vermont Agency for Agriculture, Food and Markets and provided $1.6 million in FY10 to help farmers implement BMPs to address water quality issues. The Ecosystem Restoration Program (formerly known as Clean and Clear Program) provides grants for a wide variety of NPS-related efforts, including river management, stormwater management, local municipal actions, wetland protection and restoration, and forest watershed management. The FY10 appropriation for this program was approximately $1.65 million. In addition, the Northern Vermont Resource Conservation and Development Council administers the Better Backroads Program, a collaborative effort that promotes erosion control techniques and practices through technical and financial assistance. This program was launched in 1997 with a 319 grant and now is funded by state legislature allocations (more than $400,000 in FY10) as a complement to the 319 grant program. Over the life of the program nearly 330 grants have been awarded to 155 towns and organizations. The Department of Environmental Conservation NPS program remains involved with this program's activities.
    - **Kansas** NPS program is supported by the state Water Plan Fund, which in FY10 provided approximately $6 million for several state programs related directly to NPS and other conservation activities. Programs or activities supported by the state Water Plan Fund

[9] FY10 funding amounts for RI are based in part on taking an average of funding over a period of years, based on information provided by Rhode Island Department of Environmental Management to EPA for the purposes of this study.

include: NPS program staff at Kansas Department of Health and Environment, the Watershed Restoration and Protection Strategy (a core element of Kansas' NPS program activities associated with watershed planning, cost share for implementation of soil erosion practices at the conservation district level, and cost share to implement locally developed NPS management plans, including BMP implementation, education to conservation districts on no till practices, etc. The state Water Plan Fund is a dedicated revenue source from a combination of fees, fines and State General funds.

- **Tennessee** Department of Agriculture's *Agricultural Resources Conservation Fund* provides approximately $3 million/year in state funding (a portion of the state's Real Estate Transfer Tax) to soil conservation districts, Resource Conservation &Development Councils, and other organizations to cost share with landowners to install agricultural BMPs to address NPS pollution. NPS program staff work closely with *Agricultural Resources Conservation Fund* staff to allocate resources and approve project sites.

- In addition to the states listed above, there are several other state NPS programs (CO, CT, MO) that are leveraging significant state-based funding to support 319 and/or NPS-targeted projects, but for which specific funding amounts were unavailable for this study. State records often do not track the amount of funding that is being leveraged by the NPS program but spent by other agencies or programs.
  - For example, a 2010 NPS Success Story for Missouri's program describes how funding from multiple sources made it possible for the state to address sedimentation in the North Fabius River, ultimately removing an 82-mile stream segment from the state's list of impaired waters in 2008. The project focused on address stream channelization and erosion from agricultural lands. Over the five-year time period of the project, $410,000 of section 319 funding leveraged more than $4.5 million from Missouri Department of Natural Resources' Soil and Water Conservation Program (SWCP) and two soil and water conservation districts. The SWCP funding helped landowners install about 743 conservation practices in the watershed. For the full story, see http://water.epa.gov/polwaste/nps/success319/upload/mo_fabius.pdf.

Federal Funding (FY10)

The primary findings with regard to federal funding are:

- **In FY10, six states (DE, KY, MD, MS, PA, VA) quadrupled their 319 grant allocation through leveraging of federal funds.** For example:
  - **Mississippi** leveraged significant dollars from USDA's Mississippi River Basin Initiative (MRBI) in FY2010 to help producers in selected watersheds voluntarily implement conservation practices and systems that avoid, control, and trap nutrient runoff; improve wildlife habitat;

and maintain agricultural productivity: (1) The MRBI – Cooperative Conservation Partnership Initiative (CCPI) provided $21.44 million, (2) the MRBI – Wetland Reserve Enhancement Program (WREP) provided $13.2 million, and (3) USDA's Conservation Innovation Grants (CIG) program provided $434,575 in FY2010. The Delta Farmers Advocating Resource Management (FARM) association plays a key role in MRBI project/proposal development, provides input throughout the project ranking/criteria development process, and works with stakeholders to develop and implement project plans. Delta FARM focuses its efforts in watersheds with additional, ongoing NPS activities (e.g., 319-funded projects) and works with local Natural Resources Conservation Service (NRCS) staff to ensure MRBI projects are tailored to fit the specific NPS needs of the area. Mississippi NPS program has also played a key role in augmenting federal MRBI funds with State agency funding targeted at addressing nutrient management issues. In FY2010, the Mississippi Department of Marine Resources contributed $1.5 million to implement projects aimed at developing, validating, and delivering comprehensive nutrient management practices in support of the nutrient reduction goals outlined in MRBI plans.

- **Kentucky**'s Division of Water NPS Pollution Control Program leveraged approximately $10.5 million in Environmental Quality Incentives Program (EQIP) funds in FY10 through participation on the NRCS State Technical Committee. KDOW staff provided ranking criteria to KY NRCS that helps prioritize impaired waterbodies for EQIP funding. KDOW then provides maps of section 303(d) listed waters to NRCS, which their staff use when reviewing EQIP applications. KDOW provides updated impaired waters information to NRCS every two years, when a new Integrated Report is approved by EPA.

- **In FY10, DC and Michigan tripled their 319 grant allocation through leveraging of federal funds.**
- **In FY10, four states (AR, MN, WI, WV) doubled their 319 grant allocation through leveraging of federal funds.** For example:
  - **Arkansas** received more than $5.33 million of USDA MRBI funding in FY2010, the first year MRBI funding was available in the 12-state Mississippi River Basin. This funding supported 51 contracts on 24,781 acres of land. USDA-NRCS provided assistance to producers in developing conservation plans and implementing practices to reduce impacts of nutrient and sediment loss from agricultural fields. Arkansas NPS program supports MRBI by conducting monitoring in NRCS-selected watersheds.

Additional Findings Regarding Federal Funding for NPS Activities

- Among those states that are leveraging significant federal resources for NPS program implementation, the most common sources are USDA (NRCS and FSA) agricultural conservation programs, such as EQIP, Conservation Reserve Enhancement Program and Wetland Reserve Program. However, many state NPS programs do not maintain a detailed accounting of USDA program expenditures that are leveraged to further the goals of the NPS program in accordance

with NPS program priorities. This is partially attributable to USDA/NRCS reporting restrictions – states often have no mechanism to obtain this information, much less track and report it. In at least nine states (IA, KS, MT, ND, OK, OR, SD, VT, UT), NPS programs are actively engaged in leveraging Farm Bill program resources for NPS activities but were unable to provide funding amounts for purposes of this study. For example:

- **Oklahoma** has leveraged approximately $100 million over the past two years from USDA – NRCS and FSA programs, such as EQIP, Conservation Stewardship Program (CSP), Wildlife Habitat Incentives Program (WHIP), and Conservation Reserve Program (CRP), which direct funding for conservation practices. Additionally, the Oklahoma Conservation Reserve Enhancement Program (CREP), which is managed in part by the Oklahoma Conservation Commission (the state nonpoint source agency), has obligated approximately $1 million over the past three years to enroll 569 acres of land in the program. 319 dollars have been used to enroll an additional 1,400 acres of CREP-ineligible land in long-term riparian contracts. See *Chapter 7: Coordination with USDA* for more information.
- The **South Dakota** NPS program works closely with USDA at the state and local levels to leverage Farm Bill program resources for NPS projects. However, while the state reports that FY10 expenditures on CRP, EQIP, CSP, CREP and other USDA programs totaled more than $50 million, the NPS program does not have data to indicate how much of this $50 million was directed to NPS projects.
- **Oregon** Department of Environmental Quality's (ODEQ) NPS program coordinates with USDA at the state agency headquarters level, and through NRCS/SWCD regional and local working groups to leverage Farm Bill resources for water quality and habitat enhancement work, including NPS projects. While ODEQ is unable to identify the specific amount of NRCS funds leveraged by the NPS program, NRCS has provided more than $68 million since 2002 through Agricultural Water Enhancement Program, EQIP, and WHIP for projects that address water quality issues.
- See *Chapter 7: Coordination with USDA*, for more detailed information about how these states coordinate with USDA to leverage EQIP, CRP, CREP and other program funds.

- **Oregon** is also an example of a state that is leveraging significant resources from USFS and BLM, but for which specific FY10 funding amounts were unavailable at the time of this study. ODEQ has leveraged significant dollars from both USFS and BLM over the past several years. ODEQ has memorandum of agreements with both federal agencies to work in a proactive, collaborative, and adaptive manner to meet state and federal water quality rules and regulations (see the *Chapter 5: Key NPS Partnerships* for more information). ODEQ has been integral to the successful implementation of many projects providing guidance, expertise, and access to funding through state and federal sources. Between 2003 and 2007, the USFS and BLM committed approximately $80.3 million to water quality restoration projects on USFS and BLM lands throughout Oregon. Over 1,600 miles of road were improved and 484 miles decommissioned reducing sediment delivery and

floodplain encroachment. Riparian treatment was completed on 452 miles. Instream structure was added to over 750 miles of stream and aquatic passage projects have provided fish access to 478 miles of habitat. Upland areas had approximately 32,000 acres treated through various methods including slope stabilization, revegetation, silvicultural treatments, or livestock exclusion fencing. Riparian areas received similar treatments on approximately 25,000 acres. Both freshwater and coastal wetland restoration occurred on 4,807 and 1,500 acres. In 2008, BLM committed $2.6 million and USFS committed $6.6 million to water quality restoration projects on federal lands. In 2009, BLM committed $594,520 and USFS committed $1.9 million to water quality restoration projects on federal lands.

- Approximately half of state NPS programs are not leveraging significant federal funding (other than 319). The most common barrier cited by states is difficulties coordinating with other agencies on targeting and prioritizing funds. While many states are leveraging other programs so that they provide more funding to address NPS pollution, another program often does not align their projects with those funded by the NPS program agency and sometimes does not target their funds in the same manner. Many state officials that EPA has spoken to during this review have shared stories of difficulties they have continued to experience over time in forming successful cooperative and resource-sharing relationships with federal agencies that expend significant resources annually to address conservation issues.

- Some states have programs or mechanisms set up to successfully leverage CWSRF funding for NPS projects. See *Chapter 8: Clean Water State Revolving Fund for NPS* for additional discussion.

Regional (Multistate) NPS Programs and Initiatives

There are at least three regional efforts that span multiple states, focused on specific large waterbodies that are in trouble in significant part from nonpoint sources. In all three cases, the federal government is a significant partner in providing and directing funds to particular efforts, including combating NPS pollution; yet at the same time, the states are the primary implementers and NPS program managers are playing significant roles in these programs and use both 319 dollars and other leveraged federal and state dollars to accomplish the multi-state goals and objectives.

Mississippi River Basin Initiative (MRBI) –

There are scores of state and federal agencies, NGOs, and other partners working to develop and implement nutrient reduction strategies as part of the 12-state MRBI. The USDA-NRCS is providing $80 million to this initiative for each of four fiscal years (2011, 2012, 2013, 2014), for a total investment of new Farm Bill funding of $320 million over and above regular program funding for each state. The funding is directed at voluntary projects in 12-digit hydrologic unit code (HUC) priority watersheds located in 12 key states: Arkansas, Kentucky, Illinois, Indiana, Iowa, Louisiana, Minnesota, Mississippi, Missouri, Ohio, Tennessee, and Wisconsin. Within the first funding year, projects must fit within one of the following three programs:

1. $50 million for Cooperative Conservation Partnership Initiative
2. $25 million for Wetlands Reserve Enhancement Program
3. $5 million for Conservation Innovation Grants

The 12-digit priority watersheds, referred to as MRBI HUC initiative Areas by NRCS, were selected with input from state technical committees and other conservation partners, and generally align with priority watersheds as designated by the state NPS programs. According to the USDA, "The initiative is performance oriented, which means that measurable conservation results are required in order to participate. By focusing on priority watersheds in these 12 states in the basin, USDA, its partner organizations, state and local agencies, and agricultural producers will coordinate their resources in areas requiring the most immediate attention and offer the best return on the funds invested." In general, USDA's investment aligns with several major planning components of the MRBI:

- The Gulf Hypoxia Action Plan for the MRB;
- The Gulf of Mexico Alliance's Governors' Action Plan for Healthy and Resilient Coasts; and
- Nutrient TMDLs developed under various consent decrees.

Chesapeake Bay Program –

The Chesapeake Bay Program is a regional partnership facilitated by EPA that includes federal and state agencies, local governments, universities, NGOs, non-profits, and academic institutions. Much of the work of this regional program is coordinated or completed by EPA Region 3's Chesapeake Bay Program Office. Chesapeake Bay watershed states (including the District of Columbia) are heavily invested in Bay restoration and preservation activities, providing roughly three-quarters of the direct spending, and this investment has been well established over the years. Over a ten-year period ending in 2004, an estimated $3.7 billion in direct funding from federal, state and local sources was provided to restore the Bay. Maryland, Virginia, Pennsylvania and the District of Columbia invested $2.7 billion during that period while eleven federal agencies combined for an additional $972 million. This funding was provided for water quality improvements, land use planning, protection and restoration of habitats and living resources, and stewardship and community engagement.

EPA funding of the Bay Program Office has risen from about $20 million annually in the late 1990s and much of the 2000s to $50 million in 2010 and $54.4 million in 2011. The majority of these funds are passed through to the states and local entities for on-the-ground restoration through the grant programs described below. The remainder is used to support Chesapeake Bay Program Office staff, the Chesapeake Bay Program's science and modeling initiatives, supporting the Chesapeake Bay Program partnership and its many components, various monitoring programs, and special projects. The Bay Program addresses nonpoint source priorities by providing funding to support the following grant programs:

- **Chesapeake Bay Implementation Grants** are funded to the Bay states each year under section 117(e)(1) of the Clean Water Act, which focuses on reduction of nutrient and sediment pollution

from agricultural NPS, and is administered as a cost share program with eligible farmers. In 2010, this grant program was supported by $9.1 million in federal funds, and this funding has held relatively constant over the years.

- **Chesapeake Bay Regulatory and Accountability Program (CBRAP)** – The Chesapeake Bay Program Office provided $11.2 million in 2010, which was the first year of funding for this new program. This funding level is being maintained for 2011. These new funds are aimed at aiding the states and the District of Columbia in implementing and expanding their states' regulatory, accountability and enforcement capabilities, in support of reducing nitrogen, phosphorus and sediment loads delivered to the Bay and implementing the new Chesapeake Bay TMDL. These CBRAP grants will help states to develop new regulations, design TMDL watershed implementation plans, reissue and enforce permits, and provide technical and compliance assistance to local governments and regulated entities. Each state and D.C. may use up to $200,000 of their FY2010 CBRAP grant funding to access EPA contractor assistance for watershed implementation plan development. State or local matching funds are required for the remainder of these grant awards, which provide further leveraging.
- **The Innovative Nutrient and Sediment Reduction Grants Program** provides grants to innovative and cost-effective projects that dramatically reduce or eliminate nutrient and sediment pollution into local waterways and the Bay. EPA's Chesapeake Bay Program Office contributed $12.9 million in its first year of funding in 2009 for 24 projects, with grant recipients providing an additional $11.7 million in matching funds. In 2010, EPA funding provided $5.9 million to 11 projects, with grant recipients contributing an additional $10.2 million. In 2011, EPA funding provided $8.2 million to 19 projects, with grant recipients contributing an additional $11.7 million in matching funds. This grant program is administered in cooperation with the National Fish and Wildlife Foundation (NFWF). Prior to this grant program, NFWF administered the **Chesapeake Bay Targeted Watershed Grants Program** through 2007 to target nutrient reductions with significant support from EPA's Chesapeake Bay Program Office.
- The **Small Watershed Grants Program**, currently administered in cooperation with the National Fish and Wildlife Foundation (NFWF), with contributions from the USFS, National Oceanic and Atmospheric Administration, US Fish and Wildlife Service, NRCS and the Chesapeake Bay Trust. From 2008 through 2011, the Chesapeake Bay Program Office provided between $1.5 and $2 million per year to support this grant program. The Chesapeake Bay Small Watershed Grant program provides grants of $20,000 to $200,000 to organizations working on community-based projects that improve the condition of their local watershed while building stewardship among citizens. There are three funding priorities: watershed restoration, watershed conservation, and watershed planning.

Chesapeake Bay Watershed Initiative (NRCS funding) –

Beyond the federal funds made available through EPA's Chesapeake Bay Program Office, but working cooperatively with this regional partnership, the USDA-NRCS has committed to a new effort called the

Chesapeake Bay Watershed Initiative (CBWI). The 2008 Farm Bill will provide $188 million over the next four years to support restoration of the Chesapeake Bay and its watershed, which represents one of the largest single federal investments in the clean-up effort and an unprecedented targeting of Farm Bill resources to a specific watershed. Congressionally authorized future funding levels are $43 million in 2010, $72 million in 2011 and $50 million in 2012. The CBWI is more aligned to NPS program priorities than NRCS investments such as EQIP. Payments are directed toward High Priority Watersheds, as determined by NRCS with input from state technical committees and other conservation partners, including state NPS programs. Payments will go toward conservation practices that reduce sediment and nutrient losses from fields and pastures in priority/targeted watersheds in the Chesapeake Bay.

Within the CBWI, $72 million is set aside for a new **Showcase Watersheds initiative**. Three agriculturally dominated HUC-12 showcase watersheds were singled out for extra funding of $24 million each:

- Pennsylvania's Conewago Watershed in Dauphin and Lebanon counties.
- Maryland's Upper Chester Watershed in the Eastern Shore
- Virginia's Smith Creek Watershed in the Shenandoah Valley

Restoration funds in these watersheds align with EPA-approved nine-element watershed plans for the Conewago and Upper Chester watersheds, and with an approved TMDL Implementation Plan for the Smith Creek watershed.

Great Lakes Restoration Initiative –

Through a coordinated interagency process led by the EPA, implementation of the Great Lakes Restoration Initiative (GLRI) is helping to restore the Great Lakes ecosystem. This interagency collaboration began in 2010. As outlined in the 2010-2014 GLRI Action Plan, the Initiative targets five focus areas:

1. eliminating or mitigating toxic substances and restoring designated Areas of Concern;
2. preventing and reducing the destructive impacts of invasive species;
3. improving nearshore health and reducing nonpoint source pollution;
4. improving habitat and reducing species loss; and
5. emphasizing and instilling the concepts of accountability, education, monitoring, evaluation, communication, and partnership throughout GLRI implementation.

The EPA works with its GLRI partners to select the best combination of programs and projects for Great Lakes restoration and protection. Special priority is being placed on cleaning up and de-listing Areas of Concern, reducing phosphorus contributions from agricultural and urban lands that contribute to harmful algal blooms and other water quality impairments, and keeping invasive species out of the Great Lakes. GLRI funds are used to implement federal projects and projects done in conjunction with public entities like states, tribes, municipalities, universities and with private entities such as non-governmental organizations. In addition to funding its own work through grants and contracts, EPA distributes GLRI funds to other federal agencies to supplement (but not supplant) their base Great Lakes funding.

The principal agencies involved with EPA in the GLRI are: White House Council on Environmental Quality, U.S. Department of Agriculture, U.S. Department of Commerce, Department of Health and Human Services, Department of Homeland Security, Department of Housing and Urban Development, Department of State, Department of Defense, Department of Interior, and Department of Transportation.

In its first two years, 2010-2011, approximately $775 million in GLRI funding is being used to restore and revitalize the Great Lakes, including an investment of more than $162 million in projects competitively awarded through EPA. The majority of funds have gone to support on-the-ground projects in the Great Lakes states – Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin.

Watershed plan implementation is a GLRI principal action for improving nearshore health and reducing nonpoint source pollution. Under Funding Category I.C.8, EPA provided $16.2 million in competitive grants to support 24 "Watershed BMPs Planning and Implementation" projects in 2010 and another $7.7 million to support 13 "Watershed Restoration" projects in 2011. All work funded under these categories address nonpoint sources, and together comprise 15% of the total funds awarded by EPA in the 2010 and 2011 grant competitions. In 2010, watershed restoration proposals scored significantly higher if the work aligned with nine-element watershed planning or a TMDL Implementation Plan. In 2011, this alignment became a requirement for eligibility. An additional portion of GLRI funding went toward developing TMDLs, amounting to $1.9 million in 2010, and this was counted in the federal leveraging calculations for this study. However, projects that focused on water quality monitoring or on riparian restoration under a GLRI program other than the NPS or TMDL categories of EPA's competitive grants offerings were not counted in the federal leveraging calculations for this study. Furthermore, GLRI funding distributed by other federal agencies are not counted in the federal leveraging calculations used in this study, even though some agencies, such as the USDA NRCS, are utilizing approved TMDLs and nine-element watershed based plans to prioritize some of their GLRI funding decisions.

It is worth noting that state NPS staff (largely funded by base 319 funds) from most states either prepared GLRI grant applications or helped local stakeholders prepare applications. Further, this 319-funded staff provides technical assistance and administrative support necessary to implement projects, and they are monitoring the effectiveness of these projects, as well. In many cases, GLRI-funded projects would not have been possible without the support of 319 funded staff. Lastly, although state and/or local match was not required for GLRI projects, voluntary match was often provided to show support from project partners and is a source of additional NPS leveraging not necessarily documented by this study.

Chapter 7: Coordination with USDA

The most recent national report on the state of the nation's water quality, the *National Water Quality Inventory: Report to Congress – 2004 Reporting Cycle*,[10] indicates that agriculture is the leading source of impairments in assessed rivers and streams (approximately 38%), and the leading known/specified source of impairments in assessed lakes, ponds, and reservoirs (approximately 17%). The U.S. Department of Agriculture (USDA) Farm Bill programs, including the Environmental Quality Incentives Program (EQIP), Conservation Stewardship Program (CSP), Conservation Reserve Program (including the Conservation Reserve Enhancement Program (CREP)) and the Wetlands Reserve Program, provide a significant potential leveraging source at approximately $3.5 billion/year with which to address agriculture-related water quality issues.

This study found that coordination between state nonpoint source (NPS) agencies and USDA agencies (primarily the Natural Resources Conservation Service (NRCS) and Farm Service Agency (FSA)), varies significantly among states. As indicated below, in a substantial number of states, EQIP or other Farm Bill conservation program funding is distributed in whole or in part in accordance with the state's NPS program goals and priorities. At the same time, many states indicated that they have had difficulty obtaining significant broad-based, recurring support for NPS program priorities from USDA funding programs. Many states identified improved coordination and collaboration with USDA programs as a key NPS program goal. In this regard, a few states have stated that they have made or are in the process of making progress in obtaining greater levels of support from USDA funding programs to address agricultural NPS issues.

This study includes the following examples of leveraging: (1) direct coordination between state NPS program staff and NRCS State or District Conservationists (e.g., efforts of a local NPS watershed coordinator or NRCS-NPS program liaison position that lead to cooperative funding from 319 and EQIP in the same watershed), or (2) USDA scoring sheets or ranking systems for Farm Bill conservation programs include significant weighting of water quality considerations, such as projects focused in section 303(d)-listed impaired watersheds and/or NPS program priority watersheds or that implement nine-element watershed-based plans. Landscape conservation initiatives that NRCS has established in priority geographic areas, such as the Chesapeake Bay Initiative, Mississippi River Basin Healthy Watersheds Initiative, Illinois River/ Eucha-Spavinaw Initiative, and West Maui Coral Reef Initiative may provide additional opportunities for increased collaboration. The multi-agency Great Lakes Restoration Initiative is another opportunity for collaboration.

In order to obtain information about the working relationship between state NPS programs and USDA funding programs, EPA HQ relied on a number of sources, including:

- State NPS Program Annual Reports;

[10] See http://water.epa.gov/lawsregs/guidance/cwa/305b/2004report_index.cfm.

- State NPS Program Work Plans;
- State NPS Management Program Plans; and
- Correspondence with EPA Regional and State NPS program staff.

EPA's review has led to the following findings:

- Nearly all state NPS program coordinators participate in NRCS state technical committee meetings. However, in some states these meeting take place relatively infrequently (e.g., 2 or 3 times per year) and may not provide a strong enough basis for relationship-building and significant partnering. Opportunities for coordination with NRCS arising from state technical committee membership vary depending on the state, and can range from the NPS program obtaining information about NRCS program implementation in the state to NRCS integration of funding with a state's NPS program priorities, not only in terms of project locations, but also conservation practices.
- In addition, many state NPS programs coordinate state-wide interagency (state, federal and local) NPS committees (e.g., State NPS Coalition or Task Force) that help to guide or administer the state's NPS program. In most such groups, USDA is represented on the group. This can provide additional opportunities for NPS program staff coordination with USDA (including Forest Service, NRCS, FSA, and Cooperative Extension Service). However, only a few states can point to relationships built within these groups that contribute to an effective process for overall coordination of program funding prioritization. These groups are discussed further in *Chapter 5: Key NPS Partnerships*.
- At least six states (AL, CA, DE, FL, KY, NE) fund one or more NPS program/NRCS liaison positions at the state level. These positions are funded by 319 or in some cases are jointly funded by 319 and NRCS. The liaisons often work out of an NRCS or conservation district office. Benefits of having a NPS program liaison to NRCS include greater accessibility to USDA program data and increased coordination on watershed and best management practices (BMP) targeting.
    - **Nebraska** Department of Environmental Quality's (NDEQ) NPS program has an NRCS liaison that is jointly funded (50/50) by USDA. The NDEQ/NRCS liaison has the following responsibilities: 1) coordinate program implementation between NDEQ, NRCS and project sponsors (e.g., participate in reviews and updates of 319 and EQIP ranking); 2) provide leadership in organizing and assisting watershed councils (e.g., outreach regarding opportunities for NRCS programs to complement 319 activities); 3) assist in evaluating the progress in addressing identified resource concerns in a watershed (e.g., provide technical information to NDEQ); and 4) support and advise NDEQ staff on coordination of NRCS programs and section 319 activities (e.g., advise NDEQ of workload and technical assistance resources at NRCS). The NDEQ also funds a NPS program liaison at University of Nebraska-Lincoln Cooperative Extension.
    - **Alabama** NPS program supports a statewide agricultural Water Quality Coordinator (WQC) with base 319 funds, who works to achieve agricultural NPS management program goals and objectives. The agricultural WQC serves as an NPS pollution management link between the Soil and Water Conservation Committee and its partners (Alabama Department of

Environmental Management, NRCS, Resource Conservation and Development, and Soil and Water Conservation Districts (SWCDs)). The WQC coordinates with NRCS regarding BMP technical assistance and other aspects of agricultural-related 319-funded watershed projects (see the Agricultural Programs section of *Chapter 4: Statewide NPS Programs and Initiatives* for more information on this position).

- **California**'s State Water Resource Control Board (SWRCB) uses base 319 funds to support the coordination and implementation of California's Irrigated Lands Regulatory Program (ILRP), which operates under the authorities within the Porter-Cologne Act (see the Agriculture section in *Chapter 3: State Regulatory Authorities to Control NPS Pollution*). This funding support includes Water Board staff serving as an active liaison with USDA. The collaboration with NRCS involves providing a greater emphasis on water quality in NRCS guidance (such as the Field Office Technical Guide), which has traditionally focused on other aspects of conservation. This NRCS guidance is used to determine the types of management practices to be implemented in the EQIP funded projects. As an example, the Region 5 Central Valley Water Quality Control Board enforces the ILRP by requiring dischargers to development and implement Management Plans (MPs) where monitoring has shown inadequate water quality. These MPs typically include the management practices that must be implemented by the dischargers. This, in turn, can help steer NRCS EQIP funding to support the compliance with and implementation of MPs required under the ILRP. This is particularly significant because this Board regulates an area that spans approximately 60,000 square miles (nearly 40% of the state) and includes 80% of the state's irrigated lands. Further, the new Agricultural Water Enhancement Program (AWEP), established under the 2008 Farm Bill and administered under NRCS-EQIP, has goals that dovetail very nicely with those of California's ILRP. California is optimistic that as these two programs evolve, coordination will increase and both programs will be strengthened.
- **Florida** NPS program has a state-funded staff member who serves as a liaison between the NPS program and USDA. Among other duties, this individual serves on the USDA-NRCS State Technical Committee, which meets several times per year and provides direct input to NRCS programs like Conservation Reserve Program (CRP), EQIP, Wildlife Habitat Incentives Program, Wetlands Reserve Program, and the Forestry Incentives Program.
- **Delaware** is a small state that is dominated by agriculture. For this reason, the state has invested heavily in developing a strong, well leveraged agricultural NPS program that includes a Memorandum of Understanding (MOU) between Department of Natural Resources and Environmental Control, USDA Farm Services Agency and NRCS. Less formally, but perhaps more significantly, Delaware's NPS Program Manager (Bob Palmer) has taken on the role of unofficial NRCS liaison (in addition to his other duties) because the relationship bears much fruit. Approximately once a month, Bob and his staff join the NRCS State Conservationist and his staff (6-15 people in all) over lunch to strengthen professional bonds and to seek ways to integrate their respective programs. Additionally, this crew, plus

a larger group of agricultural conservation leaders in Delaware (approximately 40 people in all), conduct standing quarterly state technical committee meetings. Bob notes that "without 319 base funding, this targeting and coordination would not happen." Five Conservation Planners from Sussex County and two from Kent County funded with base 319 funds work with farmers to provide nutrient management planning, cost share funding for agricultural BMPs, and partnering with NRCS to develop conservation plans and EQIP contracts. These two counties account for 78% of the state's land and approximately 87% of its agricultural acreage. Delaware and NRCS have established the voluntary Cooperative Conservation Partnership Initiative (CCPI) between them to target EQIP funds toward the state's agricultural NPS priorities. This greater flexibility to target came about through EPA's Chesapeake Bay Program. Finally, NRCS recently awarded $715,000 to the Sussex Conservation District through the CCPI to help farmers increase conservation efforts in the Chesapeake Bay Watershed.

- **Kentucky** NPS program provides 319 funding to the Kentucky Division of Conservation to support half of an Agriculture Water Act Liaison position with the University of Kentucky Cooperative Extension. This individual coordinates statewide agricultural NPS pollution control efforts with the KY Division of Conservation, KY Division of Water, and University of Kentucky Cooperative Extension Service. This liaison is currently coordinating with NRCS through the Agriculture Water Quality Authority to address nutrient reduction issues.

- At least 11 states (FL, IL, IN, MN, OK, PA, SD, UT, VA, VT, WV) fund liaison positions at the watershed or conservation district level. These positions often serve to increase the amount of cross-program coordination and funding that is obtained for important NPS watershed projects and to pool resources to provide technical assistance to landowners. The purpose of these liaison positions is to help promote the utilization of USDA funds in a manner that furthers the mutual interests of the NPS program and USDA in implementing projects and activities that protect water quality. Examples include:
  - **Pennsylvania** – See feature story below.
  - **Utah** NPS program leverages staff resources from conservation districts. NPS program funding provides for up to eight local watershed coordinator contract positions. While salaries and benefits are usually provided by the Utah Department of Environmental Quality (UDEQ), the office space and operating materials are often provided by Utah Association of Conservation Districts (UACD), the local conservation districts, or the NRCS, due to the fact that many of these positions are co-located with NRCS field offices, UACD or local Conservation Districts. The watershed coordinators are located in watersheds where a Total Maximum Daily Load (TMDL) has been developed and are members of the local community. The primary focus of coordinators is to ensure the development and implementation of comprehensive watershed, water quality-based TMDL/watershed plans. In their efforts to develop and implement plans, watershed coordinators identify sources of funding for

implementation, provide technical assistance and coordinate with key partners, including NRCS. UDEQ encourages each watershed coordinator to become an NRCS-certified planner and to use Farm Bill funding. Farmers seeking Farm Bill program funding for conservation practices are sometimes referred by NRCS to the local watershed coordinator. The local watershed coordinators may recommend 319 funding to assist with the landowner's cost share for EQIP or other USDA program. All watershed coordinators are required to attend local conservation district meetings, and in many cases projects must ultimately be approved by the local CDs.

- **Oklahoma** NPS program supports 8.4 full-time equivalents (FTEs) who work on five active cost-share implementation programs and projects, including USDA-Farm Service Agency's Conservation Reserve Enhancement Program (CREP) program. These 8.4 FTEs are housed in five different Conservation District offices. This cooperation has helped produce a significant number of Success Stories in the State of Oklahoma, where significant USDA dollars were focused in priority impaired watersheds (under the Local Emphasis Area Project program, discussed in the next section) and were determined, in conjunction with Oklahoma's section 319-funded monitoring program, to meet water quality standards (see *Chapter 6: Leveraging of State and Federal Funding for State NPS Programs* for more information).

- **Florida** NPS program provides 319 funding to support an Agricultural BMP Outreach Team (approximately 6 FTEs). This team provides guidance to growers on effective water quality-related BMPs, provides quality assurance for BMP implementation, develops training materials, etc. After working with landowners to select potential BMPs for their property, the Outreach Team assists landowners in identifying and applying to potential funding sources, including the state agricultural cost share program and USDA Farm Bill programs, to support BMP implementation.

- **Hawaii** provides 319 match to support four Resource Conservation Specialists with the Hawaii Association of Conservation Districts in each county/island to assist local farmers in creating conservation plans and conduct nutrient planning for individual farms, provide technical assistance with specific BMPs, and assisting with watershed planning and implementation efforts.

- **Indiana** is applying its Clean Water Indiana funds toward agricultural BMP cost share and on-farm demonstration projects administered by Indiana's State Soil Conservation Board to Indiana's 92 SWCDs, with each SWCD receiving a maximum of $10,000/year. Beginning in 2011, Indiana will move toward focusing on a few watersheds at a time, so some counties may receive more than $10,000/year. Also, via the Indiana Conservation Partnership (ICP), Indiana Department of Environmental Management leverages 319 funds with USDA-NRCS funds by each funding what the other cannot, as well as funding BMPs both agencies can fund. The ICP develops an annual Scope of Work for priorities, for example the Mississippi River Basin Initiative, which delineates what each Partner will deliver to leverage resources.

State NPS staff work with individual landowners in 319-funded priority watersheds to secure/leverage EQIP funds.

Feature Story: Pennsylvania Provides Staffing, Resources to Work in Tandem with Farm Bill Programs

Pennsylvania's NPS program agricultural specialist maintains contact with state and county NRCS personnel on a project-by project basis and represents Pennsylvania Department of Environmental Protection on the Conewago Initiative Advisory Board. Pennsylvania also provides annual staffing support sufficient to hire a technical assistance specialist for each of 66 county SWCD offices across the state through its dedicated environmental fund, *Growing Greener* (see *Chapter 6: Leveraging of State and Federal Funding for State NPS Programs*). These conservation specialists work with individual farmers to provide technical support and state and Farm bill cost share funding for agricultural BMPs where they are needed most to protect water quality. Pennsylvania contributes nearly $4 million a year to SWCD managers in support of conservation activities and programs through a separate *Conservation District Fund Allocation Program*. Additionally, the State Conservation Commission uses the annual $4.5 million *Resource Enhancement and Protection* (REAP) Program to allows farmers and businesses to earn tax credits in exchange for BMPs on agricultural operations that will enhance farm production and protect natural resources. Eligible applicants may receive between 50% and 75% of project costs as state tax credits for up to $150,000 per agricultural operation, which allows Farm Bill programs to work in tandem with more targeted state-funded agricultural programs. REAP participants must have developed an approved conservation plan (or an NRCS approved grazing plan); an agricultural erosion and sedimentation control plan (which is part of a conservation plan); and a nutrient management plan if Pennsylvania's Animal Feeding Operation threshold of 8 Animal Units or more is met. And with the 2008 Farm Bill, NRCS is dedicating $9.8 million in the new Chesapeake Bay Watershed Initiative to pay for conservation practices that reduce sediment and nutrient losses from fields and pastures in priority NPS Chesapeake Bay watersheds in Pennsylvania. Beyond that, NRCS worked with state NPS staff to select the Conewago Creek Watershed in Pennsylvania to be a "showcase watershed" and provide $24 million of Farm Bill funds toward agricultural BMPs (see Chesapeake Bay Watershed Initiative federal funding description near the end of *Chapter 6: Leveraging of State and Federal Funding for State NPS Programs*). This is leveraging the substantial investment that Pennsylvania DEP has already made in this watershed, which is covered by an approved nine-element watershed plan.

- As a result of coordination over the years between state NPS program staff and NRCS State Conservationists, in 26 states (AR, DE, IL, IN, KY, KS, LA, MD, MI, MN, MS, MT, NC, ND, NE, OH, OK, OR, PA, SC, SD, TX, VA, VT, WI, & WV), EQIP or other Farm Bill program funding is distributed in whole or in part in accordance with the state's NPS program goals and priorities, i.e., USDA scoring sheets or ranking systems include significant weighting of water quality considerations, such as projects focused in section 303(d)-listed impaired watersheds and/or NPS program priority watersheds or that implement nine-element watershed-based plans. Other examples include where the state NPS program is actively involved in administering CREP, resulting in projects focused in NPS priority areas. Among the states that provided examples of successful leveraging of USDA dollars,

some were often unable to provide exact dollar amounts of USDA funding leveraged to address NPS program priorities/goals (see the Federal Funding section in *Chapter 6: Leveraging of State and Federal Funding for State NPS Programs* for additional information). Examples of Farm Bill funding in cooperation with NPS program goals and priorities include:

- **Oklahoma** Conservation Commission (OCC), the state NPS agency, has pursued a number of opportunities to strengthen its relationship with USDA. At the local level, OCC 319-funded watershed project coordinators work out of local conservation district offices in cooperation with USDA-funded district conservationists to ensure their programs reduce overlap (to reach the maximum number of producers), and coordinate to select effective agricultural BMPs for local producers. The OCC's NPS Monitoring Program and Blue Thumb Education Program (see *Chapter 4: Statewide NPS Programs and Initiatives*) help inform conservation district decision-making as to where USDA funds should be directed at the local level. Similarly, at the State level, the OCC NPS water quality monitoring data has been used to identify watersheds where USDA and State program implementation led to section 303(d) de-listings, leading to engagement with the USDA office about how to achieve further NPS success. The OCC's close working relationship with the Oklahoma Association of Conservation Districts (OACD) has led to greater cooperation with and support for the 319 program through conservation district partnerships with USDA. As a result of these efforts, the OCC has been able to leverage a significant portion of USDA's Farm Bill funding to address NPS program priorities throughout the State (see *Chapter 6: Leveraging of State and Federal Funding for State NPS Programs* for more information). Specific examples of leveraging include:
    - CREP - The OCC plays a key role in administering the USDA-Farm Service Agency's CREP program, which has obligated approximately $1 million over the past three years. Generally, USDA CREP funds conservation practices and contracts for long-term livestock exclusion and riparian protection. Concurrently, section 319 and state dollars fund technical support to develop and implement the CREP contracts, water quality monitoring to evaluate success, watershed modeling to identify target areas for program implementation, and equivalent cost share for riparian exclusion in areas of the watershed not eligible for CREP.
    - EQIP – the OCC leverages this funding through the designation of EQIP Local Emphasis Area Projects, which are targeted towards specific state conservation needs. Current efforts include a no-till initiative (i.e. erosion control) in 19 counties in the state, and a $2 million Cooperative Conservation Partnership in Sugar Creek to address severe erosion.
- **All Region 5 states (IL, IN, MI, MN, OH, WI)** – Because of the importance of agriculture across all EPA Region 5 states, the Region systematically worked within each of its states to ensure the water quality data contained in the approved section 303(d) listed waters is used to prioritize EQIP funding. At a minimum, it is a factor for both the state ranking question

(worth 20 points on the scoring sheet) and the national ranking question (worth 10 points on the scoring sheet). In addition, agricultural lands in all of the Region 5 states areas covered by nine-element watershed-based plans receive priority consideration for NRCS-administered Farm Bill funding programs. **Wisconsin**, **Michigan**, and **Minnesota** have additional levels of cooperation, explained below.

- **Wisconsin** – In addition to the cooperation that occurs across all Region 5 states noted above, Wisconsin's NR 151 NPS regulations (described in *Chapter 3*: *State Regulatory Authorities to Control NPS Pollution*) are a driver for implementing agricultural BMPs, so NRCS coordinates with state NPS staff to assist with compliance. Wisconsin's CREP is a cooperative effort with the USDA's Farm Service Agency and the NRCS, Wisconsin Department of Agriculture Trade & Consumer Protection, Wisconsin Department of Natural Resources, Land Conservation Districts, and Wisconsin landowners. Currently, about 3,500 landowners around the state are receiving a total of nearly $5 million annually in rental payments for enrolling lands in this program intended to protect water quality. This partnership allows Wisconsin to leverage about $82 million in federal payments over the next 15 years. Also, within priority watersheds in the Great Lakes Basin, NRCS uses TMDL-derived data and information as the first level of screening to target practices and outreach.
- **Michigan** – In addition to the cooperation that occurs across all Region 5 states noted above, if the proposed practice for NRCS funding is implementing an approved TMDL, the applicant receives extra points on the project scoring sheet.
- **Minnesota** – In addition to the cooperation that occurs across all Region 5 states noted above, the Minnesota Pollution Control Agency uses its own considerable cost share support to work with NRCS to target projects that increase effectiveness and stakeholder acceptance. In the past, Minnesota had a memorandum of agreement with NRCS and shared staff to facilitate coordination.
- **Kentucky** Division of Water (KDOW) NPS program staff participated with the NRCS State Technical Committee extensively during the development of the new EQIP Ranking Tool upon issuance of the 2008 Farm Bill. NPS program staff also participates in the 14 NRCS-EQIP pooling area groups throughout the state to help set regional priorities for NRCS-EQIP funding and to develop EQIP project ranking criteria. KDOW staff provides water quality data, including impaired waterbody information, to members of these pooling area groups to direct EQIP funds to address NPS priorities (see the *Chapter 6: State and Federal Funding to Control NPS Pollution* for more information). Additionally, KDOW staff worked cooperatively with the Kentucky Department of Fish and Wildlife Resources and USDA-Farm Service Agency to target CRP funding toward impaired waterbodies in western Kentucky in Federal Fiscal Year 2010 (FY10). KDOW NPS priorities were also addressed through the Green River CREP program.
- **Mississippi** NPS program has coordinated with a number of partners, including USDA State and local offices, Delta Farmers Advocating Resource Management (Delta F.A.R.M.) and

various State and federal agencies, to leverage a significant portion of the USDA Mississippi River Basin Initiative (MRBI) funds to address water quality issues in the state. The state NPS program has developed the Mississippi Watershed Characterization and Ranking Tool (MWCRT), a spatially-based tool used to characterize sub-watersheds within the major Mississippi river basins. MWCRT has enabled the Mississippi NPS program and partner agencies, including NRCS, to shorten the evaluation time for identifying priority watersheds. Mississippi NPS Program staff indicated that NRCS adjusts its ranking and allocations based on Mississippi Department of Environmental Quality input to target priority watershed areas.

- **Nebraska** – The Water Quality Special Initiative is a cooperative effort between NRCS and NDEQ to coordinate EQIP and Clean Water Act section 319 funding for installation of best management practices in impaired watersheds. From 2005-2010 NRCS set aside $1 million annually for EQIP projects. NDEQ, with concurrence by NRCS, will identify the watersheds in which initiative funds will be made available. The ranking sheet for these funds provides concentrated installation of select BMPs that are expected to result in the attainment of water quality standards in designated watersheds.
- **Vermont** - NRCS added points to the EQIP ranking sheet for projects in watersheds impaired primarily by agricultural runoff and distributed a map of these watersheds to district offices. USDA cost share programs give extra points to projects that will improve water quality in Lake Champlain, a NPS program priority. In addition, the Vermont NPS program collaborated with USDA on a CREP pilot project in Lake Champlain basin that provided higher incentive payments, which resulted in increased farmer participation. This project paved the way for the state-wide CREP. Section 319-funded state staff are dedicated to CREP and working to increase participation through outreach efforts.
- The **Arkansas** NPS program indicated that the Arkansas Natural Resources Commission (ANRC) and Conservation District participation on the NRCS State Technical Committee has led to an increase in the amount of EQIP funding directed towards ANRC-declared “critical groundwater areas” and watersheds where watershed based plans (WBPs) have been developed. In 2011, EQIP funding was allocated to the Illinois River Watershed as a result of the NPS program’s development of a WBP.
- **North Dakota** NPS program has worked with NRCS through participation in the state technical committee to incorporate factors for water quality, TMDLs, and 319 watershed projects into the EQIP priority ranking system. Local 319 grant project coordinators are often able to leverage EQIP dollars for NPS projects. The project coordinators also assist NRCS field office staff with the planning and development of EQIP and other USDA Program plans/agreements within active NPS Program watershed project areas.
- **Kansas** NPS program’s active participation in the state technical committee has led to inclusion of TMDLs, WRAPS (Watershed Restoration and Protection Strategy) project areas, and Source Water Protection Areas in the EQIP ranking criteria. There are also efforts

underway to include watershed-based plan targeted areas in the ranking criteria for future EQIP funds.

- **Oregon** Department of Environmental Quality (ODEQ), the state NPS agency, leverages USDA-NRCS funds to address water quality by (1) its involvement in Agency and Stakeholder review (specifically, as a member of NRCS' Oregon State Technical Advisory Committee, ODEQ has an opportunity to review NRCS Conservation Innovation Grant and Agricultural Water Enhancement Program project proposals. USDA also consults with ODEQ regarding implementation of the CREP program, so that funding addresses priority water quality issues and geographic areas); (2) providing 319 funding for water quality monitoring in watersheds where USDA funds are distributed for pesticide projects; (3) SWCD specialists and landowners' use of 319 fund as supplement to access funds through NRCS cost share programs (for example, ODEQ NPS program staff indicated that, as a result of using 319 funds as a supplement for NRCS cost share programs, USDA funding was directed to NPS priority areas to assist with TMDL load reductions in the Lower Willamette and Clackamas subbasins to address water quality issues identified in the Willamette Basin TMDL); and (4) NRCS is included as a stakeholder during TMDL development so that they are aware of NPS TMDL implementation priorities, and uses TMDLs to identify priority needs for NRCS funding.
- **South Dakota** NPS program coordinates with NRCS and the Farm Service Agency on EQIP, CRP and CREP. In recent years, animal waste management systems have been an EQIP priority in South Dakota. Coordination between South Dakota Department of Environment and Natural Resources (DENR) and NRCS has involved NPS program support for planning associated with conservation practice needs and NRCS EQIP funding for implementation of those plans. The NRCS State Conservationist reviews 319 project plans to determine the level of NRCS assistance that can be provided to the projects. For example, South Dakota DENR, South Dakota Game, Fish and Parks Department and USDA have recently partnered on the James River Watershed CREP. The focus is on improving water quality, reducing soil erosion, and providing flood control, all while creating additional pheasant nesting habitat in the watershed. There are 319-funded projects in the upper and lower parts of the watershed.
- In **Louisiana**, USDA-NRCS includes water quality in their priority ranking criteria for the EQIP program and provides a higher ranking to projects that are intended to "…result in considerable reductions of non-point source pollution, such as nutrients, sediment, pesticides, excess salinity in impaired watersheds, groundwater contamination…" Additionally, project proposals receive more points if they are located within the drainage area of an impaired stream segment or waterbody.
- **Montana** NPS program staff makes recommendations to the State Conservationist on EQIP and other Farm Bill program priorities. NRCS has added points into EQIP and CSP project

selection process for streams with completed TMDLs. Higher points are awarded to projects in impaired waters that address pollutants with TMDLs.

- In 2005, the **Texas** NPS agencies (the Texas State Soil and Water Conservation Board and Texas Commission on Environmental Quality) worked with NRCS to establish an EQIP Statewide Resource Concern for water quality in south central Texas, which directs EQIP funding towards protecting streams impacted by bacterial contamination from livestock.
- **North Carolina** NPS program implements/administers the USDA-Farm Service Agency's CREP program in a number of Nutrient Sensitive Water watersheds throughout the state, including the Chowan, Neuse, Tar-Pamlico, Jordan, and Yadkin-Pee Dee River Basins.
- In **South Carolina**, NRCS uses the state's CWA section 303(d) list to help prioritize funding allocation. One of the questions listed on the EQIP Application Ranking Sheet is: "Will the majority of the land offered in this application lie in a watershed designated on SCDHEC's section 303(d) list of impaired watersheds or is in a watershed with an existing 319 project?" Additionally, NRCS classifies high-priority watersheds as "major needs" (based on sediment, bacteria, and other impairments); watersheds with an existing 319 project receive higher priority in this ranking.

- At least 16 states (AR, DE, IA, FL, IL, MD, MN, NE, NM, OK, OR, PA, SC, VA, VT, WI) have programs in place to provide cost share assistance to farmers in combination with USDA cost share as an additional incentive for BMP implementation. For example, where USDA assistance for an EQIP project covers 50% of the total cost, the state may provide 25% of the total cost, thereby reducing the farmers' cost share from 50% to 25%. This can be significant enough to allow for BMP implementation by a farmer who otherwise would not have been able to participate. The USDA programs in these states consider control of NPS pollution in priority areas when determining farmer eligibility for cost share assistance. This approach likely increases implementation of EQIP and other Farm Bill programs in areas and on practices of importance to the NPS program. Examples include:
  - **Virginia** Department of Conservation and Recreation (DCR) has an Agricultural BMP Cost-Share Incentives Program funded through its Water Quality Improvement Fund, which is described in *Chapter 6: Leveraging of State and Federal Funding for State NPS Programs*. Virginia's Agricultural BMP Cost-Share Program can be (and often is) leveraged with NRCS EQIP support, reducing the landowner s expense to less than 30% of the total cost. In FY10, more than $15 million was made available to agricultural producers across the state. This program focuses on efficient nutrient and sediment reduction from five priority BMPs: cover crops, conservation tillage, nutrient management plan development and implementation, livestock exclusion from streams, and the establishment of vegetative riparian buffers. These five priority BMPs are emphasized in guidance given to 47 local SWCDs spread across the state for program year funding allocations. Each SWCD receives a funding allocation and

signs a cost share grant agreement with DCR. SWCDs also receive a lesser amount of "base" level funding to implement any of the roughly 30 practices contained within the Virginia Agricultural BMP Cost-Share program manual. Funding is provided to each SWCD to target TMDL implementation priorities that have tie to agricultural sources. Beyond this program Virginia also provides an agricultural BMP tax credit program to support voluntary installation of BMPs that will address Virginia's NPS program objectives (up to 25% of the first $70,000 spent on agricultural BMPs). To qualify for the tax credit, an agricultural producer must have an approved conservation plan and the BMPs must be inspected by a SWCD technician.

- **Vermont** - VT Agency of Agriculture, Food and Markets (AAF&M) receives an annual state appropriation to fund the BMP Cost Share Grant Program, which was established by state statute in support of Vermont farmers' "voluntary construction of on-farm improvements designed to abate non-point source agricultural waste discharges into the waters of the state of Vermont, consistent with goals of the Federal Water Pollution Control Act and with state water quality standards." The program can award a grant that reduces the producer's cost share to as low as 15%, however, the state grant cannot exceed 50% of the total cost. Eligibility factors include eligibility for USDA cost share assistance and whether the farmer has a nutrient management plan. Priority is given to farmers in the Lake Champlain or Lake Memphremagog basins. Section 319-funded staff at AAF&M assist with implementation of this program. Benefits of the program include a greater number of agricultural BMPs installed/implemented that help achieve NPS program goals and tracking of load reductions associated with USDA-funded BMPs.
- **Iowa** Department of Natural Resources NPS program staff coordinate 319 funding with USDA, Iowa Department of Agriculture and Lands, Iowa's Clean Water State Revolving Fund program, and the state Watershed Improvement Review Board to make conservation practices more affordable for farmers. Typically, USDA cost share for a conservation practice is 50% and the NPS program will work with state and federal partners to provide an additional 25% of cost share requirement so that landowner only has 25% cost share. In limited cases, where the water quality benefit warrants, a 319 grant could provide a higher percentage of the total BMP cost. For example, between 1999 and 2008 the Rathbun Lake Watershed Project relied on EQIP and 319 funding to provide 75% cost share on private lands located within high priority areas of the watershed (i.e., areas contributing higher amounts of sediment and phosphorus to the lake).
- In **Oklahoma**, 319 and state funds are used as cost share to landowners to implement BMPs to address water quality problems in priority watersheds. Local Watershed Advisory groups recommend both individual practices with the greatest likely water quality benefit as well as cost share rates necessary to ensure voluntary adoption by local landowners. Section 319 and state funds are also utilized as *equivalent cost share* in areas where the Farm Service

Agency's CREP projects are implemented but a portion of the watershed is ineligible for CREP (e.g., a semi-forested area where cattle are grazing and have stream access).

- Under the **Nebraska** Water Quality Special Initiative a portion of EQIP funds are reserved to support NPS program priority practices in priority areas (see discussion above). Nebraska Department of Environmental Quality in turn reserves some 319 funds to support EQIP projects that are funded under the Initiative. In general, EQIP pays for 50% of the practice. The remaining 50% may be subsidized with section 319, local NRD, landowner or other funds. Total EQIP, 319 and other federal funds cannot exceed 75% of total cost, preserving the goal of having the landowner become personally invested in the practice.
- **South Carolina** NPS Program encourages all watershed-based plan implementation projects to utilize USDA funds when eligible (typically EQIP and CRP). NPS program staff coordinates with sub-grantees and county NRCS staff to supplement the homeowner portion of EQIP contracts with 319 funds through cost share.

- In addition to the above findings regarding NPS program coordination with USDA at the state and local level, this study found that NRCS provides technical assistance/landowner consultation on agriculture-related 319 projects. A complete list of states engaging in this form of leveraging was unavailable at the time of this study. Examples include:
  - **Kansas** Department of Health and Environment has a Technical Assistance Partnership MOU with NRCS and other state and federal agencies to support BMP implementation (see discussion of this MOU in *Chapter 5: Key NPS Partnerships*).
  - **Nebraska** NPS program coordination with USDA on meeting technical assistance needs is facilitated by the NDEQ/NRCS liaison described earlier in this chapter. The liaison interacts at the local level with Natural Resources District staff and 319-project Technical Advisory Teams to provide technical assistance on GIS mapping and BMPs.

Additional examples of NPS program coordination with USDA at the state or local level include:

- **Alabama** Department of Environmental Management partners with NRCS to implement the statewide poultry litter program, and coordinates with NRCS in developing technical standards and guidelines related to animal waste and nutrient standards. Further, 319 funding provided original seed money for the current NRCS cost share program that supports the transport of poultry litter from nutrient-impaired to unimpaired watersheds.
- **Virginia** DCR has a contractual relationship with NRCS to provide engineering services, training and technical assistance services to support both Virginia's Agricultural TMDL Program as well as Virginia's Agricultural BMP Cost-share Program. Technical assistance furnished by NRCS was directed to local SWCD and DCR staff to provide for more effective implementation of agricultural incentive programs that result in water quality improvements. Tasks included training of SWCD employees to ensure that they are qualified to effectively assist farmers in their communities to implement on-the-ground BMPs.

Chapter 8: Use of Clean Water State Revolving Fund for NPS

In 1987, Congress authorized the Clean Water State Revolving Fund (CWSRF). Each year, the federal government appropriates funds to EPA for the CWSRF program, and these funds are distributed by EPA to every state according to a statutory formula. The CWA primarily provides the CWSRF loans can be made to the following eligible projects:

1. The construction of publicly owned treatment works by any municipality, intermunicipal, interstate, or state agency
2. The implementation of projects pursuant to a state nonpoint source pollution management program
3. The implementation of projects pursuant to an EPA-approved estuary conservation and management plan

In order to be eligible to receive funding, a project must be listed on a state's annual Intended Use Plan (IUP), which identifies the intended uses of CWSRF program funds and describes how these uses support the goals of the state's CWSRF program. Publicly owned treatment works projects, including both wastewater and regulated stormwater projects, must be prioritized in a Project Priority List. States select a subset of these projects for funding each year and include them on the IUP. Nonpoint source projects do not have to be included in the Project Priority List. However, a list of NPS activities eligible for assistance in a state for a particular year must be included on the IUP for these projects to be funded.

The NPS project categories eligible for CWSRF funding include: agricultural cropland; agricultural animals; silviculture; urban; ground water (unknown source); marinas; resource extraction; brownfields remediation; containment of storage tank (including salt sheds and underground storage tanks); sanitary landfill remediation and closure; hydromodification; and individual/decentralized sewage treatment.[11] However, as a general matter, the following NPS categories are not high priority issues in the states' own NPS management programs: brownfields remediation, storage tank containment, and sanitary landfill remediation and closure. Therefore, for the purposes of this report, the aforementioned categories are regarded as "fringe" NPS activities. The remaining NPS categories for CWSRF funding (listed above) such as agriculture, silviculture, hydromodification and urban, address the nonpoint sources of pollution that dominate state 305(b) reports and 303(d) lists, which indicate EPA and state priorities for the NPS program. Therefore, for purposes of this report, these categories are considered "core" NPS activities and the discussion about CWSRF funding for NPS projects in this chapter focuses on "core" NPS activities.

[11] Each state has discretion to provide all, part or none of these NPS categories for CWSRF funding eligibility.

The state summary data included in this chapter is based on information stored in the Clean Water State Revolving Fund (CWSRF) National Information Management System (NIMS), available at http://water.epa.gov/grants_funding/cwsrf/cwnims_index.cfm. Findings are based on the 2010 NIMS reporting year, which includes the total dollar amount of CWSRF assistance (including federal capitalization grants, state matching funds, bond proceeds, fund investment earnings, and loan repayments) provided for the implementation of nonpoint source management programs during the reporting period, July 1, 2009 through June 30, 2010. The year 2010 was selected because it was the most recent year for which data was available and it is consistent with the timeframe considered for other chapters in this report. American Recovery and Reinvestment Act (ARRA) funds spent in 2010 (carried over from the one-time ARRA allocation from 2009), and tracked separately from Federal Fiscal Year (FY) 2010 funding by the states and EPA, were deliberately excluded from this analysis to better focus on what NPS projects are funded in a representative year.[12] Additional sources of information for this chapter include state NPS management program plans, annual reports, state websites and correspondence with state staff. Due to limited time available for the completion of this study, EPA was unable to schedule a comprehensive review/update of the data by state CWSRFs.

States have flexibility in how to operate the CWSRF program with respect to priorities for funding, eligible recipients and project types, and mechanisms for administering the loans. Accordingly, coordination between state NPS programs and CWSRF varies greatly between states. Several states do not fund NPS projects (see below) and other states limit loan recipients to public entities. Still other states restrict nonpoint source funding with SRF dollars to a narrow set of activities that may not reflect the priority issues faced by the state's nonpoint source program. These state-specific limitations can be barriers to NPS program managers interested in leveraging SRF dollars for implementation of the state NPS management program. Nevertheless, as discussed below, a significant number of states allocate CWSRF loans and/or grants for projects that address NPS pollution.

At least seven states have never used CWSRF funds for NPS projects (outside of ARRA). In direct contrast with EPA's allowance (and encouragement) of this fund to support NPS projects, most of these states prohibit this money to be applied to such projects. However, as a result of ARRA and the advent of the Green Project Reserve, which requires states to use at least 20% of their annual CWSRF allotment for projects with energy efficiency, water efficiency, green infrastructure or other environmentally innovate project component, several of these states are taking steps to expand eligible project to include NPS categories. Among the remainder of states, some have formal programs that focus on NPS and others only fund NPS activities occasionally or at relatively low levels. From 1990 to 2010, a total of $3.5 billion of CWSRF funds has been allocated to NPS projects, accounting for approximately 4% of all CWSRF lending (Figure 8-1). Half of this amount has been directed to primarily address "fringe" NPS activities.

[12] A modest number of States applied ARRA funds to core NPS activities, and a few did so at significant levels (more than $5 million).

To date, approximately 2% of all CWSRF lending has been committed to addressing the nonpoint sources of pollution that dominate state 305(b) reports and 303(d) lists ("core" activities). In 2010, the following 29 states financed nonpoint source projects (core and fringe) with some level of non-ARRA CWSRF funding: AK, AR, CA, DE, GA, IA, IN, KS, KY, MA, MD, ME, MN, MO, MT, NC, NE, NH, NJ, NY, OH, OR, PA, RI, SD, VA, UT, WV, and WY.

Of these, the following six states committed more than $5 million to core NPS activities (i.e., projects other than landfill remediation/closure, underground storage tank remediation, and salt storage shed construction) in 2010: AR, IA, MN, NE, OH, and OR.

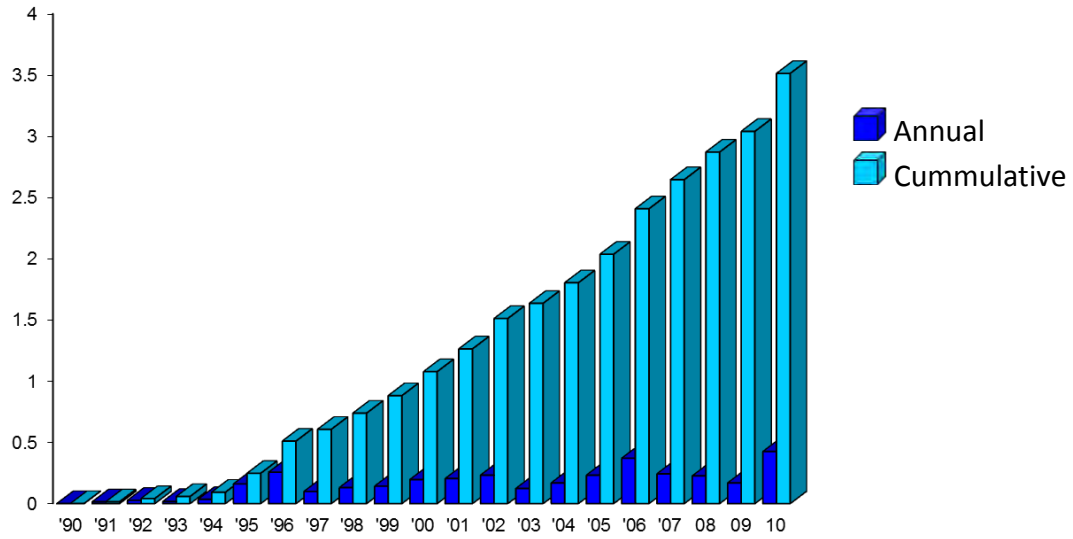


Figure 8-1: SRF funding for NPS in billions of dollars (Source: EPA Office of Wastewater Management)

In a number of states the NPS program works closely with the CWSRF program to prioritize NPS project proposals for CWSRF. In some cases, this means collaboration across state agencies and, in most cases, across offices and divisions within the same agency. In general, the extent to which a state administers CWSRF loans to NPS projects is often dependent on partnerships between CWSRF program and other entities. Examples of partnerships that facilitate CWSRF lending for NPS projects are summarized below.

Partnerships with other public entities:

In some cases, CWSRF programs partner with other public entities to distribute CSWSRF loans. One example of public partnering is through a *pass-through loan*, in which a CWSRF program makes a loan to another government agency or to a municipality that then passes the money to private borrowers as loans for nonpoint source pollution projects. The town, county, or state agency reviews the project and

the finances of each borrower. Examples of state CWSRF programs designed to support NPS pollution activities are provided below.

Public partnerships:

- Partnerships with local governments

    - **Washington** Department of Ecology (CWSRF agency) lends to Conservation Districts, who lend to farmers. The Conservation Districts guarantee repayment to CWSRF with county assessments. As the farmer incurs costs, they provide invoices to the Conservation Districts, which send them to the CWSRF program for disbursement. Also in Washington, many counties in the state have used the Washington State Water Pollution Control Revolving Fund (SRF) low-interest loan program to create local loan programs to help residents and small businesses pay for needed repairs and upgrades of faulty on-site sewage systems. Since 2007, Washington has also awarded grants from its Centennial Clean Water Fund (Centennial) for administrative costs of those programs and for grants to residents who cannot qualify for low-interest loans. Most of these loan and grant programs are administered by local health jurisdictions that apply for loan and grant funding through the Department of Ecology's Water Quality Financial Assistance Program (which includes SRF and Centennial funds). The SRF and Centennial programs have provided more than $18 million for this purpose since 2002; at least $5 million of that is available now through programs in counties throughout Washington. From 2002 to 2011 these local loan programs funded the repair or replacement of over 600 failing on-site sewage systems in Washington.

    - **Rhode Island** Department of Environmental Management (RIDEM) coordinates with the Rhode Island Clean Water Finance Agency on the Community Septic System Loan Program (CSSLP), which was established in 1999. Under the CSSLP, municipalities with a RIDEM-approved on-site wastewater management plan (OWMP) can apply for a low-interest loan for a term of 10 years. A municipality receiving a CSSLP loan will distribute the funds to homeowners in accordance with the OWMP.

- Partnerships with other state agencies (e.g., Agriculture, Forestry, and Natural Resources)

    - **Delaware** has developed an Agricultural Non-Point Source Loan Program as part of its CWSRF. Local conservation district planners and NRCS assist agricultural producers with needs assessments and with project planning and design. This program targets poultry and dairy producers by underwriting up to 90 percent of the producer's share of the cost of building manure and composting structures. Borrowers guarantee repayment of the loans with revenue streams from poultry integrators and dairy cooperatives. Poultry and dairy producers must have an approved waste management plan to be eligible to receive funding for approved practices. So far, Delaware has funded more than 700 agricultural projects for

$7.3 million. Delaware has also applied $6.2 million from the CWSRF to repair or upgrade failing septic systems.

- **Minnesota**'s CWSRF program is highly integrated with its NPS program, and provided $14,900,599 in NPS loans in FY2010. The majority of this is loaned to implement agricultural best management practices (BMP) through the state's Clean Water Partnership between the Minnesota Pollution Control Agency and the MN Department of Agriculture (MDA). In FY2010, $5.4 million was provided to control NPS impacts from cropland and $3.4 million was provided to control NPS impacts from non-CAFO Animal feeding Operations. Another $6.0 million was loaned to upgrade failing or underperforming septic systems. Minnesota's Agricultural BMP loan program is unique among CWSRF programs because of the many partners involved in its operation. MDA manages this program. Counties receive loans from the CWSRF, and the counties manage agricultural loan programs at a local level. Soil and Water Conservation Districts assist farmers with needs assessment and with project planning and design. To date, Minnesota's CWSRF program has funded 8700 agricultural projects for more than $118 million.
- **Maine** – Through the Forestry Direct Link Loan Program, the Maine Forest Service's Division of Forest Policy and Management, Department of Environmental Protection, and the Maine Municipal Bond Bank have teamed up to offer a mechanism to provide incentive financing to loggers that reduces NPS pollution risk on timber harvests in Maine. This program accounted for loans totaling $3.7 million in FY10.
- **Montana** – the Montana CWSRF program lends $1-2 million annually to Montana Department of Natural Resources to provide loans to increase irrigation efficiency on agricultural lands.

- <u>Partnerships with other federal assistance programs (e.g., EPA – NPS, USDA – Farm Bill programs, HUD, etc.)</u>
    - **Arkansas** Natural Resources Commission (ANRC) provides CWSRF funds to support stacking sheds, fencing, compost sheds, trenching, and no-till farming drills and tail water recovery nonpoint source projects. Local Conservation Districts partner with ANRC to approve project plans and approve the completed project. The CWSRF purchases certificates of deposit at 49 banks, who in turn make reduced interest rate loans (3%) loans to local farmers to implement agricultural BMPs. Over $50 million has been loaned for agricultural nonpoint source projects in 35 counties.
    - **West Virginia** CWSRF, in partnership with state and federal agencies and banks, provides cost share for the Environmental Quality Incentives Program (EQIP). CWSRF funds are available for agricultural BMP projects and remediation of failing septic systems and removal of straight pipes. Since 1998, more than $10 million has been loaned to fund NPS

projects for agricultural BMPs ($6.1 million) and septic system upgrades (including removal of straight pipes) ($4.2 million).

- **Oklahoma**- In 2008 the City of Tulsa utilized $1.25 million of CWSRF funds from the Oklahoma Water Resources Board to invest in permanent riparian easements to protect their water supply reservoir. These funds were used as match for the USDA (Conservation Reserve Enhancement Program (CREP) in that watershed.
- **North Dakota** – The ND NPS program coordinates with the CWSRF program on the Livestock Waste Management System SRF program, which has annual funding commitments of at least $500,000. This program helps producers meet 319 and EQIP match/cost share requirements for manure management systems.

Loan Sponsorship Options:

At least four states (ID, MD, OH, OR) have a *CWSRF loan sponsorship option*, which allows a water restoration project (e.g., stream bank stabilization project) to be funded in conjunction with a community's traditional CWSRF-funded wastewater project. The restoration project is paid for by a POTW's sewer user charge. Reduced costs from lower interest rates offered by the SRFs result in no negative financial impact to the utility.

- **Ohio** uses a linked-deposit loan program to fund NPS projects that support county watershed management plans. The program has provided more than $120 million since 2000. See feature story below.
- **Maryland** – In addition to direct SRF loans, and similar to Ohio's program, Maryland also relies on a linked deposit mechanism to provide a source of low interest financing to implement NPS capital improvements that will reduce the delivery of nutrients to the Chesapeake Bay and its tributaries, and provide safe drinking water. Eligible projects include agricultural BMPs, septic, stormwater, and shoreline erosion control projects.
- **Idaho** Department of Environmental Quality's (DEQ) CWSRF "sponsorship agreements" provide funding to NPS projects that have a nexus with the point source community by adjusting either the interest rate charged on wastewater treatment/collection facility loans or extended term financing that lowers the annual debt service. The NPS project costs are generally funded by interest rate reductions, so that point source rate payers do not experience an increase in their rate burden. The NPS projects are administered by IDEQ 319 grant staff, and have the same administrative conditions as any section 319 grant. In SFY2012, DEQ will facilitate the sponsorship of three NPS projects, totaling approximately $350,000. These projects were selected because they had completed a technically correct 319 grant application; they were in the same watershed as their sponsor; and, their sponsor was in support of the NPS effort.
- **Oregon** DEQ's "sponsorship option" financing, available for public agencies, allows a watershed restoration project to be funded in conjunction with a community's traditional wastewater project. Examples of sponsorship option NPS projects include: (1) Portland, OR – a sponsorship project in

September 2003 provided $2.3 million for streambank restoration along the Willamette River and its tributaries, and (2) in February 2010, the City of Woodburn received $411,000 through the sponsorship option to fund riparian area enhancements (restoring native vegetation, wildlife habitat, and providing additional shading) within the Pudding River watershed. The project was implemented in conjunction with upgrades to the city wastewater collection and treatment facilities and was paid by sewer rates.

Feature Story – OHIO CWSRF LINKED DEPOSIT LOANS – OVER $120 MILLION SINCE 2000

Ohio created the innovative practice of the linked-deposit loan program and has relied on it since 1993 to fund projects that support county watershed management plans. [A short primer on the Linked Deposit approach is provided at the end of this feature story.] Since then, other states, such as Maryland, Idaho and Oregon, have adopted this approach. Ohio's program, called Ohio's *Water Resource Restoration Sponsor Program* (WRRSP), is an important enhancement to Ohio's NPS program. From 2000 to 2010, more than $120 million in WRRSP funds have been provided to address NPS problems by implementing BMPs for agriculture, forestry, stormwater, and land development, and to repair failing onsite wastewater treatment systems. To date, this has resulted in the protection and/or restoration of more than 90 miles of stream corridors and approximately 5,000 acres of high quality wetlands. WRRSP projects are often linked to specific action items and/or recommendations within TMDL studies and locally prepared watershed management action plans. Projects proposed under Ohio's linked deposit program score higher in the application process if they are in watersheds that have either a completed TMDL and/or state-endorsed watershed action plan. T he financial assistance provided by WRRSP is critical for local governments, watershed groups and conservation organizations that are implementing relatively large water quality improvement projects throughout Ohio.

In recent years Ohio has set aside $15 million/year to support priority NPS restoration projects and priority watershed protection projects—$7.5 million for each type. Most of the restoration projects support the implementation of agricultural BMPs (e.g., manure storage facilities, conservation tillage equipment, filter strips, grassed waterways, fencing, and alternative watering sources for livestock). On the priority protection side, WRRSP supports fee simple land purchases and the acquisition of conservation easements for water quality protection, especially critical in central and northeastern Ohio where watersheds are experiencing rapid land use conversions.

Soil and water conservation districts (SWCD) for each county assist farmers with needs assessment, planning & design, and cost estimates. Each county's program is developed with two concurrent steps: the county SWCD develops a watershed management plan, and the WRRSP and local financial institutions enter into agreements describing requirements and procedures for linked deposit loans. Watershed management plans identify and prioritize pollution sources, suggest mitigation actions, identify funding sources, and establish an implementation schedule for water quality improvements. Ohio EPA and public review lead to approval of each county SWCD plan. The WRRSP and the SWCD then sign a memorandum of understanding that describes how these two entities will coordinate their

implementation of the management plan. As development and review of a watershed management plan proceeds, SWCDs identify local banks that would like to participate in a linked deposit program. Any borrower with a project that helps to implement the watershed management plan is eligible for a linked deposit loan. Participating banks review borrowers' credit using their own credit standards. If a bank approves a linked deposit loan, the WRRSP purchases a CD of equal value from the bank. The WRRSP accepts a CD interest rate that is 5% lower than the rate of a U.S. Treasury Note or Bond with the same term. The bank reduces the borrower's loan interest rate by 5%. The bank makes semiannual payments of principal and interest to repay the CWSRF for its investment in the CD, even if the borrower defaults on the linked deposit loan.

Linked Deposit Programs

In a linked deposit loan approach, a state works with local private lending institutions to fund nonpoint source pollution control. The state agrees to accept a reduced rate of return on an investment (e.g., a certificate of deposit) and the lending institution agrees to provide a loan to a borrower at a similarly reduced interest rate. For example, if the typical earnings rate for a certificate of deposit (CD) is five percent, a state might agree to purchase a CD that earns two percent interest, and in exchange, the lending institution agrees to provide a loan to a borrower at an interest rate that is three percentage points lower than the market rate for the borrower. In this program, the CWSRF investment (deposit) is linked to a low-interest loan, thereby earning the description "linked deposit loan." Linked deposit loan programs provide benefits for CWSRF programs, local financial institutions, and borrowers. CWSRF programs can support high priority nonpoint source projects and place risk and management responsibilities with local lenders. Financial institutions earn profits from the linked deposit agreements and offer an additional service for their customers. Borrowers save money with low-interest loans and can comfortably work with their local bank or credit union.

Examples of coordination between state NPS and CWSRF programs:

One example of coordination between state NPS and CWSRF programs is the use of recycled SRF funds that are provided as match to 319 grant awards. Recycled CWSRF funds are funds that have been paid back to a state, and that are recycled back into the state's SRF program, and are no longer considered to be a federal source. Currently, at least four states rely on recycled SRF funds to provide all or part of the required 40% match for 319 grants: CA, IN, MT (all three in full) and UT (partial match). These and other examples of coordination between state NPS and CWSRF programs are provided below*:*

Feature Story – NPS Incentive Rate in South Dakota

The NPS program in South Dakota Department of Environment and Natural Resources (SDDENR) worked with the Board of Water and Natural Resources to develop an **incentive rate** to promote the use of SRF funds for NPS projects in 2004. Any NPS incentive rate loans are in line with SDDENR NPS program goals because to be eligible, a project must be part of an approved 319 grant project implementation plan. Since 2004, more than $8 million has been provided for NPS activities as a result of the incentive rate program.

Traditional wastewater or stormwater projects that include a nonpoint source component may receive the nonpoint source rate. The annual principal and interest payments are calculated for a loan at the higher base interest rate. Using the lower interest incentive rate, a loan is sized using the annual payment previously calculated. The difference in the two loan amounts is the amount of funding available for the nonpoint source component of the project. For additional information, see http://denr.sd.gov/dfta/wwf/cwsrf/11cwsrfiup.pdf.

- **Minnesota** – Minnesota's CWSRF program is highly integrated. Most of the loans go toward agricultural BMPs. The agricultural BMP loan program, managed by MDA, is unique among CWSRF programs because of the many partners involved in its operation. Counties receive loans from the CWSRF, and they manage agricultural loan programs locally. SWCDs assist farmers with needs assessment and with project planning and design. Minnesota's CWSRF program has funded more than 1,961 agricultural projects for more than $110 million.
- **New York** – NPS program staff in the NY Department of Conservation (NYSDEC) coordinate with the New York State Environmental Facilities Corporation to review and score all CWSRF applications. Additionally, the state's Green Innovation Grant Program (GIGP), created in 2009 under the ARRA Green Project Reserve (GPR), provides grants to municipalities, not-for-profits, SWCDs, and other eligible recipients for projects that protect water quality and other environmental resources with a measurable impact on water quality. Project proposals, which are submitted through a separate application process from the SRF base program, must meet the applicable requirements of both GPR and the CWSRF program. NPS program staff serves on a multi-agency panel that screens and scores all GIGP project applications. Approximately $9.4 million in FY2010 GIGP funding supported nonpoint source projects.
- **Washington** – The application process for CWSRF is integrated with the state's Centennial Clean Water Fund and 319(h) funding cycles. A single Request for Proposals (RFP) is administered by the financial management section of the Washington Department of Ecology Water Quality Program. CWSRF-funded NPS projects must be in accordance with the state NPS program plan.

Feature Story – Recent Legislative Changes Increase Utah CWSRF Support for NPS Program

Utah's Clean Water State Revolving Fund (CWSRF) is administered by the Utah Water Quality Board through the staff of the Engineering Section of the Division of Water Quality. There are several ways that Utah's SRF program supports nonpoint source activities, including projects that reduce/abate runoff, improve critical aquatic resources, preserve or protect beneficial uses in state waters, improve watershed management or support TMDL assessments.

The Utah Legislature has designed the Utah CWSRF program to include several funds and subaccounts. A 2007 law revised the existing SRF statute to authorize the Water Quality Board to make fund an eligible NPS project through a loan the Utah Wastewater Loan program Subaccount or a grant from the Hardship Grant Program for Wastewater project Subaccount. This change in state law, which was supported by the Utah DEQ's Division of Water Quality (DWQ), increases the availability of CWSRF funding for NPS projects. The Hardship Grant Program is financed principally through fees (assessments) and interest charged on SRF loans. Through collaboration between the state NPS and CWSRF programs, a portion of the **interest** from wastewater treatment facility loans is reserved to fund NPS projects. The NPS reserve is a minimum of $1 million annually for loans (as low as 0% interest for up to 20 years repayment) and Hardship Grants. With expansion of the Hardship Grant Program over the last four years to include NPS projects, the program has provided over $7.4 million in direct grants for 97 NPS projects.

The Water Quality Board also funds other NPS projects, beyond the $1 million reserve. In FY10 the Water Quality Board approved $1.75 million in additional grants to reduce NPS pollution. The following projects were supported by the Utah CWSRF in FY09:

- South Valley Water Reclamation Facility (SVWRF) provided $2,000,000 for NPS projects within the Jordan River Watershed. Salt Lake County is working with SVWRF to utilize the funds for water quality improvement projects and watershed hydrologic and pollutant loading models.
- South Utah Valley Municipal Water Association (SUVMWA) set aside $225,000, part of which will be used for studies on Utah Lake to augment the TMDL.
- Central Weber Sewer Improvement District (CWSID) set aside $1,000,000 for NPS projects within its watershed. CWSID has funded a conservation easement along the upper Weber River and provided funding for a portion of the Ogden River Restoration.

DWQ NPS program staff have engaged with the Utah Association of Conservation Districts, watershed coordinators, and the Utah Division of Wildlife Resources to successfully spread the word about the availability of Hardship Grants and SRF loans for NPS projects. These groups have provided on-the-ground assistance for land owners and individuals and assisted NPS program staff with identifying potential loan/grant recipients and help evaluate project eligibility and progress. As provided in Utah's 2009 NPS Program Annual Report, "The philosophy of the DWQ is to provide incentives to 319 grant recipients to move these projects forward. The DWQ has prepared a list of "targeted" watersheds that

will be the focus for the NPS and the 319 awards. The hope is to have measurable water quality improvements within a watershed in a shorter timeframe."

- **Pennsylvania** – As of March 2010, PennVEST, the agency that manages the state's CWSRF assets, manages a new separate Nonpoint Source subfund within the CWSRF. Creation and management of this new NPS subfund was made possible through base 319 funding, which was used to add dedicated staff to improve the quantity and quality of NPS projects funded with CWSRF (see also feature story in *Chapter 2: Staffing Summary*). While $14 million of ARRA funds went toward agricultural BMPs for manure management in 2010, Pennsylvania intends to continue this program after ARRA funds expire. A primary driver for the creation of this NPS subfund is to facilitate nutrient trading between point and nonpoint sources, and in particular to encourage trades with agricultural operators. Pennsylvania sees point-nonpoint nutrient trading as a central strategy for implementing the recently finalized Chesapeake Bay TMDL and creating options for renewals of wastewater treatment plant discharge permits. PennVEST has conducted at least three nutrient credit auctions to date, and while they have not yet generated much interest in the agricultural community, PennVEST plans to continue to hold auctions on a regular basis and expects the agricultural NPS nutrient credit market to grow once implementation of the Chesapeake Bay TMDL is ratcheted up, as expected (see also feature story in *Chapter 2: Staffing Summary*).
- **Virginia -** The VA DEQ Agricultural BMP Loan Program provides CWSRF loans to Virginia farmers. From its beginning in January 2000 through June 2010, the DEQ Virginia Ag BMP loan program provided $34,450,337 in low interest loans to 409 Virginia farmers to improve water quality. In 2010, Virginia passed enabling legislation to allow CWSRF to pay for stormwater projects that reduce pollution from impervious surfaces.

Feature Story: Iowa CWSRF Programs for On-site Systems and Agriculture

Iowa's Clean Water State Revolving Fund (CWSRF) is utilized to finance publicly owned wastewater treatment, sewer rehabilitation, replacement, and construction, and storm water quality improvements. Since 1989, the CWSRF has provided more than $1 billion in financing assistance for water pollution control. NPS program staff in Iowa Department of Natural Resources coordinate with the Iowa CWSRF program and Iowa Department of Agriculture, Land and Stewardship (IDALS) on administration of the CWSRF program. The NPS program coordinator directly participates in the on-site systems component of the SRF program and works with IDALs on SRF program support for the Local Water Protection Program and Livestock Water Quality Facilities, both agriculture-focused components of the Iowa CWSRF program. Total FY10 SRF funding for core NPS projects was $18 million.

The Local Water Protection Program (LWPP) offers low-interest loans through participating lenders to Iowa landowners for projects to control the runoff of sediment, nutrients, pesticides or other nonpoint source pollutants from entering Iowa waters. The Division of Soil Conservation (DSC) of the Iowa Department of Agriculture and Land Stewardship administers the program through its local Soil and

Water Conservation Districts (SWCD). The Iowa Finance Authority (IFA) acts as the financial agent. Prior to receiving a loan, the landowner must receive project approval from the local SWCD. Eligible projects include: contour buffer strips, field borders or windbreaks, filter strips, grade stabilization structures, grassed waterways, terraces, and other practices that are show to improve or protect water quality.

The Livestock Water Quality Program (LWQ) offers low-interest loans through participating lenders to Iowa livestock producers for projects to prevent, minimize or eliminate non-point source pollution of Iowa's rivers and streams from animal feeding operations. Projects eligible for the LWQ include: development of manure management plans, lagoons, manure management structures, roofed manure storage structures, and vegetative filters.

- **California** uses "recycled" (or repayment) SRF investments in NPS projects to count as match to its 319 grant from EPA. The term recycled refers to SRF loans that have been paid back to the state, and that are recycled back into the SRF program to be used for other projects. Because they represent repaid monies, the funds are no longer considered a federal source. California tracks these second-round funds, and makes them available via the SRF program. Those projects funded by second-round SRF funds can therefore be used as a state match for the 319 grant from EPA. Because California uses this mechanism to provide the required 40% match up-front, it is able to award recipients of 319(h) grant funds for projects funded under the state's RFP process, and provide flexibility in match requirements for target groups such as Disadvantaged Communities and Environmental Justice communities.
- **Indiana**, similar to California, relies on recycled SRF funds to meet its federal 319 grant match obligations. Since 2004, Indiana Finance Authority has a NPS Incentive Fund that focuses on extending sewers to areas with failing septic systems. Since 2004, $147 million of SRF funds have been loaned to remove more than 7,400 failing and underperforming septic systems. Approximately $36 million has been loaned each year between 2005 and 2008, but slowed to roughly $3 million in 2009 and less in 2010 ($539,400 was documented in EPA's NIMS database on unspecified urban NPS projects, in addition to millions of dollars loaned for restoration of brownfields (a fringe category).
- **Kentucky –** CWSRF program gives priority funding status to projects that fall within watersheds where accepted section 319 watershed-based plans have been developed.

Chapter 9: Current Program Implementation

a. State Nonpoint Source Management Program Plans

The Clean Water Act (CWA) does not require states to revise and update their NPS management programs. However, as described in "section c" below, updating state NPS Management Program Plans may be critical in some instances to enable EPA to make satisfactory progress determinations prior to awarding grants consistent with section 319(h)(8) of the CWA. EPA did require states to update their NPS management programs in 1999-2000 as a condition for providing a 100% increase in their funding from $100 million to $200 million. Since that time, some states have updated or even significantly upgraded their NPS programs, often with considerable encouragement from, and involvement by, EPA's regional offices. This study found that approximately 28 states' NPS management program plans have not been upgraded since 1999-2000 and are now significantly out of date. Further, this study found that these out-of-date program plans play a diminished role or are simply ignored in the current implementation of the state program, the state's annual application for a 319 grant, and the region's issuance of the grant. **A renewed effort to have all states upgrade their programs at this time could be an important foundational element of a more effective NPS program.**

b. Section 319 Grant Expenditure Rates

Background

The national NPS program received its first funding in Federal Fiscal Year (FY) 1990 at about $38 million. In FY91-93, Congress provided $50-53 million annually, then $80 million in FY94, $100 million in FY95-97, and $105 million in FY98. These funds were used by states for the purposes set forth in section 319, which "include, as appropriate, nonregulatory or regulatory programs for enforcement, technical assistance, financial assistance, education, training, technology transfer, and demonstration projects." 33 U.S.C. 319(b)(2)(B).

In February 1998, pursuant to the President's announcement of the "Clean Water Action Plan: Restoring and Protecting America's Waters," the President requested, and the Congress appropriated, an increase in section 319 funding in FY99 to $200 million. The annual appropriations of section 319 funds have been as follows since that time:

Table 9-1: Annual Section 319 Allocations

Federal Fiscal Year	Appropriation*
1999	$200
2000	$200
2001	$237.5
2002	$237.5
2003	$238.5
2004	$237
2005	$207.3
2006	$204.3
2007	$199.3
2008	$200.9
2009	$200.9
2010	$200.9
2011	$175.5

*in millions of dollars, rounded

As discussed in the Clean Water Action Plan, subsequent guidance documents and the Introduction of this study, EPA has annually focused $100 million of section 319 appropriations, commonly referred to as "incremental funds," on the restoration of impaired waters, while the remaining funds, commonly referred to as "base funds," continued to be spent on the full set of NPS program needs as outlined in section 319. Beginning in FY02, EPA further specified through grants guidelines that the incremental funds were to be focused on the development and implementation of watershed-based plans to restore waters impaired by nonpoint sources. This breakdown of funding amounts was predicated upon the funding levels provided by Congress at the time and subsequently as well, so that $100 million was available annually to develop and implement watershed-based plans and at least $100 million remained available to implement base 319 programs, as had been available since 1995. This assumption recently broke down in FY2011, when the total funds dropped below $200 million and thus, for the first time in 17 years, it is not possible to provide to states at least $100 million each for both the implementation of base 319 programs and the development and implementation of watershed-based plans to remediate impaired waters. This conundrum is a central issue in determining the appropriate balance in the use of available 319 funds and is discussed elsewhere in this document.

Expenditure Rates

The section 319 grants program is rather unique among major EPA grants programs for states. Typically, as in CWA section 106 grants and similar grants programs for other environmental media, the grants support major regulatory programs in which entities are regulated and (with the significant exception of public entities eligible for State Revolving Loan funds) required to comply with national rules, state

regulations, and/or permit requirements without federal funding support for construction of facilities or implementation of practices. Rather, the state grants provide funding that supports state staff and supporting equipment to implement these regulatory requirements through the development of regulations, issuance of permits, inspection and enforcement of individual facilities, monitoring for compliance, and other similar activities.

In contrast to these other environmental media programs, there are generally no federal requirements and relatively few state requirements for nonpoint sources. In general, individuals and entities are not required to implement practices, and many of them are individual actors of limited means. Hence, the section 319 grant program is the only one of the major EPA grant programs that must fund individual practices in order to achieve the goal of preventing or reducing NPS pollution to protect or restore water quality. Doing so in a largely nonregulatory environment is a challenge that requires the state to invest the time and personnel resources to educate the local community as to the nature of the water quality issue; the need to address it; how it can be addressed; what role individuals in the watershed can take in solving the problem; the potential cost and the nature and amount of technical and financial assistance available, etc.

As a result, states generally expend their section 319 funds on two tracks. Much of the base funding is used to support staff whose activities can be and are implemented within two years of the award of the grant. A portion of base funds is used for projects that require more time. In contrast, most of the incremental funding is used to support the implementation of watershed projects, often in the form of "pass-through" grants distributed locally to prioritized watersheds. In most cases, these watershed-specific implementation projects require considerably more time to obtain the necessary "buy-in" (particularly if local entities are on the hook to provide the 40% match requirement) and active involvement by the local community. This, and other project phasing considerations and monitoring requirements, often compel the need for project implementation to span more than two or three years. See the Featured Story above. (Some projects are ambitious and complex enough to require 10 to 15 years of work to achieve enough implementation with available funds to attain clean water – this can be true even at the "moderate" size of a 12-digit hydrologic unit code. Such projects typically receive multiple grants over a period of years before they can be completely implemented.) Thus, a grant that is awarded in late FY11 would likely have most of its base fund activities implemented in FY-12-13, while most of its incremental funds would be expended in FY13-15.

This unique feature of the section 319 program has focused attention around the question of how long of an implementation period is appropriate for the implementation of watershed projects. To provide some information for decision-makers, the analysis below covers the states' expenditure rates in recent years based on several available tracking tools and data systems. Data available for the analyses come from EPA's ORBIT (Reporting and Business Intelligence Tool). This tool pulls financial data from a variety of databases and sources including EPA's Integrated Grants Management System and EPA's Integrated Financial Management System.

This analysis is necessarily dependent on data that was developed in the past when “snapshots” of databases were taken. Historical data pulls from ORBIT are available beginning in June 2007. The most recent data pull at the time of this study was in June 2011. For this reason, data extracts from June of each year (2007-2011) were used in the analyses. When data are pulled, it reflects current expenditures from all the preceding funding years; thus when the June 2007 data pull is conducted, it shows funds that were expended in that year from grants that were awarded in preceding years. However, there is one anomaly in the database: the data pull from 2007 did not include 2006 grant information. This is attributable to human error. At the time the data were pulled, EPA accidentally omitted the 2006 grant information.

EPA pulled data from ORBIT to analyze the following categories of information:

- total 319 funding awarded to states in a specified year (including carryover, as explained below),
- total amount of awarded funds that were expended in a specified year, and
- total amount of awarded funds that were NOT expended in a specified year.

Carryover is the funding from a previous year that is remaining and rolled into another year's funds. For example, leftover dollars from aFY01 grant could be reprogrammed into FY02. This FY01 funding would be considered "carryover" funds in the FY02 grant. Carryover funds help to explain why totals may appear greater than actual FY funding allocations in a given year.

EPA has charted the rate of fund expenditures over a series of years in order to better understand the trajectory of funding throughout the life of a particular year’s grant as well as to determine whether and how such trajectories have changed (i.e., improved by expending funds more expeditiously) over time.

Charting out the life of each fiscal year of grant funding is necessary for comparison. Table 9-2 displays the format used to conduct the analysis. It provides data for each year in which a particular grant has completed each year of its life span. For example, the FY01 grant will complete its first year in 2002, its second year in 2003, and so on. This information was developed for all grant years from 2001 to 2011. By creating this table, EPA can focus comparisons on the same constant (e.g., funds expended in the third year of grants) over time. The numbers which appear in red bold font represent the years of focus in the analyses. For example, in Table 9-2, the 2007 row will show in the first column the amount of FY07 funds that were expended during the first year of the FY07 grant and, moving further along that row, the table shows that analyses in this study looked at the first through fourth year of FY07 grant funds, in this case being FY08-11.

Table 9-2: The Yearly Life Cycle of Fiscal Year 2001 through Fiscal Year 2011 319 Grant Funding (based on an eight year grant life)

Fiscal Year of 319 Funding	First Year of Grant	Second Year of Grant	Third Year of Grant	Fourth Year of Grant	Fifth Year of Grant	Sixth Year of Grant	Seventh Year of Grant	Eighth Year of Grant
FY2001 Grant Funds	2002	2003	2004	2005	2006	2007	2008	2009
FY2002 Grant Funds	2003	2004	2005	2006	2007	2008	2009	2010
FY2003 Grant Funds	2004	2005	2006	2007	2008	2009	2010	2011
FY2004 Grant Funds	2005	2006	2007	2008	2009	2010	2011	2012
FY2005 Grant Funds	2006	2007	2008	2009	2010	2011	2012	2013
FY2006 Grant Funds	2007	2008	2009	2010	2011	2012	2013	2014
FY2007 Grant Funds	2008	2009	2010	2011	2012	2013	2014	2015
FY2008 Grant Funds	2009	2010	2011	2012	2013	2014	2015	2016
FY2009 Grant Funds	2010	2011	2012	2013	2014	2015	2016	2017
FY2010 Grant Funds	2011	2012	2013	2014	2015	2016	2017	2018
FY2011 Grant Funds	2012	2013	2014	2015	2016	2017	2018	2019

Using the format displayed in Table 9-2 and focusing on one fiscal year of funding at a time and all of its included data (i.e. the red bolded text across a particular horizontal row) the percentage of funds expended in each year of that fiscal year's respective grant life was calculated and placed into a summary table. Using FY07 grant funding as an example, Table 9-3 shows that at the end of the first year of the grant's life (2008), 30.29% of awarded FY01 grant funds, plus any money carried over from the previous year had been expended.

The data in Table 9-3 show that as each year of the grant life passes, an increasing percentage of total funds are expended. This is expected, as states will continue to expend funds in each year of the grant. Closer examination of Table 9-3 yields other important information. For example, the data for the "Second Year of Grant" column demonstrate that roughly one-half of all section 319 grant funds have been expended nationwide for all of the grant years FY05-09. These funds are primarily base funds, which constituted approximately one-half of the grant funds in these years and which generally supported full-time equivalents (FTEs) rather than projects (just like funds in other state grant programs that support mostly FTEs rather than on-the-ground watershed projects). In contrast, the funds expended in years three through five of the grant are primarily incremental funds that were used to implement on-the-ground watershed projects which take more time to implement.

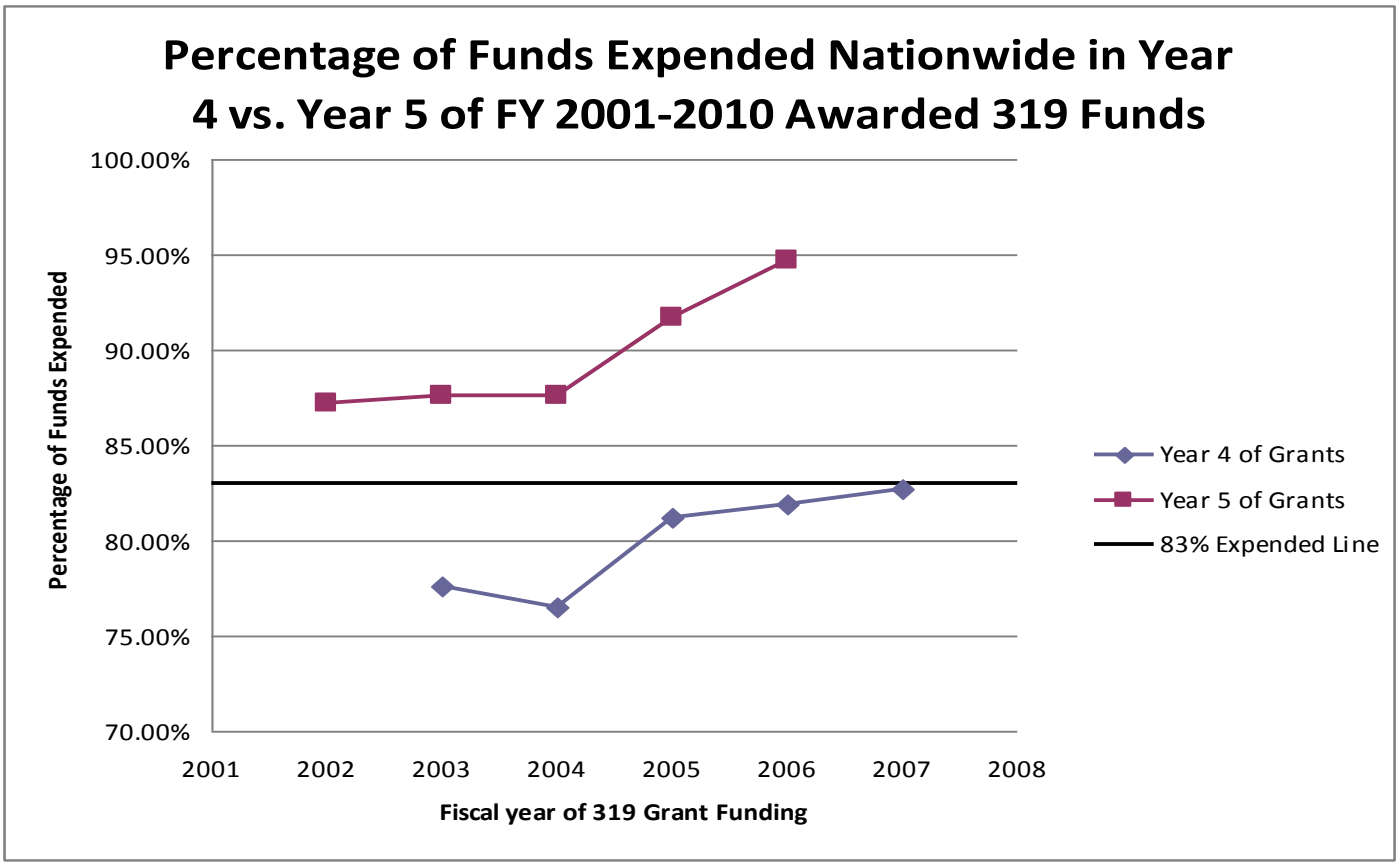
Importantly, these data indicate that in the past five years, states have improved their expenditure rates. This can be observed by comparing the numbers in each column for years three through eight. The general trend depicts an increase in percentage of funds expended in more recent years; it is thus clear that, **on a nationwide basis, the rate of expenditure is generally increasing with each new year of funding**. It is also true that, while diminishing, there continues to be some remaining unexpended funding after five years in some states.

Table 9-3: Percentage of Cumulative Funds Awarded to States that was Expended Nationwide (including carryover funds) in Years 1-8 of the Specific Grant

Fiscal Year of 319 Funding	First Year of Grant	Second Year of Grant	Third Year of Grant	Fourth Year of Grant	Fifth Year of Grant	Sixth Year of Grant	Seventh Year of Grant	Eighth Year of Grant
FY2001 Grant Funds	NA	NA	NA	NA	NA	93.44%	97.75%	99.93%
FY2002 Grant Funds	NA	NA	NA	NA	87.18%	95.36%	98.80%	99.88%
FY2003 Grant Funds	NA	NA	NA	77.59%	87.56%	93.74%	98.90%	100.00%
FY2004 Grant Funds	NA	NA	64.05%	76.46%	87.64%	95.36%	99.69%	NA
FY2005 Grant Funds	NA	53.57%	67.75%	81.17%	91.71%	97.91%	NA	NA
FY2006 Grant Funds	NA	49.83%	64.21%	81.93%	94.70%	NA	NA	NA
FY2007 Grant Funds	30.29%	48.09%	68.28%	82.71%	NA	NA	NA	NA
FY2008 Grant Funds	24.50%	49.57%	68.49%	NA	NA	NA	NA	NA
FY2009 Grant Funds	30.65%	49.79%	NA	NA	NA	NA	NA	NA
FY2010 Grant Funds	31.49%	NA	NA	NA	NA	NA	NA	NA
FY2011 Grant Funds	NA	NA	NA	NA	NA	NA	NA	NA

Figure 9-1 compares the rate of expenditure in Year 4 versus Year 5 of the 2002-2007 319 grant awards. The data show that on a nationwide basis, Year 5 is when expenditure rates of 319 funds are in the high 80%-mid-90%. This is a large improvement from the data on a national basis in Year 4 (data typically fall between high-70% to low-80%). The Year 5 data also show that with each new year of grant funding, the rate of expenditure is increasing, indicating that states continue to work to improve their expenditure rates. Table 9-3 reinforces this point: in Year 4 of 2003 awards, 77.59% of funds were expended and in Year 5 of 2003 awards, 87.56% of funds were expended. **Comparing this with Year 4 of 2006 awards (81.93%) and Year 5 of 2006 awards (94.70%), shows that in more recent years of funding, funds remaining in the 4th and 5th years are being expended at a significantly faster rate than previously.**

Figure 9-1. Percentage of Funds Expended Nationwide in Year 5 of 319 Grants for FY01-10



c. Satisfactory Progress Determinations

As outlined in CWA section 319(h)(8), the EPA Regional Administrator may not award section 319 grant funds to a state unless the Regional Administrator determines that the state has made satisfactory progress during the previous fiscal year in meeting the schedule of milestones specified in the state's

NPS Management Program Plan. EPA's section 319 guidelines require that each EPA regional office issues a written determination that the state has made satisfactory progress during the previous fiscal year and includes it in each section 319 grant, or in a separate document, prior to award of the grant. In order to obtain information on section 319 satisfactory progress determinations, EPA relied on the following sources: State NPS program grant work plans, annual program reports, section 319 grant award documents, EPA regional documents (including satisfactory progress determination letters to States and EPA regional criteria used to determine satisfactory progress), and correspondence with EPA regional and State NPS program staff.

At least one EPA region exercised its authority to determine that a state has not made satisfactory progress and withheld an entire 319 grant award as a consequence. The lost funds were reallocated among the other states in that region. This study also found that a few regions have conditioned a satisfactory progress determination on certain program improvements and have withheld a portion of the grant until the state addressed the region's concerns.

Two key state NPS program documents that should be available to EPA regions to assist with a determination of satisfactory progress are: (1) the NPS program work plan that is developed by the state each year as part of the grant application process and, (2) the state's NPS program's annual report for the preceding year.

Seven regions indicated that they review both the state's work plan and annual report when determining satisfactory progress. In addition to these two documents, resources that regions said they use when conducting satisfactory progress determinations collectively include:

- tracking of 319 grant expenditure/drawdown rates
- NPS Management Program Plan to review the state NPS program's goals/milestones
- NPS Program Grants Reporting Midyear and End-of-Year Report
- Review of the state's performance under national measures, including: NPS Success Stories, *Grants Reporting and Tracking System* (GRTS) reporting (load reductions, etc.)
- Tracking of percent of active projects in grants with up-to-date evaluations
- Tracking of percent of active projects that are on, or ahead of, schedule
- Grant (project) progress and closure reports
- Site visits
- Standing meetings (typically quarterly) or conference calls between EPA management and state management to assess progress and discuss performance issues across water programs, including 319.

Work Plans

All states submit NPS program/319 grant work plans. The work plan, which is attached to a state's 319 grant application, should provide an overview of the 319 (and non-federal match) funded NPS programs/activities to be implemented in the upcoming fiscal year. The layout and level of detail

provided in 319 work plans varies from state-to-state. The highest quality state work plans provide a clear breakdown of how both base and incremental funds will be used on a project-specific level, and include the following for each project/activity: project description, expected outputs/outcomes, and an overview of the NPS program plan goals/milestones to be accomplished as a result of the project/activity. In general, detailed budgets are not provided for projects within Performance Partnership Grants (PPG).

Alternatively, many state work plans do not clearly indicate the source of 319 funding (base or incremental) for a particular project. Five regions have states with work plans that lack specificity with regard to activities performed by staff and anticipated results (outputs/outcomes) for the upcoming year. This is particularly true for the base operations/NPS program administration portion of these grants, which typically receive nearly half of a state's grant award (e.g., the work plan does not include position descriptions for all 319-supported staff). As a result, EPA's ability to efficiently ascertain how these states used 319 funds as part of this study was limited, and in some cases it was necessary to conduct significant follow-up with states and EPA regions to better understand state program activities. Also, project funding amounts presented in state work plans and in GRTS sometimes differed. These differences may be explained by changes during the grant period; however, it is sometimes difficult to determine which source of information is the most current and accurate without contacting the state NPS program coordinator.

Another approach taken by many states is to provide collections of individual work plans for each 319-funded project (such as Project Implementation Plans) instead of one grant work plan that covers how the entire annual 319 allocation will be utilized. States that have part or all of their 319 grant included in a PPG may use a work plan format that is common for all PPG programs.

Annual Reports

All states in six regions submit timely annual reports. There is much variance with regard to the components and level of detail included in these reports, as well as their length and areas of emphasis. There are also some states that typically provide annual grant reports but not annual program reports. An annual grant report would only cover projects funded by that particular grant, whereas a program annual report covers all NPS program activities over the prior year and other required elements of an annual report, as set forth in section 319(h)(11) of the CWA:

> *Each State shall report to the Administrator on an annual basis concerning (A) its progress in meeting the schedule of milestones submitted pursuant to subsection (B)(2)(C) of this section, and (B) to the extent that appropriate information is available, reductions in nonpoint source pollutant loadings and improvements in water quality for those navigable waters or watersheds within the State which were identified pursuant to subsection (a)(1)(A) of this section resulting from implementation of the management program.*

These reports should provide an overview of program activities/accomplishments for the previous fiscal year. The information provided in the NPS annual reports should further convey how the state has made progress toward meeting the schedule of milestones in their NPS Management Program over the past fiscal year. Based on EPA's review of recent state annual reports for this study, information commonly provided in these reports includes: program highlights and accomplishments, program expenditures, overview of statewide programs, best management practice (BMP) implementation and estimated load reductions for active and recently completed (within the last fiscal year) NPS projects, and some discussion of NPS program partner activities. (Note that water quality improvements are reported publicly through EPA's section 319 NPS Success Stories website at www.epa.gov/nps/success).

As discussed above, a state's ability to report on its progress towards accomplishing program goals and milestones is directly related to the condition of the state's NPS management plan. States whose NPS management program plans are out of date are hindered in their ability to measure program accomplishments against current, documented program goals and milestones.

This study found that the degree of detail in annual program reports varies greatly between states. For example, annual reports range from 20-page documents to several hundred page documents. Also, regardless of length, some state annual reports consist to a significant extent of boilerplate language that changes little if any from year to year. This suggests that there is either little variation in program activities from year to year, or that variations are not fully captured in the annual report.

In light of the varying level of detail and information provided in state NPS program annual reports, some EPA regional satisfactory progress determination letters include recommendations on how the state should improve NPS program annual reports so that the region can better assess the state's progress in accomplishing program goals/milestones over the previous year.

Current State of Regional Satisfactory Progress Determinations

Nine regions indicated that they do not use a checklist or written standard operating procedure when determining satisfactory progress, though several regions expressly noted that they are either in the process of developing more formal procedures or would support the development of such a tool to aid in their satisfactory progress determinations. In response to the need for greater national consistency in regional satisfactory progress determination protocols, EPA will develop a draft satisfactory progress determination checklist in FY12 to aid regions in evaluating the states' NPS management programs and accomplishments (see *Appendix C* for more information).

EPA regional offices employ various methods of communicating a satisfactory progress determination to the states. Four regions send satisfactory progress determination letters to each state to provide an overview and/or highlights of the state's program accomplishments in the last fiscal year, as well as recommendations for NPS program improvements. Another region sends letters to each state that serves a similar purpose, and where states have had 319 grant performance issues in the recent past,

they are accompanied by detailed "advanced monitoring reports." Letters from these five regions are usually incorporated in the state's 319 grant file for the following year. Some of the most common recommendations included in these letters are:

- If out-of-date, the state should update its NPS Management Program to accurately reflect the program's current structure, priorities, goals/milestones, etc.
- The state should maintain/improve its efforts to report NPS projects, load reductions, and other required information in GRTS.
- The state NPS program should continue/improve interagency coordination with NPS partners, such as USDA.
- The state should continue/improve its effort to reduce unliquidated obligations, such as by decreasing the amount of time it takes to obligate its grant funds into subawards.
- Programmatic recommendations related to: implementation of watershed-based plans, water quality monitoring, prioritization and use of 319 funds, etc.

Three regions implicitly confer determinations of satisfactory progress through the funding recommendation or the grant award document for the following year. Another region takes the same approach for half of its states and for the other states, the region consistently writes satisfactory progress determination letters similar to those described in the previous paragraph. Finally, one region writes satisfactory progress determination letters to its states more infrequently, such as when there is a finding of unsatisfactory progress or when the region has concerns about the state's program and wishes to provide specific recommendations for improvement.

In instances where the region does communicate recommendations for program improvements, regional follow-up and oversight throughout the grant year is an important element for ensuring program effectiveness. Most regions described their follow-up activities as centered on frequent communication with their states. Most EPA regional project officers are in contact with state NPS program coordinators on at least a weekly basis. Also, several regions have more formal communications with the state on a regular basis, such as bi-monthly conference calls or mid-year and end-of-year meetings. Regions can also monitor state progress on some recommended improvements through GRTS reporting.

Historically, there have been few instances where an EPA region has determined that a state did not make satisfactory progress towards achieving program goals and milestones. This has occurred in at least three regions. In one case, the region noted that a state work plan did not sufficiently detail progress made over the preceding fiscal year. Additionally, the state had a significant unliquidated obligation. As a result, this state's 319 award funds were reduced the following year. In another instance, a state repeatedly had difficulty obligating the grant award funds due to a shortage of project partners who were in a position to provide the required 40% matching funds. After several years of warnings about unsatisfactory progress, the following year's entire grant was not awarded to that state

and the lost funds were reallocated among the other states in that region. Performance improved, and a remediation plan was developed by the state and the region, and continues to be closely tracked years later. There are also a few regions that have conditioned a satisfactory progress determination on certain program improvements and have withheld a portion of the grant until the state addressed the region's concerns.

While most regions conduct annual program reviews based on program documents and the EPA project officer's interactions with the state throughout the year, Regions 3 and 6 provide examples of more prescriptive approaches to satisfactory progress determinations. For example, EPA Region 6 hosts or meets with each state for an end-of-year grant and program review, which is written by the NPS project officer and signed by the Water Division Director. Region 6 staff conduct several project or watershed site visits throughout the year, during which project sponsors may be invited to discuss their projects. Findings from these site visits are also incorporated in the end-of-year review.

EPA Region 3 has developed a thorough three-page standard operating procedure with a checklist for determining satisfactory progress and conveying that determination to the state. The following targets for drawing down grant funds are tracked and documented annually for each state in Region 3:

- 75% of the active projects across all grants have current evaluations.
- 75% of the funded projects each grant year are on or ahead of schedule.
- 75% of BMP implementation projects have load reductions
- 100% of completed BMP implementation projects have WebRIT tags (which facilitates Web-based mapping of 319-funded projects)
- 75% of grant money awarded 3 years ago has been drawn down
- 50% of grant money awarded 2 years ago has been drawn down
- 25% of grant money awarded 1 year ago has been drawn down

Chapter 10: State Processes for Solicitation, Prioritization and Selection of 319 Projects

Much of this chapter is focused on how states utilize their core NPS programs, typically supported with base 319 funds, to fund pass-through projects, which are primarily supported with incremental funds. As part of this NPS program study, EPA performed a simple evaluation of the processes employed by state NPS programs to determine which projects to fund from year to year. As summarized below, the study considered mechanisms for soliciting project proposals, project funding priorities, and decision-making authority. EPA relied on information from the following sources to develop this chapter: state NPS management program plans, annual reports, state NPS program websites and request for proposals (RFPs) or similar project solicitation materials.

With regard to state processes for soliciting, prioritizing and selecting section 319-funded projects, findings are summarized in the bullets that follow.

- Almost all states use a competitive grant application process, such as Requests for Proposals (RFPs), when soliciting project proposals for incremental 319 funding. Most states use the same or similar process for a portion of their base 319 funding allocations. See Table 10-1 for details.
- **New York**'s NPS program, a PPG state which uses the entire 319 allocation (base and incremental) to support staff, funds NPS projects through two state funding programs: the Water Quality Improvement Project (WQIP) Program for non-agricultural NPS projects, and the Agriculture Nonpoint Source Abatement & Control Grant Program for agricultural NPS projects. The NY Department of Environmental Conservation (NYSDEC) is a member of the two interagency committees that review and select project proposals.

Table 10-1: Project Solicitation Mechanism

Project Solicitation Mechanism		States	State Totals
Use an RFP (or other competitive mechanism)	Incremental and Base Funds	AK, AL, AR, CO, FL, GA, HI, IA, ID, IL, IN, KS, KY, MA, ME, MO, MS, NC, ND, NE, NH, NV, OR, PA, RI, SD, TN, TX UT, VA, VT, WV, WY	33
	Incremental Funds Only	AZ, CA, CT, DC, DE, LA, MD, MI, MN, MT, NJ, NM, OH, SC, WA, WI	16
Use non-competitive mechanism incremental projects		OK	1
Joint RFP with sister program		AK (with state-funded programs), IA (with state ag), MD (with 2 state-funded programs: the Ches. & Coastal Bays Trust Fund and the Ches. Bay Trust)RI (with state funding programs), WA (with state grant program and SRF)	5

Feature Story: Minnesota's NPS Project Prioritization and Section 319 Funding

Minnesota's 319 funding is competitively awarded and passed through to local governmental units (LGUs) once a year in two funding categories – TMDL implementation and Developmental, Education, and Research (DER). Approximately two-thirds of the pass-through funding is for implementation, with DER receiving roughly a third of the available pass-through funds. Project selections are based on pre-determined scoring criteria. Those seeking TMDL implementation funding must address activities outlined in MPCA-approved implementation plans, include civic engagement to carry out the project, and have demonstrated: previous successes related to TMDL projects; an ability to make water quality improvements through measured outcomes; and cost-effectiveness. All DER proposals must address at least one specific Milestone/Action Step in the state's NPS Management Program Plan. This funding is also coordinated closely with the state's own sizeable Clean Water Funds (see feature story in *Chapter 6: Leveraging of State and Federal Funding for State NPS Programs*). Those applying for 319 funds under the DER program are also encouraged to address needs identified by the state's Impaired Waters Research Symposium. One example DER project funded by 319 is Minnesota's road salt and chlorides study, which also included an education/training component.

Pass-through funding leverages significant dollars from numerous state and local sources. Each individual project must provide a 45% match; many provide more. In recent years, the average annual MPCA section 319 NPS pass-through award total is $3 million, which in turn leverages at least $2.5 million from LGUs. Proposals are reviewed and scored by both the MPCA review team and members of the state's Project Coordination Team (PCT). The PCT is a public interagency group established in Minnesota Statute that assists the MPCA in recommending to its Commissioner projects that should receive financial and/or technical assistance. The MPCA is undergoing an effort to further plan for and target NPS program work by identifying Priority Management Zones (PMZs). PMZs are defined as areas or practices that contribute disproportionately high pollutant loads or have a capacity to greatly buffer pollutants or stressors. They are a useful method to identify and prioritize these areas or practices as part of watershed restoration and planning efforts. PMZs can be delineated at a variety of scales from small to large. They may consist of broad areas of highly erodible soils or a particular geologic landscape like karst that transports pollutants quickly. PMZs might include particular land use practices scattered throughout a watershed or concentrated in a particular subwatershed or farm site. In addition to identifying PMZs at a small scale, it can also be effective and economical to work on priority pollutant source reduction over a large scale, such as a multiple watershed basin.

- In at least 15 states (CA, CO, CT, IA, ID, HI, KS, MA, MS, NC, OK, SC, SD, VA, WV) NPS program staff work at the local level in NPS-impaired watersheds *prior* to selecting a project application to receive 319 funding. This pre-project coordination helps increase local understanding of NPS

program priorities, identify potential project partners, gauge local capacity/community receptivity to the project, and thus, overall potential project success. These efforts typically improve the quality of proposals and, ultimately, water quality results from 319-funded projects. Among the states that commit 319 resources to pre-project capacity building, some states conduct this work at the basin or watershed-scale, often times through *basin-wide planning programs*. See the Capacity Building Programs section of *Chapter 4: Statewide NPS Programs and Initiatives* for more information on the role of statewide efforts to increase local capacity for NPS projects. Examples of pre-319 project proposal planning/outreach include:

- The **Colorado** NPS program works with the Colorado NPS Alliance to conduct outreach activities focused on identifying local issues so that the right projects in the right places at the right times are proposed. The NPS program staff also works directly with current and potential sponsors, providing assistance on proposal development. In addition, the NPS program provides technical support to develop local watershed groups where water quality conditions indicate the need for such a group and none currently exists.
- **Oklahoma** does not use a competitive process for selecting 319-funded projects, so the state has established a unique approach to pre-proposal coordination that informs how section 319 funding is distributed. Each year the Oklahoma Conservation Commission (OCC), the state NPS agency, coordinates with the state's NPS Working Group to develop five work plans (2 program administration and planning work plans, 1 assessment and monitoring work plan, 1 education work plan, and 1 priority watershed implementation project work plan), which inform the allocation of 319 funds. Much of the work accomplished through these work plans is administered by the OCC, in partnership with conservation districts. Additionally, the OCC prioritizes the state's 180+ HUC 11 watersheds (based on source and causes of pollution; availability of active, willing partners; whether the proposed project has been identified in the watershed-based plan as a mechanism for implementation of success, etc.) where greater than 25% of the assessed waters are 303(d) listed to determine where to direct 319 funds. The OCC works closely with conservation districts in priority watersheds to keep them informed of NPS concerns and success in their districts, and provides them with water quality monitoring data results, including locations of impaired waters and areas where waterbodies are unimpaired or improving. As a result of this coordination, the conservation districts consider NPS priorities when applying for annual funding through programs like the state's locally-led cost share program. As a result of pre-project coordination, the OCC is able to direct 319 funds to watersheds with the greatest local capacity and the greatest potential for success.
- **California** conducts a Basin Planning process to coordinate TMDLs, permits, monitoring, and regulatory aspects of its Porter-Cologne Act, which sets Waste Discharge Requirements (WDRs), Waivers to WDRs, and Basin Plan prohibitions, all of which can apply to NPS pollution. Once a Basin Plan is adopted by a Regional Water Quality Control

Board it can be formally amended through a public participation process to adopt and implement TMDLs through regulatory and voluntary processes. A byproduct of this planning is that it establishes priority watersheds for 319 funding.

- **Virginia** has begun to apply a balanced basin prioritization approach within its NPS management program. For years, Virginia had established and maintained high, medium and low priority watersheds based on 303(d) impairments, TMDLs, and other factors. Recently, Virginia is balancing the need for restoration with the need for watershed protection, with the understanding that it is less expensive to protect watersheds to preserve water quality and ecological services than it is to remediate the effects of watershed degradation after they have occurred. Virginia is now undertaking a comprehensive Healthy Waters Strategy to protect water quality and prevent impairments. This Healthy Waters Strategy was recently integrated into the state's NPS Management Strategy. The Interactive Stream Assessment Resources (INSTAR) is a new database and decision support tool that is used by Virginia to identify healthy waters resources. INSTAR assesses the integrity of watershed across Virginia based on GIS coverage and six biological metrics (see http://instar.vcu.edu/watershed.html for more information). To support implementation, data is being incorporated as a funding consideration in the state's Agricultural BMP Cost-Share Program. As a result of this new balanced protection-restoration approach, Virginia has changed its criteria for agricultural BMP cost share funding as well as its funding criteria for 319 projects.

Kansas Strengthens NPS Program through Basin-wide Planning Approach

In recent years Kansas has improved the effectiveness of their NPS program through better utilization of various state and federal funding sources and the successful implementation of the Watershed Restoration and Protection Strategy (WRAPS) Program. WRAPS was launched in 2004, in part due to the efforts of 319-funded staff at the Kansas Department of Health and Environment (KDHE), and is a cross-agency framework that offers opportunities for the public and stakeholders to participate in decisions about protection/restoration at the watershed level. Through WRAPS, Kansas awards grants for implementation of nine-element watershed-based plans.

In the winter of 2008, Kansas drafted guidance for projects to write or re-write watershed plans to be nine-element compliant. In the summer of 2009, Kansas hosted multiple workshops to educate watershed project coordinators on the planning requirements and made compliance a requirement to receive future funding through the WRAPS program (http://www.kswraps.org/watershed-plan). One of the key components of the plan writing process is collaborative partnerships between the state, the local agencies and local landowners. These partnerships lay the foundation for WRAPS projects to leverage other resources for implementation.

A multi-agency work group meets bimonthly to foster program implementation partnerships, provide administrative guidance to the program, and to align program funding with state water quality priorities

(such as implementation of the Kansas Surface Water Nutrient Reduction Plan). The Work Group (also known as the KS WRAPS Work Group), is made up of representatives from 13 state and federal agencies. Representatives of each member agency have signed a Memorandum of Understanding to assure financial, programmatic and technical assistance resources of their respective agencies are directed to priority water resource needs. Funds from the following agencies have been leveraged to implement WRAPS projects: Division of Conservation, Kansas Department of Wildlife and Parks, Kansas Forest Service, Kansas Association for Conservation and Environmental Education, The Kansas Water Office (KWO), Natural Resource Conservation Service, and the Farm Service Agency. For example, the KWO has recently been the recipient of a Wetland Development Program Grant that will work to incorporate the protection of identified Heritage Streams into the planning framework. An additional responsibility of the WRAPS work group is to review and recommend grant applications for funding. Applicants are given an application funding cap based on state priority, local interest and past project performance (referred to as a Score Matrix). Based on the Score Matrix, the highest priority watershed projects are eligible for the most financial assistance. In a short period of time, the WRAPS program grew from six pilot watershed projects to over 40. The current estimated financial need to implement nine-element watershed plans is over $7 million annually (more than twice the FY11 319 allocation for Kansas).

Key program improvements:

- The WRAPS program has a direct and positive impact on restoring and protecting waters of the state. Most recently, Kansas celebrated two success stories in which water bodies were removed from the state's 303d list of impaired waters as a result of collaboration between WRAPS projects and local partners.
- Kansas has emphasized planning and embraced the nine-element approach by, for example, developing an on-line grant application and tracking system that revolves around the nine elements and enables a lateral transfer of information from the watershed-based plan to the application.
- The multi-agency WRAPS Workgroup structure has resulted in positive synergism among agencies in addressing water quality issues throughout the state. For example, the WRAPS concept and the emphasis on developing and implementing watershed-based plans has been woven into the strategic plans of other state agencies, thus providing a single unified, and stable voice throughout the state as water quality issues and needs arise. In addition, this collaborative approach has led to innovative multi-agency partnerships to fill program gaps.
- The WRAPS program has resulted in leveraging existing resources toward high priority watersheds and has laid the foundation for creating new state resources. Kansas Water Plan funds were allocated for WRAPS projects and additional cost-share in high priority WRAPS watersheds. Also, WRAPS HUC 12 watersheds are given priority as part of the ranking criteria for projects applying for EQIP. The Kansas NPS program has recently entered into an MOU with NRCS, the Kansas Department of Agriculture and other partners to provide financial resources aimed at funding new positions to meet increasing landowner demand for technical and design assistance. WRAPS technical assistance needs are estimated annually and are considered in the annual workload

analysis conducted by NRCS. The project has already resulted in a faster turnaround time in BMP design and an increase in buffer cost-share applications.

- There has also been significant effort to integrate and work collaboratively with other programs within the KDHE.
  1. The TMDL program provides technical assistance in developing and reviewing watershed plans.
  2. KDHE's move to allocate 85% of ARRA Clean Water SRF funds to Green Project Reserve eligible projects resulted in greater emphasis on funding NPS projects with SRF and one FTE (jointly funded by the SRF and NPS programs) that is responsible for integrating SRF dollars into water quality projects.
  3. The NPS program collaborated with the Bureau of Field Services (BEFS) within KDHE to develop and initiate a Healthy Watersheds Initiative pilot project that will lead to the identification of the least disturbed watersheds within Kansas and their listing within the classified waters of the state. As a result, these healthy watersheds will be afforded protection, and special consideration in the face of constant land use change. The NPS program also partnered with BEFS to design and implement a water quality monitoring program to specifically track improvements of targeted implementation within identified subwatersheds.

For more information on leveraging and USDA coordination, see Chapters 5 and 7 respectively.

Table 10-2: State Criteria for Making 319 Grant Awards

Common Criteria for Project Selection	States	State Totals
Implementing WBP	AR, DC, DE, IA, ID, FL, GA, KY, KS, LA, MA, MD, MO, MT, NE, NH, NM, OK, PA, SC, TCEQ, UT, VA, WV, WY	25
Waters on 303(d) list	AK, AL, AR, CO, FL, GA, KY, KS, LA, MD, MO, MT, NM, OK, OR, SC, SD, UT, TN, TCEQ, VT, WY	22
Local capacity	IA, FL, GA, KY, KS, MA, MS, MT, NC, NH, NM, OK, OR, RI, SC, TCEQ, VT, WA, WV, WY	20
Project feasibility (likelihood of success, pollutant load reductions, etc.)	FL, KY, KS, MA, MD, MO, MS, MT, NC, NH, NM, OK, RI, SC, TCEQ, UT, VA, VT, WA, WY	20
Developing or Implementing TMDLs	AL, AR, CO, ID, KS, MO, MS, MT, ND, NM, OR, RI, SC, SD, TCEQ, UT, VT, WY	18
Location in priority watershed or basin	AR, CO, CT, IA, KS, KY, LA, MA, MD, ME, ND, NE, OK, OR, SC, TCEQ, VA	17

Specific NPS source categories (e.g., ag, urban stormwater, etc.)	ID, FL, MO, MT, NE, NH, OK, TCEQ, WA	9
Monitoring component	AR, FL, LA, MT, NC, NM, OK, OR	8
Education component	AR, FL, KY, LA, MT, OK, SC	7
Match > 40%	FL, GA, NC, SC	4
Local project with statewide applicability and innovative projects	FL, TCEQ	2

The most common project prioritization or evaluation criteria are that a project proposal relates to implementing a watershed-based plan or addresses 303(d) listed waters. Whether the project has sufficient local capacity to be successful is another popular factor for state project selection and prioritization. See Table 10-2 for details.

As shown in Table 10-3, in the majority of states, it is the NPS program staff or management (such as the Water Division Director) who make the final decisions about which projects to recommend to EPA for funding in any given year. A significant minority of states rely on an interagency group, such as NPS task force or water quality commission, to decide on the final funding recommendations. In these states, NPS program staff participate in the group and weigh in throughout the project proposal review and selection process. Regardless of who is making the final recommendations, it is customary for the NPS program to receive the benefit of input from key NPS partners when evaluating which projects should be funded. For example:

- **Idaho** –Three key stakeholder groups are involved in 319 project process (potential project identification/prioritization, review, etc.): Idaho has 18 Watershed Advisory Groups (WAGs), which include representatives from industry and other interests affected by watershed management, including Soil Conservation Districts. 319 project proposals must first be presented to WAGs for approval to allow the application to move forward towards funding consideration. DEQ, as needed, evaluates each project application to determine technical completeness. Technically complete project applications are then sent to the respective Basin Advisory Group (BAG) for review and ranking. BAGs are established in each of the six river basins, and include NPS stakeholders. The BAG Chairman/designee review project applications for each ranked project in their basin. BAG chairmen then meet with DEQ staff to discuss a select group of the highest ranked projects.

Table 10-3: Final Funding Recommendations

Who makes final project funding recommendations to EPA?	States	State Totals
NPS program staff or mgmt	AR, AZ, CT, DC, DE, FL, GA, HI, IA, ID, IL, IN, KS (for grants unrelated to WBP), LA, ME, MI, MN, MO, MS, MT, NC, NE, NH, NJ, NM, NV, OH, OK, OR, PA, RI, TN, TX, VA, VT (DEC Commissioner), WI	36
Statewide or Interagency Task Force, Committee, Commission or Board	AK, AL, CA, CO, KS (for WBP-related grants), KY, MA, MD, ND, SC, SD, UT, WA, WV, WY	15

As discussed in *Chapter 4: Statewide NPS Programs and Initiatives*, there are a few states (AR, CT, MA, MS, UT) that use a rotating basin/watershed approach to awarding 319 grants each year. Wyoming is considering moving toward such an approach. For example:

- **Utah** has begun to implement a new targeted basin funding approach to help reduce the impacts of NPS pollution. Fiscal Year 2010 was the first year of a six year cycle that will allocate the majority of the state NPS funds to a single targeted watershed. The target basin approach will help identify areas of concern, estimate project effectiveness, and facilitate project planning and reporting. The Bear River Watershed was the first watershed to receive funds using this approach, receiving 60% of the funds available for project implementation in 2010. In future funding years it is anticipated that an even higher percentage of the funds will go toward the target basin.
- **Arkansas** NPS program's priority watershed program focuses watershed implementation within priority 8-digit HUC watersheds where there are known impairments or significant threats to water quality. Watershed projects are then planned and implemented within smaller-sized watersheds nested within the 8-digit HUCs. Additionally, waterbodies with an approved TMDL (with an NPS component) will automatically be considered a priority watershed. Only watersheds identified as priority watersheds are eligible for incremental 319 funds. In 2011, there were ten priority watersheds.
- **Mississippi** coordinates water protection/restoration efforts through a *Basin Management Approach* (BMA), in which nine of Mississippi's major river basins are organized into four basin groups. Each basin group has a basin team comprised of state and federal agencies and local organizations, which is led by an MDEQ employee (the Basin Coordinator). These teams provide opportunities for multiple levels of government and local stakeholders to coordinate their efforts. Basin team members assess water quality, determine causes/sources of problems, and prioritize watersheds for water quality restoration/protection activities. The BMA also facilitates the pooling of technical and financial resources from various agencies and stakeholders to address priority watersheds.

Appendix A: Determination of TMDLs Primarily Impacted by NPS (May 2011)

TMDL Study

What percentage of TMDLs are due primarily to NPS?

Purpose: The purpose of this study was to estimate the number and proportion of all TMDLs nationally that address waterbodies impacted primarily by nonpoint sources. The approach involved reviewing a random sample of TMDLs sufficient to make this estimate with +/-10% margin of error and 95% confidence interval.

Method:

1. A data pull from ATTAINS returned 47,459 records. The data pull included TMDL ID, a unique database-assigned identifier, so the information returned provides an individual record (row) with all of the information associated with that TMDL ID. Because a pollutant/listed water combination can have multiple TMDL IDs, each record should not be counted as a TMDL.
2. The data pull represented an estimated 44,500 TMDLs.
3. The data pull included: TMDL ID, TMDL Name, State, Region, TMDL Status, Pollutant Name, Pollutant Group, TMDL Type, Total WLA, Total LA, TMDL Pollutant Units, List ID, TMDL Document URL.
4. Using the American Research Group online sample size calculator (http://www.americanresearchgroup.com/sams.html), it was determined that 96 TMDLs was a statistically valid sample size for our population (44,500) that would meet a +/- 10% margin of error and 95% confidence interval.
5. Using Excel, a "randomizer" function was applied to the data; this gave us the ability to pull a completely random selection of 96 TMDLs.
6. Each TMDL document was reviewed to determine whether the impairment was due primarily to Nonpoint Sources or Point Sources. This was accomplished by verifying that the total Load Allocation to nonpoint sources exceeded 50% of all the TMDL's allocations, either by calculations provided or statements to that effect.
7. For TMDLs that did not have a document URL in ATTAINS, a quick search (of about 5 minutes) was done trying to locate the TMDL document on the Internet; if the document could not be located, it was eliminated from the sample and a new TMDL from the randomized order was added to the sample in its stead.

Results:

1. Of the 96 TMDLs that were reviewed, 23 were determined to be primarily impacted by Point Sources.
2. Of the 96 TMDLs that were reviewed, 73 were determined to be primarily impacted by Nonpoint Sources.

3. Based on the findings, approximately 76% of the TMDLs were primarily impacted by Nonpoint Sources.
4. When extrapolated to the total number of TMDLs in ATTAINS as of April 14, 2011, we estimate that 33,820 TMDLs are primarily impacted by Nonpoint Sources.

Observations:

1. The amount of time required to make a determination of pollution source varied greatly from document to document (some executive summaries included a breakdown of source of pollution by List ID).
2. Some of the TMDL listings had the incorrect document URL listed and a search was needed to find the correct one.
3. Some of the List IDs had to be researched for their water/stream names in order to find information specific to them in the TMDL documents.
4. Because each TMDL document varies pretty greatly from state to state, the amount of time required to make pollutant source determination also varied greatly.

Watershed Based Plan Review

Final Report

July 2011

U.S. Environmental Protection Agency
Office of Wetlands, Oceans, & Watersheds
Assessment & Watershed Protection Division
Nonpoint Source Control Branch

Introduction & Purpose

In 2006, the Non Point Source Control Branch (NPSCB) of the EPA Office of Wetlands, Oceans, and Watersheds completed a review of the "best" watershed plans from each state. The purpose of the review was to evaluate how well stakeholders were meeting the challenge of developing high-quality watershed-based plans in accordance with the 9 essential components outlined in the October 2003 "Nonpoint Source Program & Grants Guidelines for States and Territories". The 2006 review found that while some states were able to develop high quality watershed-based plans, many plans were still not sufficiently well designed or did not contain sufficient information to support a fully successful implementation effort that would lead to the attainment of water quality standards in the waterbodies identified.

Recommendations from the 2006 review included:

- Greater oversight by EPA Regions to assure watershed-based plans are adequate
- Developing a guidance document providing "best" examples for each of the 9 components
- Providing better training and guidance that demonstrates the level of detail needed to assure water quality standards are achieved in a watershed
- Distributing the "best" plans to the Regions as examples of the level of detail required for a good watershed-based plan.

Since the 2006 review, EPA Headquarters has taken action to provide guidance for developing effective watershed based plans, including publishing the Watershed Planning Handbook; releasing the best plans from the last review; posting additional exemplary plans on the EPA nonpoint source website; and convening workshops addressing watershed-based plan issues such as modeling.

In 2008, EPA Headquarters decided to conduct a second review of state watershed-based plans to determine the level of progress that states and their stakeholders have made in addressing the nine essential components of watershed-based plans. In September of 2008, the NPSCB again asked each of the regional offices to coordinate with their states and territories to identify and submit the "best" watershed-based plan from each state. A total of 49 plans were reviewed during the period 2008 – 2010.

Purposes of this review included:

- Improving our understanding of States' ongoing efforts to develop watershed based plans and identifying needs for improvement.
- Identifying effective and innovative approaches to watershed planning and management that can be shared with states, tribes, and local partners.
- Help guide future activities to promote improved watershed planning and management.

Evaluation Method

EPA developed scoring criteria based on the nine components of a watershed based plan, as identified in the October 2003 Federal Register notice. There are several critical elements identified for each criterion. In order for a plan to meet a criterion, it should contain each of its corresponding elements. Upon the review of each plan, each criterion was given a score of 0-3, 3 being the highest score. Scoring is further explained in Table 1.

Table 1: Criterion Scoring

3	Excellent – Criterion was met at a level that goes above and beyond the minimum and/or included especially effective approaches to addressing the criterion.
2	Good - Criterion met an adequate level of detail; i.e. information provided was adequate to support successful implementation.
1	Fair – Information provided addressed some aspects of the criterion, but failed to fully address it.
0	Poor - Criterion was not adequately addressed

The overall score for each plan was based on a maximum score of 100. Each criterion was assigned a percent weight, and the weight of each criterion was based upon its relative level of importance in assuring that implementation of the plan would attain water quality standards. In particular, 54% of the final score is focused on the first three criteria.

A criterion's score of 0-3 was converted to a percentage, which was multiplied by the weight to determine how many of the possible percentage points were earned for each criterion. For example, a plan that achieves a 2 for all criteria would have a total score of 67% and would be considered by the scoring system to be adequate to support successful implementation. The overall score was not used to assign a particular "rating" to each watershed plan, or declare that a plan "passed" or "failed". Rather, it was used to rank all of the watershed plans; i.e. the higher the score, the higher the rank. This information has been used to identify the merits of those plans that appear to be of high quality – providing excellent models that states, local governments, watershed groups can review and learn from and to assess the overall quality of all of the plans.

The criteria that were used to evaluate the plans are listed in Table 2.

Table 2. Numerical Criteria

A. CAUSES/SOURCES OF POLLUTION ARE IDENTIFIED		
Goals for restoration & protection are clearly defined, quantified & thoroughly explained		8.0%
	Impaired, partially impaired, and/or threatened water bodies on the 303(d) list are identified	
	Goals are clearly defined, and quantified (if applicable)	
Causes/sources of pollution that need to be controlled to meet goals are identified as it applies to areas for restoration and protection		14.0%
	Sources of pollution, both point and non point, are mapped/causes identified	
	Loads from identified sources are quantified	
	Watershed sufficiently subdivided by landuse type, cover or other characteristics to enhance the assessment of sources and strategic placement of BMP's	
	Data sources, estimates and assumptions are cited & documented	
	Data Gaps Identified if they exist, but data gaps not significant enough to delay implementation	
B. EXPECTED LOAD REDUCTIONS FOR SOLUTIONS IDENTIFIED		18.0%
	Expected load reductions are linked to a pollution cause/source identified in (A)	
	Expected load reductions are analyzed to ensure water quality criteria, and/or other goals will be achieved	
	Basis of load reduction effectiveness estimates is thoroughly explained	
	Significant estimates, assumptions, and other data used in the analysis are cited & verifiable	
C. NONPOINT SOURCE MANAGEMENT MEASURES IDENTIFIED		14.0%
	Management measures needed to address causes/sources of pollution identified in (A) are listed, described, and mapped (if known)	
	Explanation for the selection of measures is included to ensure they are applicable to the pollutant causes/sources and are feasible and acceptable	
	Management measures are prioritized based on critical pollutant causes/sources, type, and location as well as compatibility with landowner operations	
	Significant estimates, assumptions, and other data used in the analysis are cited & verifiable	
D. ESTIMATE OF TECHNICAL & FINANCIAL ASSISTANCE		
Estimate of Technical Assistance needed		4.0%
	Significant existing sources of technical assistance that may be needed to implement the plan are accounted for.	

	Additional technical assistance needs are identified, and referenced back to the solutions	
Estimate of Financial Assistance Needed		4.0%
	General cost estimate is included by task (project work plans should have more detailed cost information)	
	Multiple funding sources are listed, as well as an estimated contribution from each source	
E. EDUCATION/OUTREACH		8.0%
	Reaches out to the appropriate sectors of the population in the watershed	
	Both educates public and encourages participation	
	Encourages the implementation of BMP's necessary to fulfill the plan requirements	
F. IMPLEMENTATION SCHEDULE		6.0%
	Timeline presents projected dates for the development and implementation of the actions needed to meet the goals of the plan and includes information on how implementation will be tracked	
	Implementation of point source and regulatory activities are coordinated with nonpoint source actions and other watershed implementation activities	
G. MILESTONES IDENTIFIED		6.0%
	Milestones are measureable and attainable	
	Includes expected completion dates to ensure the continuous implementation of plan	
H. SHORT TERM CRITERIA TO ENSURE PROGRESS IS BEING MADE TOWARDS ATTAINING WATER QUALITY STANDARDS		9.0%
	Interim numerical criteria present	
	Expected dates of achievement identified.	
	Includes a review process to determine if the reductions are being met	
	Includes criteria to determine whether the watershed based plan needs to be revised based upon failure to make adequate progress in accordance with the implementation schedule	
I. MONITORING COMPONENT		9.0%
	Includes description of how monitoring will be used to evaluate the effectiveness of the implementation efforts	
	There is a routine recording element in which progress and methodology are evaluated.	
	Monitoring is tied to a quality assurance plan	
	Parties responsible for monitoring are identified	

Additional details were recorded for each plan to assess any trends across plans. These included:

- Organization(s) authoring the document
- Predominant pollutants addressed in plans

- Watershed size, to determine if there was any correlation between the quality of the plan and the size of the watershed.
- Model used, if applicable, to get a better idea of the models that are being most commonly used and where.

General Results

Based on the above described scoring system, the average score for all of the plans was 56%. Figure 1 presents the average score for each of the 9 watershed based plan components required in 319 plans.

The majority of reviewed plans have done very well with respect to the following components:

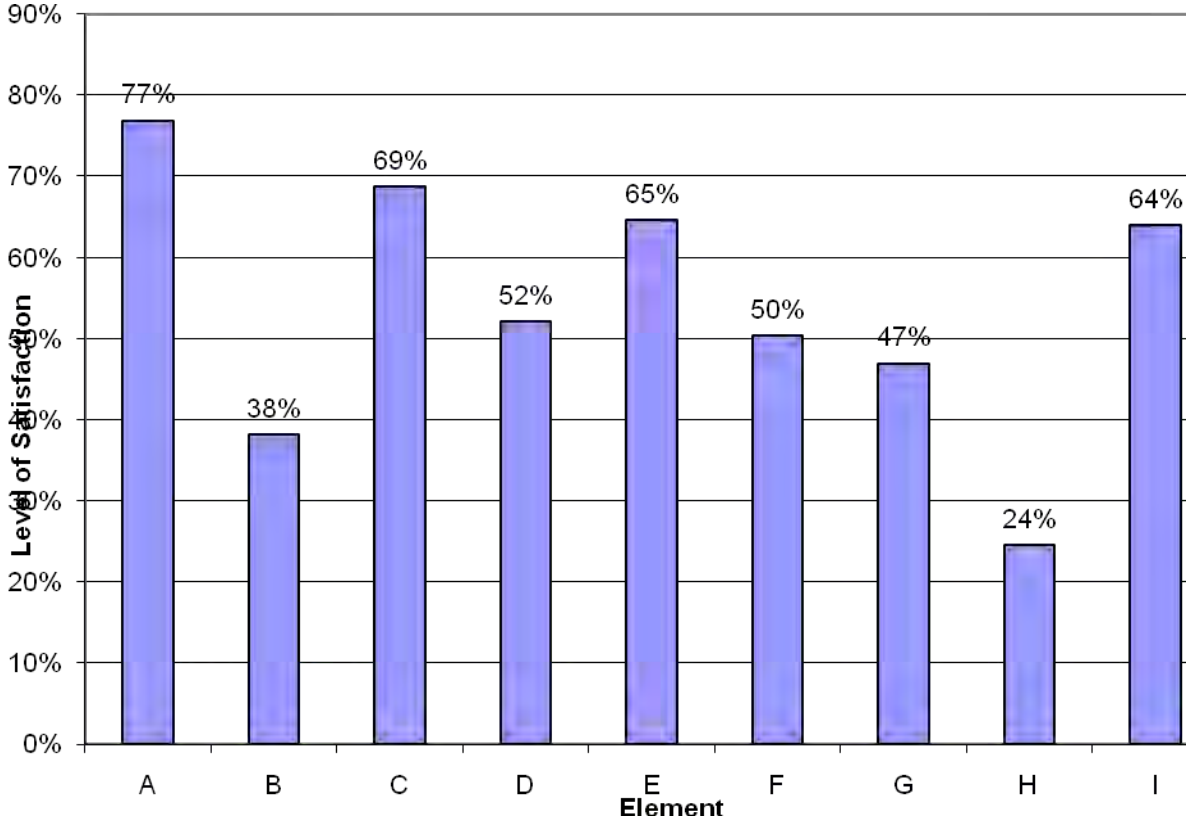
- Identifying causes and sources of pollution that need to be controlled to achieve watershed goals (Component A);
- Describing the NPS management measures that need to be implemented to achieve watershed goals (Component C);
- Developing an information/education component that will be used to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, and implementing NPS management measures (Component E); and
- Including a monitoring component to evaluate the effectiveness of the implementation efforts over time (Element I)

However, many states continue to struggle with estimating load reductions expected for the management measures selected, and setting criteria that can be used to determine whether loading reductions are being achieved over time and substantial progress is being made towards attaining water quality standards (components B and H). Components B and H were found to be problematic in the 2006 review and again were often addressed inadequately in the plans reviewed for this study. These two components go hand in hand; without adequate load reduction estimates, a state cannot develop criteria that can be used to determine whether load reductions are being achieved at an adequate rate over time.

While plans in small watersheds were usually easiest to review, there appeared to be no correlation between size of watershed and overall quality of the plans (Figure 2). However, 40 of the 49 plans submitted were less than 1000 square miles and most of these were significantly smaller than that. Table 3 lists which models were used for components A-C. 13 of the plans reviewed relied solely on monitoring data, and used no formal model for estimating pollutant sources or reductions expected from management practices. Where a model was used, the model used was as varied as the plans themselves.

It is notable that the average score of the plans that used some kind of model (61%) was substantially higher than the average score of those plans that did not use a model (44%).

FIGURE 1


90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Level of Satisfaction
77%
38%
69%
52%
65%
50%
47%
24%
64%
A
B
C
D
E
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G
H
I
Element

FIGURE 2

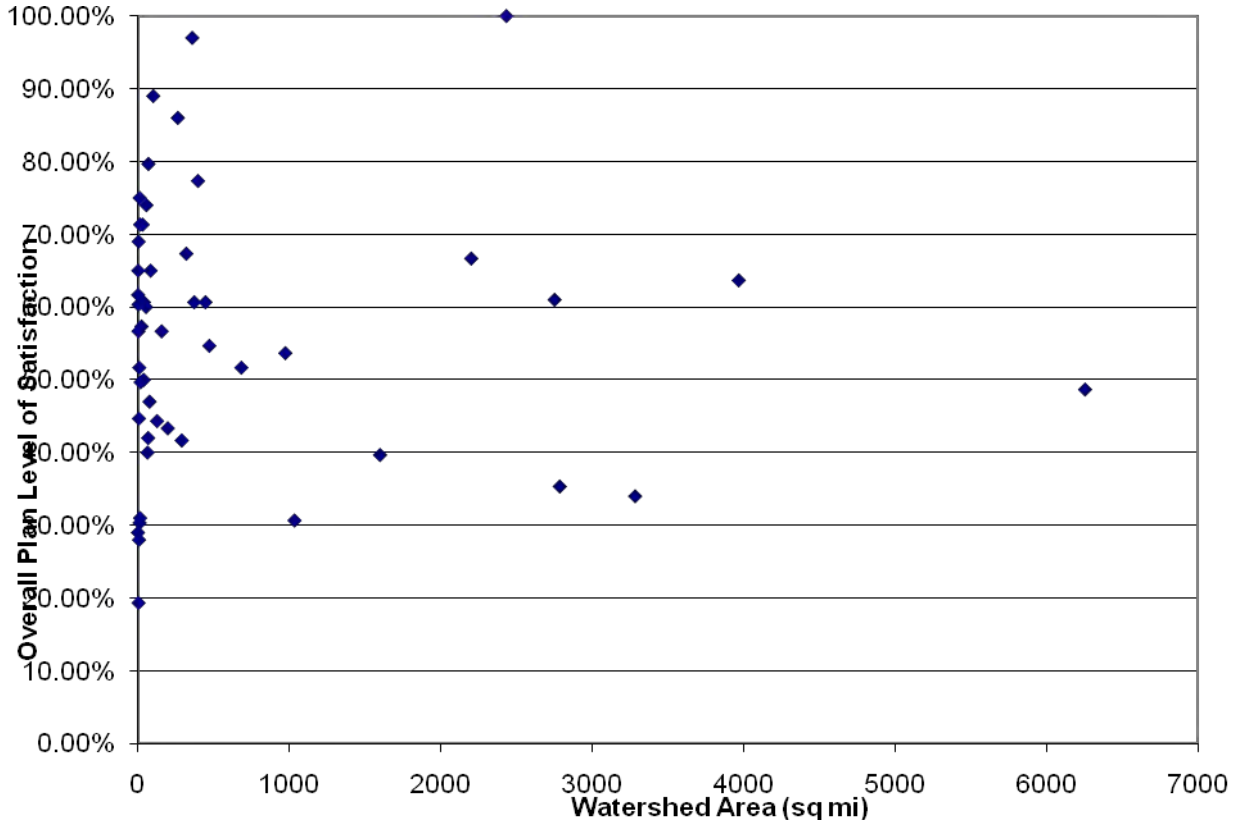

Table 3: Models used in Watershed Based Plans

Model Name	Use
[No Model]	13
Soil & Water Assessment Tool (SWAT)	4
[Revised] Universal Soil Loss Equation ([R]USLE)	3
ArcView Generalized Loading Function (AVGWLF)	3
Loading Simulation Program in C++ (LSPC)	3
Speadsheet Tool for Estimating Pollutant Loads (STEPL)	3
Stormwater Management Model (SWMM)	3
Automated Geospatial Watershed Tool (AGWA, uses Kinematic Runoff and Erosion Model (KINEROS2) and SWAT)	2
Hydrologic Simulation Program Fortran (HSPF)	2
Long Term Hydrologic Impact Assessment (L-THIA)	2
Pollution Reduction Impact Comparison Tool (PreDICT)	2
Annualized Agricultural Non-Point Source Pollution Model (Ann AGNPS)	1
AVNPS	1
Bacteria Indicator Tool	1
Bacteria Source Load Calculator	1
BATHTUB	1
Environmental Fluid Dynamics Code (EFDC)	1

FLUX	1
Impervious Cover Model	1
Integrated Pollutant Source Identification Pollutant Loading Model (IPSI/PLM, from TVA)	1
Method for Assessment, Nutrient-loading and Geographic Evaluation of watersheds (MANAGE)	1
BASINS Nonpoint Source Model (NPSM)	1
Nonpoint-Source Pollution and Erosion Comparison Tool (NSPECT)	1
PLAT/NLEW	1
Pollutant Load Screening Model (PLSM)	1
QUAL2E	1
R5 Pollutant Control Model	1
SELECT	1
Site Evaluation Tool (SET)	1
Stream Network Temperature model (SNTEMP)	1
Watershed Management Model	1
Watershed Treatment Model	1
Delaware Inland Bays Model (Based on CB Model)	1
Sediment Delivery Calculator	1
CE-QUAL-ICM	1

Sediment, bacteria, and nutrients were the most common pollutants addressed in the plans (Table 4).

Table 4: Pollutants Addressed in Watershed Based Plans

Pollutant	# Addressed
Sediment	24
Bacteria (Fecal Coliform & E.Coli)	19
Nutrients (Both Nitrogen & Phosphorus)	16
Phosphorus	8
Metals (Cadmium, Zinc, Lead, Mercury, Copper)	8
Temperature	7
DO	6
Impaired Aquatic Communities	5
Herbicides/Pesticides (including Atrazine, DDT)	4
BOD	3
pH	3
Nitrogen	2
Water Quantity	2
Aromatic Hydrocarbons	1
Oil & Grease	1
Trash	1
Salinity	1
Selenium	1
Noxious Aquatics/Exotic Species	1

While many plans were developed under the supervision of a technical committee, the "author" is the person or group that is named as the actual writer of the plan. As seen in Table 5, private consultants, hired by local watershed groups, states, and other stakeholders authored a greater

number of plans than other groups, followed closely by state environmental agencies and miscellaneous entities, such as local planning commissions, large nonprofits, and other state agencies.

Table 5: Watershed Based Plan Authors

Author	# Addressed
Consultant	11
State Environmental Agencies	10
Etc (Incl. State NRCS, Area Planning Commissions and Environmental Councils)	7
Multiple Authors	6
Local Watershed Group	6
SWCD	4
Extension	3
Local Government (city or county)	2

Summary of Findings for Each Component

Component A

An identification of the causes and sources or groups of similar sources that will need to be controlled to achieve the load reductions estimated in the watershed based plan (and to achieve any other watershed goals identified in the watershed-based plan). Sources that need to be controlled should be identified at the significant subcategory level with estimates of the extent to which they are present in the watershed.

It is difficult to remediate an impaired waterbody without first identifying the causes and sources of impairment. Identification of pollutant sources and reductions needed to meet water quality standards (component A) are the essence of TMDL's; in a number of cases, TMDL's had already addressed this component to a significant extent, thereby setting a foundation for the plan. In the few plans that did not satisfy this component, load estimates from significant source categories were absent, or the sources of pollution that need to be controlled were not quantified at a level that is useful for waterbody remediation.

Component B

An estimate of the load reductions expected for the management measures selected

Without load reduction estimates, it is not possible to determine whether or not the proposed management measures are sufficient to meet the water quality goals set in component A. As mentioned previously, many states had difficulty addressing component B. Many plans simply did not provide any load reduction estimates. Others provided estimates, but made no attempt to show that the management measures chosen would lead to meeting the overall goals described in component A.

Quantifying expected load reductions is difficult, requiring both sufficient data and an analysis leading to a judgment as to what assumptions are appropriate to make for the situation. The processes that planners need to take into account are complex, and therefore difficult to translate to a simple numerical endpoint. While there are a myriad of tools available, from complex to simple spreadsheets, as EPA discusses in considerable detail in the "Handbook for Developing Watershed Plans to Restore and Protect Our Water" (2008), it requires considerable analysis supported by experience and training to determine which one will suit the needs of a specific watershed.

However, the watershed planning process isn't necessarily about getting exactly the right answer the first time. Rather, it is about successfully employing an adaptive management approach in which available information and analytical tools are used to support the best planning decisions that can be made. The best plans were not necessarily relying on the most sophisticated watershed models or making any claims that their load estimates are 100% correct. In fact, some plans contained explicit discussions stating factors that may lead to errors in the estimates. However, it is critical that the best effort be made to develop good estimates; set a bar to measure whether or not the proposed measures are adequate; and establish a feedback loop to determine if there are additional issues in the watershed that may have been missed when the plan was first written.

Component C

A description of the NPS management measures that will need to be implemented to achieve the load reduction estimated in component B, and an identification of the critical areas in which those measures will need to be implemented

After the causes and sources of pollution are identified, the next step is to identify management measures that will reduce the pollutant loads from these sources to the extent necessary to meet water quality goals. Most states were able to do this without significant difficulties. However, some states failed to adequately explain why certain management measures were chosen over similar alternatives.

The discrepancy between the level of satisfaction in components B and C suggests plan writers can successfully identify best management practices to address pollutants, but many are having a difficult time quantifying the expected load reduction from these practices.

Component D

An estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon to implement the plan.

Component D was met with a moderate degree of success. The best plans were able to list the partners that would be called upon to complete each action in the plan, and included a full cost estimate, including possible sources of funding. Other plans were commonly missing one or more of these pieces of information or included all of this information at a level of detail that was much lower than the best plans.

Component E

An information/education component that will be used to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, and implementing the NPS management measures that will be implemented.

Actions to reduce nonpoint sources of pollution are usually voluntary; therefore, effective education campaigns are extremely important to watershed based plans. A good educational campaign helps to ensure that needed management measures will actually be implemented. Most of the time, some kind of education campaign was included (passing out flyers, PSA's etc) but an explanation of how these campaigns would enhance public understanding or encourage involvement was absent. In these cases, there is a serious question whether adequate community understanding of and support for the watershed plan and its implementation have been established.

Component F

A schedule for implementing the NPS management measures identified in the plan that is reasonable expeditious.

A schedule helps ensure that the plan's developers have thought about the feasibility of their plan in relation to its objectives and available resources. It also helps to ensure the continuous implementation of the plan. In many cases, plans failed to include a schedule beyond a year of implementation, or had a much less detailed schedule compared to the best plans reviewed.

Component G

A description of interim, measurable milestones for determining whether NPS management measures or other control actions are being implemented.

Component F and G are closely related. Most states received the same scores for both components, and had the same issues with component G as they did with component F, namely, one, or in some cases, no interim milestones, and a lesser level of detail than the best plans reviewed.

Component H

A set of criteria that can be used to determine whether load reductions are being achieved over time and substantial progress is being made towards attaining water quality standards, and, if not, the criteria for determining whether the watershed based plan needs to be revised or, if a NPS TMDL has been established, whether the NPS TMDL needs to be revised.

Components B and H go hand in hand; without adequate load reduction estimates, a state cannot develop criteria that can be used to determine whether load reductions are being achieved at an adequate rate over time. Therefore, it is unsurprising that states which are struggling with Component B are also struggling with Component H. Most of the time, Component B was not mentioned in the context of Component H, or there seemed to be confusion between what was required with respect to components G and H. Many times, the criteria that would be used to

determine whether loading reductions were being achieved were actually milestones; this indicates that there was confusion surrounding the difference between the two. The criteria should be expected levels of pollutants of concern in the waterbody at different points in time, whereas milestones indicate achievement of implementation steps like the number of BMP's that will be installed in a certain year. Many plans also failed to identify how often progress would be reviewed, and who would actually be responsible for reviewing the plan to determine this information. This would likely result in a lack of implementation of this important step and perhaps lead to continued implementation along a path that needs to be modified.

Component I

A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria established under component H.

Most plans were relying on the implementation of existing state monitoring programs, which have well established procedures, so component I is relatively straightforward. In a very small number of plans, responsibility for monitoring was unclear, as well as how often monitoring would take place.

Best Watershed Plans

These are the plans the received the highest scores of all rated plans. EPA recommends that state and EPA nonpoint source staff review these plans to gather some ideas regarding effective ways to address watershed based plan development. None of these plans is perfect, yet each represents a concerted effort to understand and address information and factors that affect the watershed's problems.

Kansas: Lower Big Blue/Lower Little Blue River

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Division of Environment
Bureau of Water - Watershed Management Section
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http://www.kcare.ksu.edu/DesktopModules/ViewDocument.aspx?DocumentID=4055

The Lower Big Blue/Lower Little Blue River watershed is a transboundary watershed (Only ~ 25% of watershed is in Kansas, the rest is in Nebraska) and drains into Tuttle Creek Lake, a flood control reservoir in Kansas. The lake is impaired by phosphorus, total suspended solids, and atrazine. While the plan only addresses Kansas portion of the watershed, it is overall an excellent watershed-based plan. Every required component was fully addressed, and the information for components B-I were presented in an especially effective manner. The tables

and maps made the information easy to read and digest and all of the information was tied back to meeting the goals of the plan; there was little extraneous information. It was also one of the few plans that included a brief explanation of the model used in the analysis, including why the model was selected, major assumptions, and data sources used. Specific highlights include:

- The Soil and Water Assessment Tool (SWAT) was used to determine loading rates and locations of pollutant causes and sources. Pollutant source analysis is further explored pollutant by pollutant in the critical areas identified in the modeling process.

- The plan explicitly compares load reductions expected from management measures with load reductions prescribed in the TMDL, to ensure that management measures chosen will meet the goals of the plan. Also, there is a section that clearly explains the load reduction estimate methodology.

- Using the model with some ground-truthing, the plan identifies "areas or subwatersheds with the top 20-30% of the highest loads among all areas within the watershed" as critical (targeted) areas for BMP implementation.

- The plan broke cost estimates down to BMP's per year; provided the source of information for these costs; and also included the estimated cost of technical assistance.

- Target audiences are identified for different education/outreach activities, and the plan includes an outline for evaluating these activities.

- The implementation schedule covered the entire life of the plan, and included milestones (# of acres of BMP, miles of streambank stabilization, etc) and interim water quality milestones.

- The plan includes a strategy for reviewing the plan over time, complete with a schedule, delegation of responsible parties, and a list of indicator and parameter criteria and data sources that will be used to assess progress.

Overall, the Lower Big Blue/Lower Little Blue River plan was one of the best reviewed, and it provides an excellent example of how to develop and write a watershed based plan.

Oklahoma: Lake Eucha/Spavinaw

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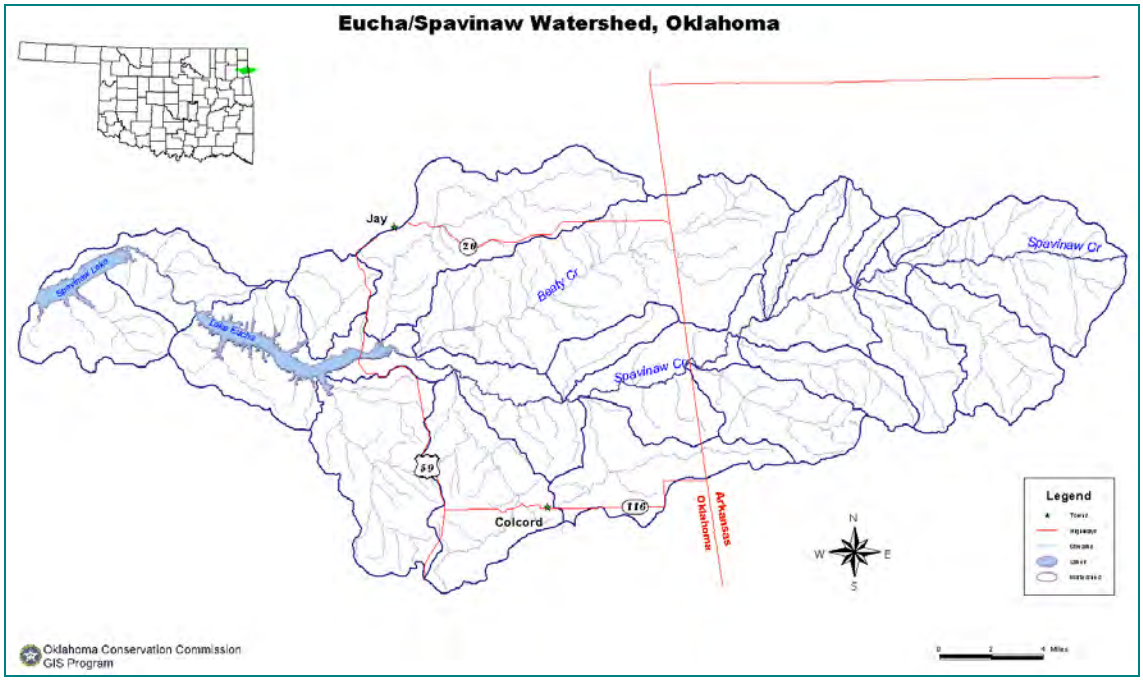
http://www.environment.ok.gov/documents/CWA/GrantWorkplans/Eucha-Spavinaw%20Watershed%20Riparian%20Protection%20Initiative/EuchaSpavWBPRev2-07.pdf

The Lake Eucha/Spavinaw watershed is a transboundary watershed (60% in OK, the rest in AR, see figure) and has been the subject of conflict, including litigation, regarding its many point and nonpoint sources of pollution. The lakes supply drinking water to approximately 1 million people and are impaired by phosphorus and low dissolved oxygen.



The watershed based plan addresses each of the 9 components and includes adequate specifics for each. In particular:

- The plan contains clear quantitative goals complete with an explanation for choosing those goals and how the goals correspond to the load reduction goals and interim water quality criteria.

- All of the information in the plan was tied back to the goals of the plan, so there was very little extraneous information which made the plan very easy to read and comprehend.

- SWAT was used to determine sources of phosphorus, including point sources of phosphorus, and was calibrated with soil test phosphorus results. The model was also used to identify critical areas in the watershed to target implementation.

- Information used for the SWAT analysis was clearly documented, and information not crucial to the WBP was included in a separate report of the modeling efforts. Results were summarized in an easy to understand table in the report, with references to a separate report if more detail is needed.

- Assumptions of the analysis are clearly stated and explained.

- Barriers to attainment of goals are discussed (for example, soils supersaturated with phosphorus may take decades to deplete) but these barriers are not presented as an excuse for inability to attain standards, rather as something to be aware of throughout the implementation of the plan.

- Reasoning for the selection of BMP's is included with the corresponding estimated load reduction. In addition, several simulations were performed to see which practices might have the greatest impact on water quality.

- The cost estimate included BMP's, education, and monitoring, and included the responsible parties for each task. The delegation of work is particularly well explained in the educational activities, which lists each group involved and clearly states what the group will be doing.

- The implementation schedule includes load reduction goals associated with planned activities and a schedule for evaluating the actions to determine if any adjustments need to be made.

- One possible improvement for the plan would be to include more interim water quality criteria.

- The monitoring plan lists what parameters will be measured and who will be responsible for which monitoring activities, as well as a map where monitoring will take place.

Overall, the Lake Spavinaw/Eucha plan was one of the best reviewed, and should be shared as another example of an excellent watershed based plan.

Virginia: Hawksbill & Mill Creek

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http://www.deq.state.va.us/export/sites/default/tmdl/implans/hksmillip.pdf (Does not include the technical report)

Hawksbill & Mill Creek are tributaries of the South Fork of the Shenandoah River, located in the northern part of Virginia. Both waterbodies are impaired due to violations of the State's water quality criteria for fecal coliform and E. Coli. In Virginia, TMDL Implementation plans are

required to be written for each TMDL and this plan was written under that requirement, taking into account watershed plan requirements from other programs, such as 319. The watershed plan for remediating Hawksbill & Mill Creek satisfies all 9 components of a watershed based plan.

Highlights of the plan include:

- Several stakeholders in the watershed were involved in developing this plan. In addition to general public meetings, 3 specialized working groups (agricultural, residential, and government) were assembled to seek public input from specific stakeholders and a steering committee collected information from the different groups and guided the overall development of the plan. Throughout the rest of the plan it was clear that these groups were all very involved in the process.

- The assumptions of pollutant source analysis are clearly stated and discussed.

- Selection of management measures needed to control sources of pollution was well explained, and the public was included in selection of management measures to ensure implementation.

- The quantity of management measures needed to meet water quality goals was estimated using modeling, spatial analysis, and input from the public, and possible locations for these measures were identified in the plan.

- Education strategies that proved successful in other watersheds, which were identified by the working groups involved in plan development, were used in the implementation plan.

- This is one of the few plans that included a cost efficiency analysis of the BMP's selected; which consisted of a breakdown of pollutant removed per $1000 spent, as well as an explanation of the non-monetary benefits of the selected BMP's. This information, along with information gathered from a land use analysis, was used to prioritize implementation.

- All information, from pollutant reduction of BMP's to costs of implementation, was clearly referenced.

- A suggestion for improvement to this plan is to explain how this plan will be reviewed over time, specifically, who will be responsible for reviewing the plan to determine whether or not changes need to be made?

Hawksbill & Mill Creek plan is another excellent example of a watershed based plan.

Maryland: Lower Monocacy River

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http://www.watershed-alliance.com/mcwa_pubsWRASsupplement.html

The Lower Monocacy River plan is a supplement to the original Watershed Plan completed in May 2004. The Lower Monocacy River and its subwatersheds are listed as impaired for: fecal coliform (2002), nutrients (1996), sediment (1996), and impacts to biological communities (2002, 2004, and 2006). However, there is only 1 TMDL that has been approved and adopted in the watershed (Phosphorus & Sediments in Lake Liganore, an impoundment within the watershed). One TMDL has been submitted but has not been approved, and the rest were scheduled for development in 2008 and 2009. In the absence of completed TMDL's, the plan developers used stream corridor assessments and the Impervious Cover Model to identify causes and sources of pollution and estimate loads. This illustrates that an excellent plan can still be written with simpler models. Additional highlights of the plan include:

- The plan was successfully able to integrate information from several sources (such as TMDL's and Tributary strategies from the 2000 Chesapeake Bay agreement). The plan contained a lot of information, but it was easy to read because everything was summarized well and contained clear references to other documents.

- The chosen management measures were adequately described, and included assumptions about their operation and effectiveness.

- This was another one of the few plans that included a benefit cost ratio of pollutant removal to aid in prioritizing implementation actions.

- A responsible party is identified for each implementation action, and all actions are clearly tied back to the goals of the plan.

- Education and outreach efforts are linked to implementation actions and goals, and each activity has measureable outcomes.

- The watershed has an extensive and well organized network of watershed groups. Plan includes a list of all groups with contact information and a summary of the type of assistance each group can provide.

- Implementation schedule reports the status of implementation, as well as the schedule for future implementation.

- The County has an electronic implementation database to track the progress of the plan. The database also calculates expected pollutant removal for each BMP entered.

- The monitoring plan includes project level and watershed level monitoring. All monitoring efforts list who is responsible, and the monitoring parameters that will be measured at each monitoring location.

- The plan includes a section dedicated to discussing issues requiring further study, and strategies for resolving these issues in the future.

This plan would benefit from additional details on the implementation of agricultural BMP's, but it is mentioned that new goals are being adopted by the Tributary Strategy program and this information will be included in the next revision of the plan. Also, there is no explicit plan for reviewing and revising the watershed based plan, but considering this is a supplement of the original plan, it is clear that this work is being done.

Overall, the Lower Monocacy River plan provides an excellent example of a watershed based plan.

Best Examples for Individual Plan Components

Several plans reviewed, while not overall "the best", did excellent jobs addressing some of the required components of a watershed based plan. Appendix B-2 lists these examples by plan component, and hopefully can be used by plan writers in the future.

Plans In Need of Some Improvement

The purpose of this report is to provide information that can be used to help move State watershed planning and implementation programs in the right direction. Identifying and describing some of the chief deficiencies found in some plans helps to achieve this purpose. In contrast, identifying specific States' plans as having specific deficiencies would not help achieve this purpose. Therefore, the discussion in this section and the following section does not provide names of specific States but does provide descriptions of shortcomings that should be avoided by all States.

Overall, one plan suffers from a lack of detail in certain components, but contains an excellent example of how to identify the causes and sources of pollution (component A of the 319 requirements.) The plan contains an excellent summery of existing data, and a great summary of management measures and why they are chosen. However, more information is needed to determine if the management measures chosen will achieve the pollutant reduction goals. There are no interim water quality goals, or any details on how the implementation of this plan will be assured, although the plan refers to several data sets that would be useful for further efforts.

A second plan was very easy to read because it was well laid out. For example, the 9 components of the plan are summarized in the appendix, and the plan includes a "using this document" section with summaries of each part of the plan right up front. However, there are several major flaws. While the whole plan is focused on future growth and how it will impact the stream, there doesn't seem to be any mention of revisiting the plan once it is implemented to make sure the plan is adequately meeting the water quality goals. There is no detail on reducing the impact of agriculture on water quality, even though it is a significant portion of the watershed.

A third plan suffers most from a lack of quantitative data. The plan does not include load estimates for identified sources of pollution, or load reduction estimates for the nonpoint source management measures selected to address pollutant sources. This might be because there is no TMDL in place. The state provides the option of a locally led watershed management planning effort in place of a full TMDL. However, while specific interim numerical water quality criteria were absent, there is a clear procedure for periodically reviewing plan progress. The implementation plan was very strong, and the management measures were listed with the specific overall goals, funding mechanisms, responsible parties, and information/education activities that would be used to promote the adoption of the measure. This made it very clear how every action proposed in the plan fit together. The monitoring plan was also very clear.

Plans in Need of Significant Improvement

One plan suffers from a lack of quantitative detail, especially regarding the expected pollutant-reduction benefits from management measures. There is also very little detail in terms of implementation. The evaluation of the plan that was conducted by the state DEQ, which was included with the plan, summarizes the issues best: "The TMDL provides specific numbers and pollutant reductions targets for the general basin. The (plan) provides information on general BMP's that will address pollutants in the TMDL, but they don't link specifically to load reductions or water quality numbers"

A second plan is missing several critical pieces of information required of a watershed-based plan, most notably the extent of management measures implementation needed to meet the goals of the plan, and load reduction estimates for the management measures that are identified. Without this information, there is no way to tell whether or not the proposed management measures are sufficient to meet the goals of the plan. There is also very limited implementation detail.

A third plan provided very little information, and the state supplemented this through a web- link to the statewide watershed based plan website to find any information missing from plan submitted. Few of the data gaps in the submitted plan were addressed in the documents on the website, since those documents focused on a much larger spatial scale (HUC 12 level) and none of them discussed the watershed in the submitted plan. Thus no information is provided in the plan regarding the watershed's water quality impairments, the types and quantities of sources, and all other similar relevant information. After reviewing the grant application and the other documents provided, an overall plan for addressing the water quality impairments in the watershed could not be determined. Actions are proposed in a grant application to address the water quality issues in the pond, but the expected impact is not. The amount or percentage of water quality impairment of this pond to be addressed by these projects is unstated. In addition, there is no discussion of a feedback loop and relevant monitoring related to this watershed.

Conclusions & Recommendations

This review of watershed plans from around the country indicated that while it is possible to meet the challenge of developing high quality watershed based plans, many plans fail to rise to that level. There is not a single clear reason for this; some plan developers may lack the expertise needed to develop a high quality plan, while others may be suffering from the lack of availability to sufficient information and resources. In some cases it may simply be the lack of sufficient effort or resources devoted to the development of the plan. It is clear that more needs to be done so all plans are of a quality that will support a successful implementation effort to restore impaired waterbodies. Specific recommendations are listed below:

- EPA Regional offices should use the results of this review to discuss with States the specific components that the states are struggling with, and to also share information from States that have successfully addressed those components.

- EPA Regions should work more closely with the States to assure that the States and their watershed partners have sufficient technical capacity and are investing sufficient funds to develop robust watershed-based plans that will lay a good foundation for a successful implementation effort that will restore the waterbodies being addressed to meet water quality standards.

- States' should take greater care in their development of watershed-based plans to assure that the plans truly address all nine components of EPA's guidelines and provide as good and specific a guidepost to future actions in the watershed as reasonably possible. The Section 319 program and grants guidelines allow each State to use up to 20% of its "incremental" watershed-based plan implementation funds to develop watershed-based plans. States should dedicate sufficient funds to the development of each watershed-based plan to assure that they will successfully address all nine components of these plans in a thoughtful and useful manner that will support successful implementation.

- EPA should follow up with the developers of the best watershed plans. Interviewing writers of successful plans would provide insight from those "on the ground" as to what resources contribute most to a successful plan. This information can in turn be used by EPA to prioritize training and tool development.

- EPA should make the best watershed plans, as well as the best examples of different components of watershed based plans, available online and in tools such as EPA Plan Builder. Overall, there seems to be confusion on "how much is enough". Several plans included extraneous information that made the plan hard to review and, most likely, less useful to those using the plan. Providing more examples of what is considered adequate will clarify what an excellent WBP should look like. EPA should also take actions to promote the resources available for WBP's.

- States should focus on developing plans at a scale that allows for the development of the right level of detail. This means, for example, that even if a State develops an integrated watershed plan at an 8-digit HUC level, it may, and likely will, need to develop a more detailed watershed-based plan at a smaller scale (e.g., HUC-12).

Appendix B-1: List of Watershed Based Plans Reviewed

Region 1		
State	*Contact*	*Watershed*
CT	Sandra Fancieullo	Coginchaug River
MA	Fancieullo.sandra@epa.gov	Martins Pond
ME		Spruce Creek
NH		Webster-Highland Lake
RI		Green Hill & Ninigret Ponds
VT		Lake Carmi
Region 2		
State	*Contact*	*Watershed*
NJ	Donna Somboonlakana	Mulhockaway Creek
NY	somboonlakana@epa.gov	Chemung & Upper Susquehanna River
PR		Rio Grande De Loiza
VI		Coral Bay
Region 3		
State	*Contact*	*Watershed*
DC		
DE	Fred Suffian	Indian River, and Indian River, Rehoboth and Little Assawoman Bay
MD	Suffian.fred@epa.gov	Lower Monocacy River
PA		Mill Creek
VA		Hawksbill & Mill Creek
WV		Martin Creek
Region 4		
State	*Contact*	*Watershed*
AL	Yolanda Brown	Indian Creek
FL	Brown.yolanda@epa.gov	Lower St. Johns River
GA		Two Mile Branch
KY		Corbin City Reservoir
MS		Bee Lake
NC		Smith Creek
SC		May River
TN		Oostanaula Creek
Region 5		
State	*Contact*	*Watershed*
IL	Thomas Davenport	Bull Creek/Bull's Brook
IN	Davenport.thomas@epa.gov	Salt Creek
MI		Paw Paw River
MN		Lake Independence
OH		Bokes/Mill Creek
WI		

State	Contact	Watershed
AR	Brad Lamb	Bayou Bartholomew
LA	Lamb.brad@epa.gov	Bayou Plaquemine Brule
NM		Jemez River
OK		Lake Eucha/Lake Spavinaw
TX		Plum Creek
Region 7		
State	*Contact*	*Watershed*
IA	Peter Davis Davis.peter@epa.gov	Lake Hendricks
KS		Lower Big Blue River & Lower Little Blue River
MO		Brush Creek
NE		Carter Lake
Region 8		
State	*Contact*	*Watershed*
CO	Peter Monahan Monahan.peter@epa.gov	Coal Creek
MT		Ruby River
ND		Beaver Creek and Seven Mile Coulee
SD		Belle Fourche River
UT		San Pitch
WY		Flat Creek
Region 9		
State	*Contact*	*Watershed*
AS		
AZ	Tina Yin	Agua Fria
CA	Yin.christina@epa.gov	Agua Hedionda
Guam		
HI		Ko'olaupoko Moku
NMI		
NV	Stephanie L. Wilson	Carson River
TT		
Region 10		
State	*Contact*	*Watershed*
AK	Rick Seaborne	Lower Kenai River
ID	Seaborne.rick@epa.gov	Pack River
OR		Willamette River Basin: City of Lowell
WA		Stillaguamish River

Appendix B-2: Best Component Examples from Watershed Plans

Puerto Rico's plan provides an excellent example of an approach to successfully implementing **component A**. Unlike most plans, model selection criteria are identified to guide model selection. Model input assumptions are clearly explained, and assumptions are supported with appropriate references. Explanation of the calibration process clearly lays out what information was used and data gaps that limited the analysis. The modeling results are presented by subwatershed, and each section includes a pollutant source assessment, priority ranking (with explanation), a breakdown of loading by source, and an analysis of seasonal variations or other critical factors that may exacerbate pollution issues. *Link: Rio Grande De Loiza, pp. IV-1 – IV-2; IV-18 – IV-28, V-2 – V-164*

The New Hampshire plan provides great examples for **components A-C**. The New Hampshire plan outlines different pollutant estimate approaches that apply to their watershed, clearly stating the limitations and assumptions of each. The pollutant source analysis begins with an in-depth study of the watershed completed several years ago using one of the more complicated approaches. Simplified approaches were then used to assess how conditions may have changed since the original study was completed.

STEPL was used to estimate the loads from individual sources of pollution in the watershed. All of the sources for information used in the modeling are listed, and while the model was not fully calibrated, an attempt was made to compare how the model results differed from monitoring results. Each possible pollutant source is further explored in the following sections, including relevant studies and visual evidence of problems that could not be taken into account using STEPL. Also included are measures to control the individual sources of pollution and estimated load reductions, explicitly linking pollutant control measures to specific sources of pollution. The information about pollutant source loads and control measures are summarized in a table as an easy reference. *Link: Coginchaug River, p. 7 – 47*

The Mill Creek plan from Pennsylvania does a good job of identifying NPS management measures that need to be implemented to meet the goals of the plan. Plan writers not only have an idea for which BMP's to install (**component C**), but where they should be installed and to what extent (acres treated by a cover crop, length of fencing, etc). This level of specificity suggests that plan writers are intimately involved in this watershed and provides confidence that the plan, once it is implemented, will succeed. The Mill Creek plan also provides a detailed cost estimate for each proposed BMP (**component D**). .Potential funding sources are also identified for the different types of BMP's. *Link: Mill Creek, p. 24 – 46*

The Coal Creek plan from Colorado addresses **component C** with a short table that summarizes the appropriate management measures and how those measures work to reduce pollution. The Coal Creek plan also uses a summary table to illustrate gaps in the monitoring data used for quantifying the causes and sources of pollution. *Link: Coal Creek, pp. 8 – 9; 49*

The Washington State Stillaguamish plan follows a similar format as New Hampshire to address **component C**, providing a section to discuss each source of pollution, specific problem areas

and the management measures that should be used to address each source. The watershed characterization in this plan is very thorough and allows for the ability to very specifically target sources of pollution with management measures. This is also one of the few plans that addresses temperature, and does a great job explaining suspected causes of impairment and targeting specific areas for management actions.

The plan also does an excellent job identifying sources of technical assistance, which is part of addressing **component D**. Partners are identified from the federal to the local level and specific actions are identified for each partner. These expectations are described in text, and then summarized in an "Implementation Tracking Sheet" to easily keep track of the tasks that need to be accomplished by which partner. This differs from most of the plans reviewed; most identified partners but did not specify what these partners were expected to contribute. *Link: Stillaguamish River, pp. 14 – 87; D-3 – D-7*

The Agua Hedionda watershed plan from California does an excellent job describing the NPS management measures that will need to be implemented to meet the goals of the plan (**component C**). Each management measure includes a detailed explanation for why it was chosen and where exactly it would be implemented, and most measures also include a strategy for prioritizing implementation. Maps of critical implementation areas enhance the presentation of this information, and cost estimates are included. A discussion of potential funding sources is also included (**component D**). The education/information component identifies target audiences and activities to reach these audiences, and it outlines specific goals for outreach activities (**component E**). The monitoring component of this plan is very clear (**component I**). Monitoring indicators are specifically linked to plan objectives. The plan also lays out the groups responsible for the different pieces of the monitoring plan and recommends specific monitoring locations that would enhance the ability of watershed managers to determine if the implementation efforts are working over time. *Link: Agua Hedionda, see Chapter 6*

The implementation piece of Wyoming's plan for Flat Creek is very strong. The management measures are broken down by the goal the measure is meant to address along with cost estimates, possible funding sources, responsible parties and information/education activities that would be used to promote the adoption of the measure **(components D, E, F, G)** This made it very clear how every action proposed in the plan fit together. The implementation summary table also makes clear how the monitoring efforts will be used to ensure goals are being reached (**component I**). Many of the plans reviewed contained a lot of information, and it was not always clear how the information would be used to implement the watershed plan. By summarizing information in this way, it is clear how each and every piece of information in the plan fits into the overall watershed goals. The Flat Creek Plan also outlines a clear procedure periodically reviewing the plan to ensure progress is being made and that the plan is revised as new information is collected. *Link: Flat Creek p. 30 – 37*

The education/information section (**component E**) in the Lake Hendricks plan from Iowa is presented in a question and answer format that clearly illustrates the decision process the plan writers followed to choose information/education activities that would be effective. Unlike most other plans, barriers to practice adoption are identified in advance along with strategies to

overcome those barriers. Also, plan writers interviewed landowners in person to get a better idea of how to target the information/education campaign. *Link: Lake Hendricks See Information & Education Section.*

The education and outreach strategy (**component E**) in the Bee Lake watershed plan from Missouri includes indicators for success, which is not present in other plans. The plan also assigns responsibility for each education/information activity to a specific party, and provides a detailed cost estimate for each activity. The Bee Lake plan also includes a good summary of data used for quantifying causes and sources of pollution. *Link: Bee Lake pp. 11 – 13; 40 – 51*

Tennessee's watershed plan for Oostanaula has a clear implementation schedule (**component F**) and does a good job describing measurable, interim milestones in addition to the implementation schedule and setting criteria that can be used to determine whether loading reductions are being met over time (**components G, and H**). *Link: Oostanaula Creek pp. 55 – 57; 60 – 62*

The Lower St. John's River Basin watershed plan from Florida contains one of the most detailed sections on how the monitoring component would be used to evaluate effectiveness of the plan over time (**component I**). An explanation why different modeling stations and parameters were chosen is included, in addition to a map of monitoring stations (that also illustrated which subbasins the stations corresponded to). Most other plans reviewed did not go very far beyond a map of stations, if a map was included at all. The monitoring efforts are summarized in a table that listed the monitoring stations, what parameters would be monitored at each station and how often, and who would be responsible for carrying out the monitoring. The plan also explains how the monitoring database would be managed, which is another factor missing from most other plans. The plan also includes a thorough discussion of the assumptions made in the analysis of causes and sources of pollution. *Link: Lower St. Johns River, pp. 8 – 12; 80 - 90*

Indiana presents its causes and sources of pollution in a table, complete with an explanation for suspecting each source. It is very clear what previous monitoring was used to verify/quantify each pollutant source. *Link: Salt Creek, p. 97 – 101.*

Hawaii developed a unique way to prioritize project implementation in the Koolaupoko watershed plan that takes into account factors such as landowner support, as well as factors such as BMP efficiency. This plan also includes a really good discussion of the model used for watershed analysis that includes assumptions and limitations. *Link: Ko'olaupoko Moku, p 3-7 – 3-11; Appendix B*

The Carter Lake plan from Nebraska is one of the only plans that included an economic valuation of the waterbody. *Link: Carter Lake, p. 8 – 11*

The Chesapeake Bay Tributary strategy from New York has a very detailed section discussing the information needed to refine the plan in future iterations. *Link: Chemung & Upper Susquehanna River , p. 76 – 83*

Appendix C: Potential Recommendations from the EPA/State Water Division Director Workgroup Regarding Section 319 NPS Program Improvements

I. Overall Themes

- Accelerate water quality improvements and restoration through greater program integration and more timely implementation of nonpoint source (NPS) controls.
- Increase accountability through greater use of satisfactory progress reviews, improved measures and updated NPS Management Program Plans.
- Continue to make progress in restoring specific waterbodies/watersheds while strengthening state approaches that can achieve more rapid improvement on a broad (geographic or categorical) scale.
- Increase leveraging of Section 319 NPS funds with other federal, state, local, and private sector funding.

II. Recommendations to Improve Strategic Program Directions for 319

1. Use Satisfactory Progress Provision to Strengthen and Update State NPS Management Program and Improve Accountability

Re-invigorate "Satisfactory Progress" determinations to improve accountability and establish metrics to better assess state program performance:

Improve Agency's NPS Management Program and Process

- In FY12, EPA will develop a draft "satisfactory progress" check list in the first quarter to aid the regions in evaluating the states' NPS management program and accomplishments in FY11. Also in FY12, EPA will complete new "Satisfactory Progress" Evaluation guidelines which would focus on:
    - Environmental results
    - Program status- including determining if a state NPS Management Program update is needed
    - Funds utilization

- In FY13, Regions would make Satisfactory Progress determinations based on the new guidelines and states would begin submitting updated State NPS Management Programs. States would have the option to include an updated NPS Management Program in their State Water Quality Management Plan.

- Also in FY13, EPA will develop a final checklist for Regions to use that provides an overall structure and consistency for evaluating and documenting satisfactory progress determinations each year which is directly linked to the award of subsequent grants. The checklist would require specific review and findings of a detailed set of criteria for performance measures (including funds

management, expenditure rates, implementation rate of projects, achievement of outputs and outcomes from 319 funds.)

- In FY13 and beyond, in some cases, EPA would make a determination that a state's NPS Program was NOT making satisfactory progress thus making it potentially ineligible for some portion or all of the funds. A competition or redistribution of funds may occur as a result of this provision (see "Regional Competition/Reallocation" section below).

Update/Improve State NPS Management Program Plans

- In FY13, States will update their NPS Management Program Plans to focus them in a manner that maximizes program effectiveness and results. Comprehensive updates will be required for any state with an outdated plan (of 1998-2001 vintage) to align with all operative 319 guidelines (including any new guidelines that emerge in 2012/2013).

- Beyond FY13, States would update their programs on a periodic basis (e.g., a 5-year basis, or rotating for different components/sections of the program), which is reviewed and approved by EPA Regions.

2. Regional Competition/Reallocation of (1) funds that have not been expended by the end of the grant period and (2) a portion of new fiscal year funds

In FY12, EPA will develop guidelines to establish an approach for Regions to compete and reallocate two potential sources of funding: (1) funds that have not been expended by the end of the grant period due to project period expiration or non-performance and have become available for re-award when they are deobligated from grants; and (2) new fiscal year funds that are subtracted from states who are not liquidating obligated funds at a reasonable rate or from states who did not make satisfactory progress in the previous year.

Priorities for use of competitive funds may include:

- Implementation of watershed-based projects that have a 9 element watershed plan
- Projects jointly funded with USDA in 12-digit HUC's
- Implementation of Statewide categorical approaches to address key NPS problems
- Activities that promote protection of healthy waters.

3. Achieving Environmental Results and Improving Program Management

In FY13, to accelerate the achievement of environmental results, the Agency will specify that at least 50% of 319 funds should be used to support on-the-ground restoration or protection projects to implement watershed plans. Furthermore, to improve program management, the Agency will work with states to identify priority watersheds for watershed-based plan development and implementation. For example, States can improve the processes/approaches for prioritizing watersheds for watershed-based

plan (WBP) funding by considering factors such as the importance and severity of impairment or protection need being addressed as well as likelihood for projects to succeed. These priorities would drive funding decisions.

The Agency will also work with states to find opportunities to promote and implement **statewide approaches** or across large portions of a state, including for example:

- Support development and implementation of statewide nitrogen and phosphorus pollution frameworks called for in March 16, 2011 memo from Nancy Stoner, Acting Assistant Administrator for Water.
- Statewide enforceable programs that require implementation of NPS BMPs for nutrient management, Agricultural BMPs, stormwater runoff, etc.
- Statewide restrictions on use of certain products/activities that contribute to NPS pollution such as restricting use of phosphorus and nitrogen in lawn fertilizer.
- Statewide requirements for nutrient controls for septic systems and/or setbacks from waterways.

Another component to improving program management is to improve tracking and reporting for NPS activities. For example, EPA will work with states to track and report on the use of all matching funds in the same manner as for 319 funds, as they are intended by law to share the cost of the program and thus are integral to the program's implementation and accountability. Furthermore, EPA will consider requiring a detailed quantitative accounting, in grants applications and in annual reports, of the outputs/outcomes/activities of staff funded with both 319 dollars and **State match.**

4. Increase Use and Leveraging of Clean Water State Revolving Funds (CWSRFs) and/or Other Sources of State Funding

States have used approximately $3.5 billion of Clean Water State Revolving Funds (CWSRFs) to date to implement NPS projects, accounting for approximately 4% of all CWSRF lending. While this is a start, EPA needs to encourage even greater use and leveraging of these funds CWSRF funds as well as use of other sources of State funds to implement watershed-based plans. In FY12, EPA will develop guidelines to allow greater flexibility in use of 319 funds for states that use SRF or other State funds for implementation. For example, States that demonstrate that they have two to three times the amount of funds (CWSRF and/or State funds) being used to implement watershed-based plans would have greater flexibility to use the 319 funds to support other state nonpoint source priorities.

5. Measuring Success and Improving Program Accountability

Continue to track WQ 10 watersheds acknowledging that these waters that are partially or fully restored are a good measure of the success of state NPS program. The current number of 355 such waters is impressive – see NPS Success Stories at: http://water.epa.gov/polwaste/nps/success319/ . However, there is concern that we also need to be able to show "incremental progress" in addressing water quality issues in NPS impaired waters. In FY12, EPA HQ and Regions will work to develop measures of

incremental progress for review by states and inclusion in the FY13 National Water Program Guidance. Some measures to be explored include:

- Percent load reductions for a specific pollutant
- Count number of BMPs/projects implemented in a watershed with a watershed plan.
- Measure/monitor water quality improvement.

6. Improve Partnership and Collaboration with Federal Agencies Such as USDA, DOI, and OTHERS to More Effectively Tackle NPS Pollution

Continue to work with other federal agencies such as United States Department of Agriculture (USDA) and Department of Interior (Bureau of Land Management, Office of Surface Mining, Fish and Wildlife Service) to encourage firm commitments to reducing NPS pollution caused by agriculture (cropland, animal agriculture including confined operations and grazing), forestry, surface mining, and other nonpoint sources of pollution. Build on existing work with USDA and DOI, including work with the Forest Service (FS) MOU and the Fish and Wildlife Service (FWS) to continue to develop and implement TMDLs on FS and FWS public lands.

Expand EPA partnership to include local conservation districts, counties, regional planning commissions, and nonprofit organizations at the state and national level, e.g., NACD, The Nature Conservancy, CTIC, etc.

In FY12, EPA will continue to work with USDA, other federal agencies and others to increase activities and funding to implement watershed-based plans to address NPS pollution problems.

Appendix D: Water Quality Priority Goal, FY 2012-2013

February 2012 Addendum to the FY 2011-2015 EPA Strategic Plan,
Water Quality Priority Goal:

> ***Improve, restore, or maintain water quality by enhancing nonpoint source program accountability, incentives, and effectiveness. By September 30, 2013, 50% of the states will revise their nonpoint source programs according to new Section 319 grant guidelines that EPA will release in November 2012.***

This Priority Goal advances the *Strategic Plan* objective of protecting the quality of rivers, lakes, streams, and wetlands on a watershed basis, and protecting urban, coastal, and ocean waters. It also supports the strategic measure on attaining water quality standards for all pollutants and impairments in waterbodies that were identified as not attaining standards in 2002. Nonpoint source pollution—principally nitrogen, phosphorus, and sediments—has been recognized as the largest remaining impediment to improving water quality. Recent national surveys have found that the Nation's waters are stressed by nutrient pollution, excess sedimentation, and degradation of shoreline vegetation, which affect upwards of 50% of our lakes and streams. Section 319 of the Clean Water Act is one of EPA's core water programs to help protect, restore, and improve water quality by providing grants to prevent or reduce nonpoint source pollution.

EPA's implementation strategy for accomplishing this Priority Goal will focus primarily on developing new Section 319 grant guidelines by November 2012. By the end of 2013, EPA will provide assistance to states to revise their nonpoint source programs in order to accelerate water quality improvements and restoration with a focus on increased accountability and enhanced targeting of the funds to ensure timely implementation of nonpoint source controls.

To achieve gains under this Priority Goal, EPA will work with the U.S. Department of Agriculture and the Department of the Interior (including the Bureau of Land Management, Office of Surface Mining, and Fish and Wildlife Service), to encourage collaborative efforts that reduce nonpoint source pollution caused by agriculture, confined animal operations, grazing, forestry, surface mining, and other sources. Specifically, EPA will jointly identify with U.S. Department of Agriculture Natural Resources Conservation Service at least 50 critical watersheds for coordination of conservation and monitoring investments. Additionally, EPA works in partnership with states and tribes to develop and implement nonpoint source pollution prevention programs and will expand partnerships to include local conservation districts, counties, regional planning commissions, and nonprofit organizations at the state and national levels.