

An Assessment of Local Governments Strategies and Shortfalls with Clean Water
Management Trust Fund Grants in Six North Carolina Counties

by

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A Masters Project submitted to the faculty
of the University of North Carolina at Chapel Hill
in partial fulfillment of the requirements
for the degree of Master of Regional Planning
in the Department of City and Regional Planning.
Chapel Hill

2005

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Executive Summary

The Clean Water Management Trust Fund is a program created in 1996 by the North Carolina General Assembly to “clean up pollution in the state’s surface waters and to protect and conserve those waters not yet polluted” (Annual Report 2003, p. 1). Currently the Clean Water Management Trust Fund offers grants for land acquisition or easements, septic and sewer repair, stream and wetland restoration, and stormwater control projects. The Clean Water Management Trust Fund provides grants to local governments, conservation non-profits, and state agencies. The local government designation includes city governments, county governments, municipal governments, sewer and water authorities, and small regional governments. Local governments receive almost 50 percent of the grants provided by the Clean Water Management Trust Fund and make up the group with the largest number of grants not completed or withdrawn.

The goal of this project was to determine how to make local governments effective partners for the Clean Water Management Trust Fund and increase the efficiency of grant implementation. In order to reach the larger study goal, local governments in counties six counties were studied. The six counties chosen had the highest number of total grants and the highest percentage of grants to local governments through the end of the 2003B funding cycle. The counties selected for study include Montgomery, Lenoir, Robeson, Johnston, Nash and Pitt. Local governments in these six counties received 40 grants during the 1997-2003B funding cycles.

The evaluation used a mixture of surveys, project case file reviews and short interviews to assess the grant implementation in each of these counties. The 40 grants to local governments in the six counties had 27 different grant manager contacts; several

local governments had received more than one Clean Water Management Trust Fund grant. Each of the 27 contacts received a survey and all 40 project files were reviewed. Additionally, the evaluation included short interviews with grant managers in areas that received several grants and follow-up interviews with grantees who had provided unclear information.

After completing the surveys, project file reviews and short interviews the evaluation found that local government grantees are successful at applying for grants, yet programmatic hurdles may prevent on-time grant completion. Additionally, consistent managers that stay through the life of the grant coupled with a great deal of community support and awareness for Clean Water Management Trust Fund grants contribute to local government success. However, while most local governments applied with matching funding, several grantees cited the need for additional funds to complete the grant. Finally, the lack of a consistent progress report to the Clean Water Management Trust Fund by all grantees hindered understanding of the factors that effect all local governments as they progress throughout the grant implementation process.

Finally, the assessment was completed by comparing Clean Water Management Trust Fund with programs in North Carolina and in other states. This final aspect illustrated three factors contribute to local government success in other area. These factors include the following: (1) a more detailed progress reports that include timelines and progress along the timeline, (2) workshops for local governments run by previous grant recipients or staff specifically assigned to local governments, and (3) community involvement in all grants.

Background on the Clean Water Management Trust Fund

Over the last nine years, the Clean Water Management Trust Fund has worked to protect surface water quality and to reduce future pollution of uncontaminated waters. It has reached these goals by providing grants to local governments, conservation non-profits and state agencies. The Clean Water Management Trust Fund has accomplished its goals through annual appropriations from the North Carolina General Assembly. For the past two years, the Clean Water Management Trust Fund has received appropriations of \$62 million or two-thirds of its approved funding level of \$100 million annually. However, the original appropriations by the General Assembly fund totaled only \$40 million. Although the actual dollar appropriations have increased, the Clean Water Management Trust Fund continues to function without a dedicated source of revenue. The lack of a dedicated funding source may suggest that North Carolinians value the work that the Clean Water Management Trust Fund has accomplished, yet are unwilling to commit fully to long-term support.

Water Quality Issues in North Carolina

In the years preceding the creation of the Clean Water Management Trust Fund, North Carolina experienced several highly publicized fish kills in coastal plain rivers and estuaries. Algal blooms resulting from nutrient-rich agricultural and hog-farm runoff led to the destruction of fish in rivers throughout eastern North Carolina. High profile articles in newspapers across the state discussed water quality and brought it to the attention of citizens in throughout North Carolina. The social recognition of

environmental damage and fear of public health risks brought about by the publicity on degraded waters acted as a catalyst to protect water quality in North Carolina.

During the summer of 1995, over 10 million fish died in eight major fish kills. About half of the fish deaths occurred within a nine-mile radius of the Neuse River during late September and early October (Leavenworth 1995b). Many of the fish deaths were attributed to *Pfiesteria*, a toxic algae found in polluted waters in Eastern North Carolina (Leavenworth 1995a). The *Pfiesteria* scare was not limited to fish; people near New Bern recorded sores similar to those found on the dead fish. Shortly after the discovery of the *Pfiesteria* algae, North Carolina Department of Health Director Ron Levine issued a health safety warning for people using the Neuse for fishing, swimming, or other activities that might bring them into contact with the algae (Leavenworth 1995a). This action raised public concern in eastern North Carolina.

By 1996, the Neuse River appeared on a list of the 30 most imperiled rivers in the United States (Leavenworth and Rosen 1996). In order to resolve some of the public concerns over agricultural and hog-farm runoff, the state began creation of a Neuse River Plan in late 1995. The plan would have required all farms to place a 50-foot buffer between agriculture and the river, thus contributing to filtration of agricultural toxins before they reached the river. Homes and small businesses would have been exempt from the buffer area (Selingo 1996). These policy actions were not popular with farmers and businesses.

The environmental awareness of water pollution in North Carolina was not limited to the Neuse River. Death of fish in waters not considered impaired or polluted also increased state recognition of water quality issues. Large fish kills on the Black

River above Wilmington, a state Outstanding Resource Water heightened awareness that water quality issues could affect all North Carolina waters (Leavenworth and Bonner 1995). Additionally, the state has dropped in oyster production, falling behind Louisiana and Connecticut; many oyster farmers blamed much of the lost production on contamination of oyster beds (Simpson 1994).

The swine industry took the blame for many of the water quality problems that led to fish kills, health warnings on the Neuse River and water contamination. In 1995, North Carolina produced more pork than any state except Iowa (Rosen 1995). About 4,000 hog farms made up the \$1 billion industry (Dew 1996, Selingo, 1996). These farms, concentrated in eastern North Carolina, contained 2,400 high-nitrogen waste lagoons (Figure 1) and made North Carolina the fastest growing hog industry in the U.S. (Stith and Warrick 1995). Hog-farm owners and hog special-interest groups lobbied against additional regulation from state lawmakers.

However, environmental problems continued in Eastern North Carolina. On June 21, 1995, a hog waste lagoon burst at Oceanview Farms in Onslow County, spilling about 25 million gallons of hog waste into the New River (Dew 1996). A 1995 study commissioned by the North Carolina Environmental Management Commission noted that of the 1,778 hog farms inspected, 252 did not have the required excess capacity within their waste lagoons to prevent unintended overflows (Warrick 1995). Additionally, in early July 1996, Hurricane Bertha hit Craven County and 1.8 million gallons of nitrogen-rich waste from a Vanceboro hog farm spilled into Swift Creek, a tributary of the Neuse River (Leavenworth 1996b).

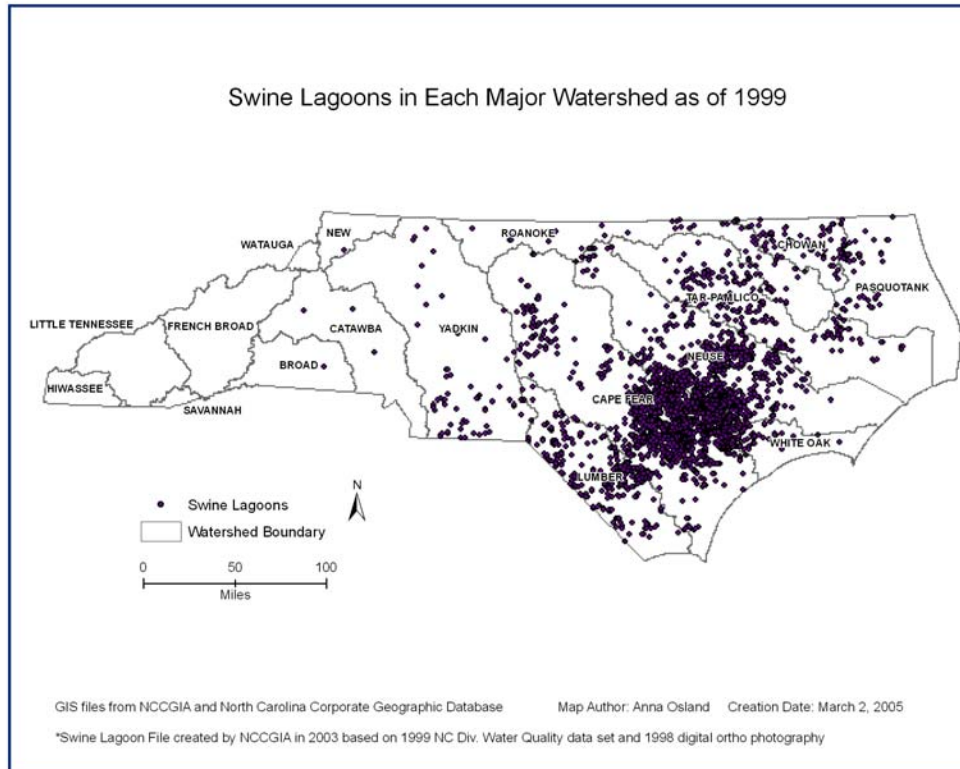


Figure 1: Swine Lagoons locations in North Carolina in 1999

The unintended hog-waste spills raised concern about ground water quality. In early 1996, drinking water problems in three communities linked hog farms to drinking well contamination (Warrick 1996a). In spite of these problems, the North Carolina Division of Water Quality stated that it did not have enough inspectors or funding to review the hog farms more than about once per year (Associated Press 1996).

The atmosphere created by publicized environmental problems led to a push for a public solution to the water quality concerns in North Carolina. River basin plans, such as the Neuse River Plan, was one such solution. Another was the creation of the Clean Water Management Trust Fund.

Authorizing Legislation

Throughout the 1996, legislators debated various ways to protect the rivers in North Carolina. In May 1996, Dare County Senator Mark Basnight proposed a trust fund to protect water quality. The proposal included \$30 million “to preserve buffers along rivers, create greenway trails and upgrade septic tanks; \$2 million for wetland restoration; \$3 million for farm ‘cost-sharing’ to reduce runoff; and \$3 million for water-quality studies and monitoring” (Leavenworth 1996b). No more than 2% of the money would be used for administrative costs. Governor Jim Hunt supported the Senate plan, stating, “Clean water is a necessity, not a luxury, and we’ve got to invest in it every year, not just one year” (Hunt 1996). The Senate plan included a provision for an annual appropriation of 6.5% of state’s unspent fund, or about \$30 million annually (Hunt 1996).

The North Carolina House of Representatives also proposed state allocations for water quality protection. The House version, supported by Representative John Nichols, would have provided a \$30 million one-time appropriation to protect river buffers and restore wetlands. Included in the \$30 million was “\$12.7 million for farm ‘cost-share’ programs; \$1.1 million for livestock farm inspections and permits; \$5 million to help cities and farms reduce nitrogen runoff; \$2 million for conservation tax credits” (Leavenworth 1996b). The House plan would have received one year of support from General Assembly appropriations, before becoming self-supporting (Greensboro 1996).

In July 1996, several editorials worried that a trust fund created to protect clean water would only target eastern North Carolina water quality, due to the high publicity of recent fish kills and hog farm spills in eastern North Carolina. The Greensboro News Record staff editorial stated, “Pollution isn’t just a flatlands problem. Much of the gunk

that eventually finds its way eastward has its origins in the mountains and Piedmont. These two sections of the state should not be left out of the trust fund loop; lawmakers should address this concern” (Greensboro News Record 1996). Other editorials stated that the trust fund proposal was too general and lacked strong spending guidelines. Many editorials pressured legislators to take into account water quality issues throughout the state, not solely Eastern North Carolina. Land development also influenced water quality in the form of stormwater runoff, contamination from poorly functioning septic and sewer systems, and loss of wetlands. These land development issues affected water quality throughout the state.

By late July 1996, the Senate revised the proposal to include more specific wording stating that, conservation non-profit organizations, local governments or state agencies could use the funds to acquire riparian buffers, greenways and parks along rivers. Additionally, the trust fund could be used to “improve municipal sewage treatment and septic tanks, and build retention ponds to control agricultural and urban runoff” (Cochran 1996). The revised plan also provided for a minimum \$6 million cost-share with rivers outside of the Neuse Basin (Dew 1996b). Article 13A to the North Carolina Constitution created the Clean Water Management Trust Fund. The authorizing legislation, from July 27, 1996, formed a trust fund to confront many of the environmental issues facing North Carolina in the mid-1990s.

The Trust Fund in 2004

The Clean Water Management Trust Fund has provided grants for surface water protection and pollution elimination across the state since its first funding cycle in mid

1997. Applications are separated into two funding cycles with grant applications due in June and December. Each cycle provides grants of approximately half of the total funding allocated each year from the North Carolina General Assembly. Although GS143-15.3B requires that the General Assembly dedicate approximately \$100 million annually to the Trust Fund, full funding has not recently been forthcoming. However, the General Assembly has maintained a high funding level throughout the Clean Water Management's almost ten years of existence. During the 2004 session of the North Carolina General Assembly, legislators gave the Clean Water Management Trust Fund the ability to acquire "critical and time sensitive" projects through debt financing, thus providing a new means to finance some projects (Schell 2004). Figure 2 illustrates the division of grant funding among different types of projects.

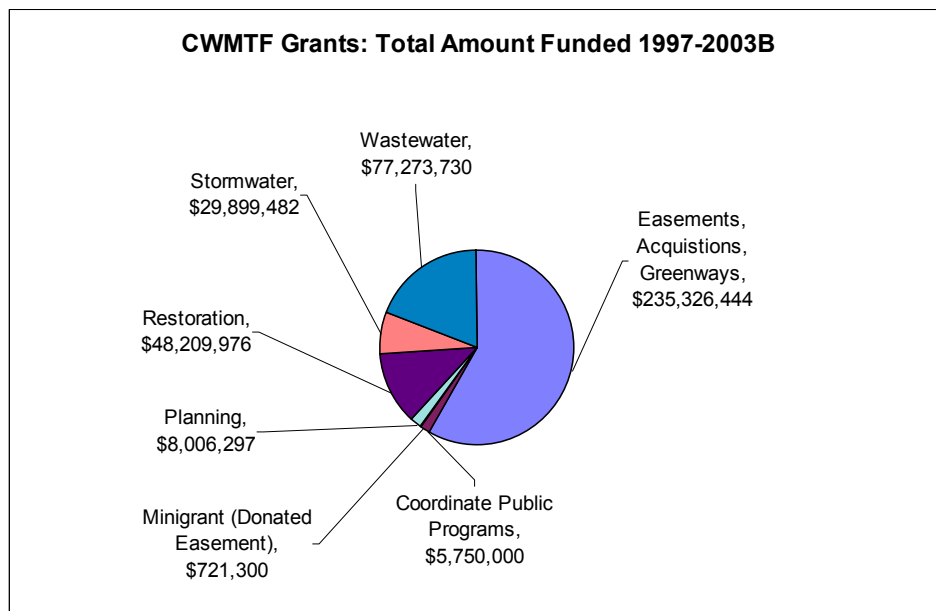


Figure 2: Types of Grants Funded for All Recipients During the 1997-2003B Cycles¹

¹ The 2003B cycle represents the grants completed, in progress or under contract during before August 2004.

The Clean Water Management Trust Fund has funded about half of all grants applications, and has met about 34 percent of funding requests (Howard and Holman 2005). While providing these grants, the Trust Fund has leveraged at least \$643.3 million from private sources and other public entities (Howard and Holman 2003). The projects funded by the Clean Water Management Trust Fund occurred across the state. Figure 3 and Figure 4 illustrates the locations of the grants funded in each watershed basin.² Additional maps illustrating grant distribution across the state according to each type of grant are available in the appendix.

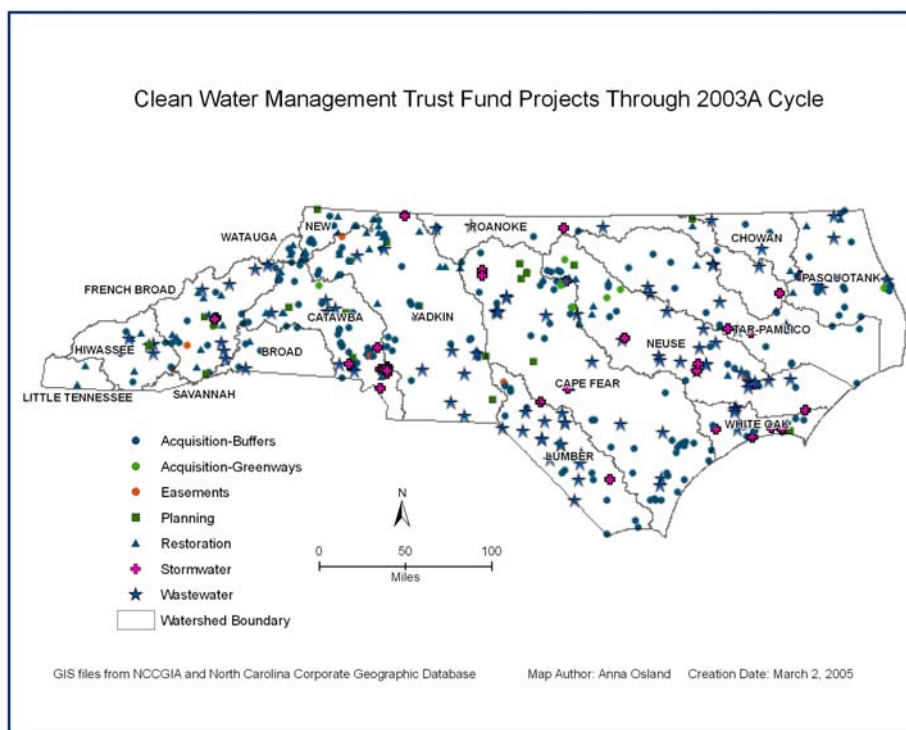


Figure 3: Clean Water Management Trust Fund Projects Distributed by Watershed Basin, 1997 Through 2003A Funding Cycle

² Through the 2003A cycle, the latest cycle for which GIS data is available from North Carolina Center for Geographic Information Analysis

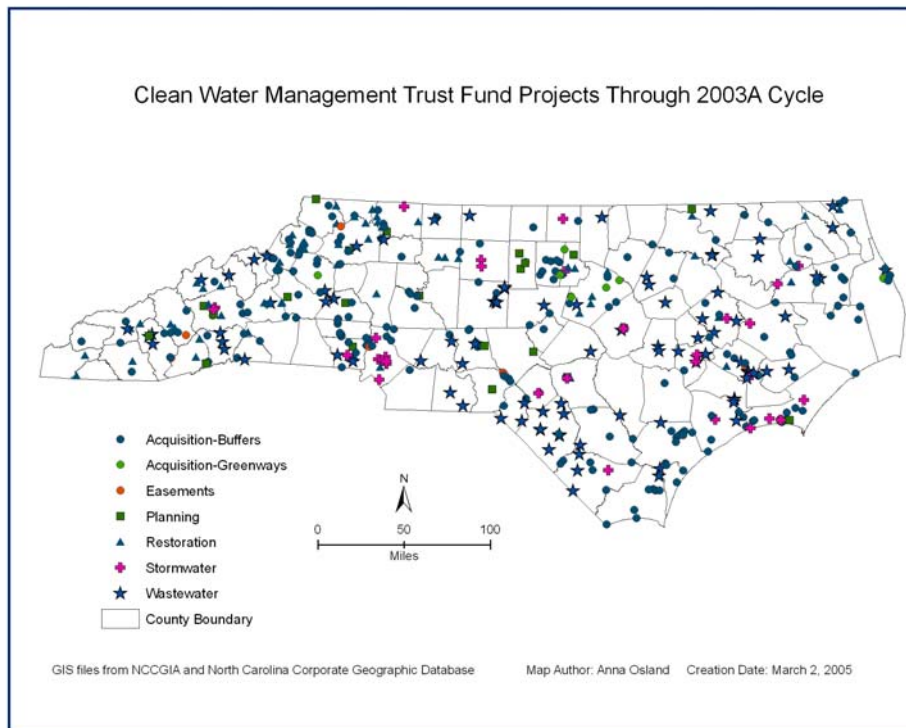


Figure 4: Clean Water Management Trust Fund Projects Distributed by County Boundary, 1997 Through 2003A Funding Cycle

Since its creation, the Clean Water Management Trust Fund has provided an important source of funding for water quality protection and pollution control across North Carolina. It has funded projects in 94 of North Carolina's 100 counties.

Why Evaluate Local Governments?

Understanding population growth and its corresponding impact on land use is important in order to understand and evaluate water quality. In North Carolina, local governments have the greatest control over land use decision making. Local decision-makers control impervious surface, stormwater runoff, wastewater discharge, stream buffers and development types through local development decisions. The Clean Water

Management Trust Fund is one option that local governments have to fund projects that protect water quality. Understanding how local governments implement Clean Water Management Trust Fund grants may provide insight into the success of the Trust Fund.

In order to understand the development pressures placed on land-use decision makers, it is important to see the context for growth and land-use change. In North Carolina, state population growth in terms of percent change and actual numbers is high. However, population growth in North Carolina has not corresponded with land use change; developed land has increased at almost double the rate of population growth (Coyne and Ouzts 2003). The North Carolina Public Interest Research Group (2003) estimates that, between 1982 and 2002, North Carolina population grew by 42 percent and developed land expanded by 82 percent (Coyne and Ouzts 2003). The loss of open space to development has significant implications for water quality. Changes in peak discharge and water quality due to development can have a negative impact on streams and rivers throughout North Carolina.

Land-use consumption is rapid within North Carolina's three largest urban areas, the Charlotte metropolitan area, the Raleigh-Durham Metropolitan area, and the Greensboro-Winston Salem-High Point Metropolitan area. In the Charlotte area, developed land increased by 92 percent from 1982-2002 (Coyne and Outzs 2003). In the Raleigh-Durham Metropolitan area, the Environmental Protection Agency (2004) estimates that land cover changed from 8 percent urban to 20 percent urban between 1975 and 2000 (EPA 2004). During this same period, both forest and agricultural land cover declined within the Triangle. The Greensboro-Winston Salem-High Point area also saw

similar change, increasing developed land by over 63 percent from 1982-2002 (Coyne and Outzs 2003).

However, metropolitan areas are not the only areas that have witnessed population growth and land use change. Of the 2.8 million acres of farmland and forest lost to development during the 1982-2002, just over half of the urbanization occurred in counties previously considered urban (Coyne and Outzs 2003). Land use change is occurring across North Carolina at a rapid rate.

Local governments manage population and land-use changes in both urban and rural North Carolina. The land-use change experienced throughout North Carolina has a strong impact on water quality. Different use of development management tools such as zoning, subdivision regulations, location of public facilities, conservation easements, taxation rates for different areas, and urban growth boundaries lead to the creation of different types of communities. The Clean Water Management Trust Fund is one source of funding for local governments in North Carolina to use for meeting goals of water quality protection. Understanding how both successful strategies and struggles that local governments have with Clean Water Management Trust Fund grants may improve Trust Fund grants as a source of water protection.

The Clean Water Management Trust Fund and Local Governments

The Clean Water Management Trust Fund provides grants to local governments, non-profits and state agencies to fund six types of projects. These projects include stormwater, acquisition and easements, wastewater, planning, restoration of degraded lands, and mini-grants for donated easements (up to \$25,000). Figure 5 shows total

funding to each group of applicants from the 1997 to the 2003B cycle. Figure 6 shows the number of grants provided to each group of grantees during the same grant cycles.

Local governments make up the largest group of grantees. The local government designation includes city governments, county governments, municipal governments, sewer and water authorities, and regional governments.

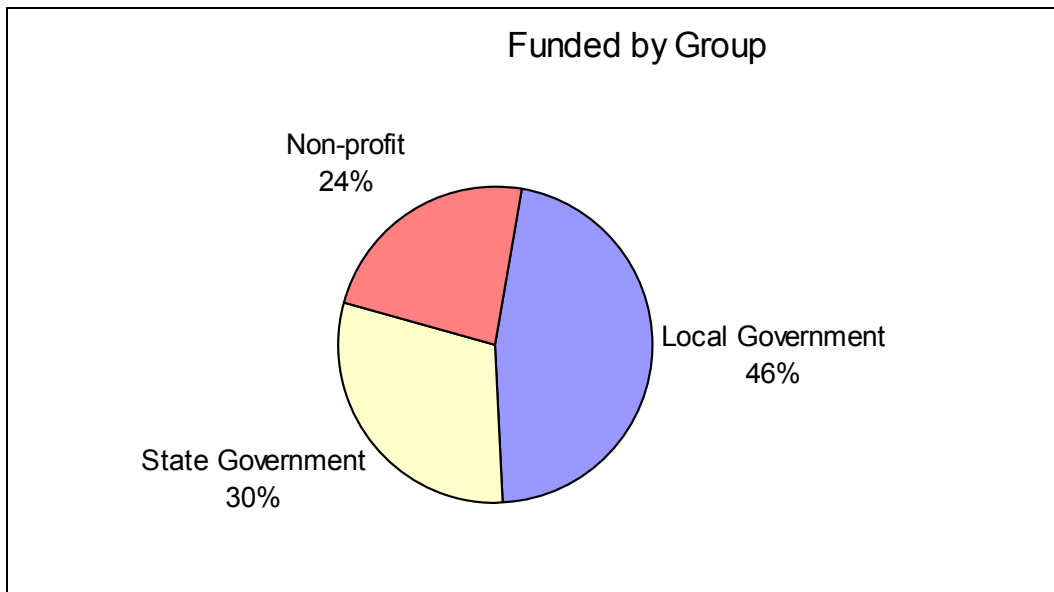


Figure 5: Amount of Funding (based on dollar amounts funded) Provided to Each Local Governments, State Agencies and Conservation Non-Profits During the 1997-2003B Cycle

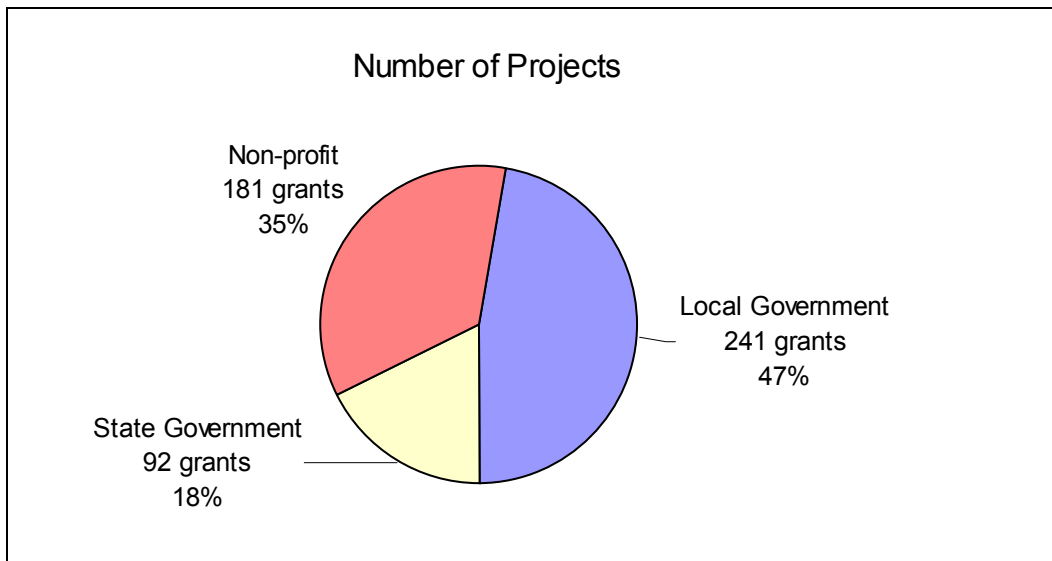


Figure 6: Total Number of Projects Funded to Local Governments, State Agencies and Conservation Non-Profits During the 1997-2003B Cycle

The ability for local governments in North Carolina to manage Clean Water Management Trust Fund grants is important to the success of the entire program. Historically, grants to local governments total almost 50 percent of all grants, both in terms of the number of grants and percent of money allocated. The Trust Fund has provided grants to local governments in 71 counties in North Carolina during the 1997-2003B funding cycles.

The role of local governments in grant management is important when considering post-contract grants withdrawn or grants unable to be completed. Although the total failure for all projects is low (about three percent or seventeen grants from 513 total grants), the largest group of grantees unable to complete the grant are local governments. Figure 7 shows the percentage of grant failures by each group of grantees from the 1997A to the 2003B cycle. When looking at the higher percentage of project failure by local governments, as compared to all grantees, it is important to note which

types of grants are the most commonly withdrawn. Figure 8 provides an illustration of the types of grants unable to be completed or withdrawn by all types of applicants.

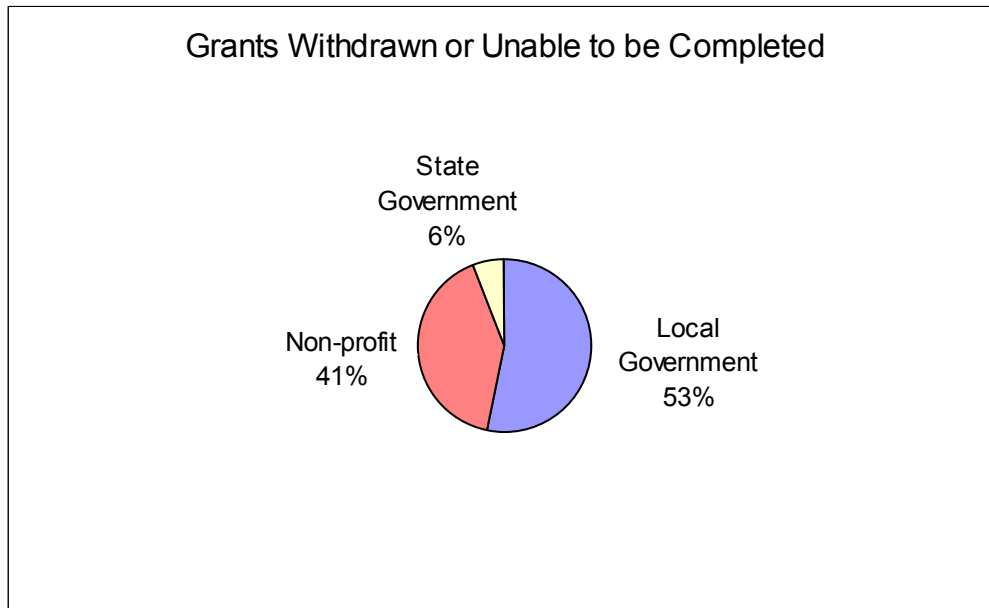


Figure 7: Post-Contract Grant Failure or Withdraw for Local Governments, Conservation Non-Profits, and State Agencies during the 1997-2003B Funding Cycles

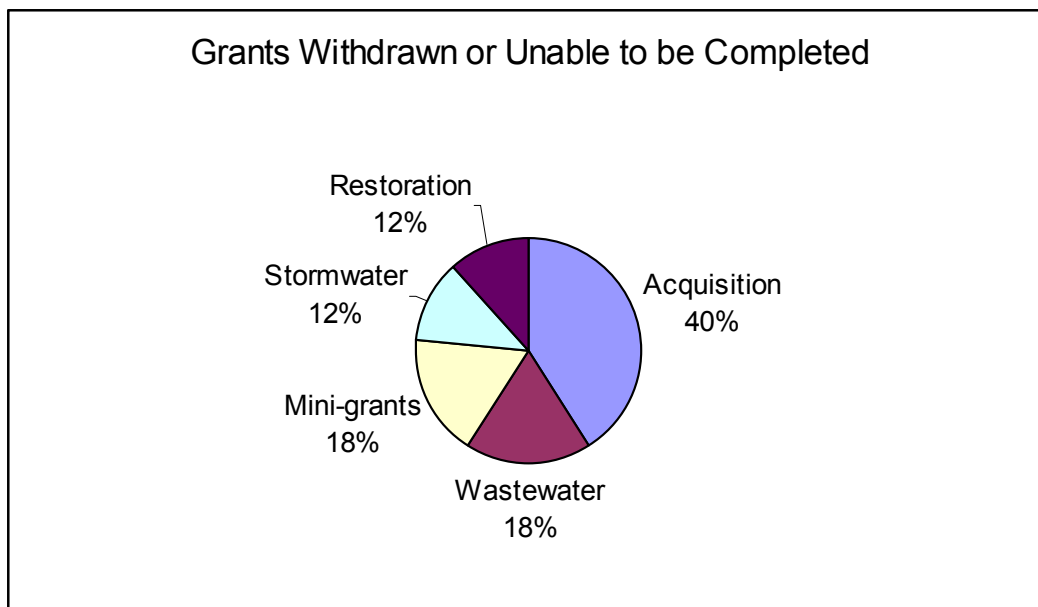


Figure 8: Types of Grants Withdrawn or Unable to be Completed by State Agencies, Local Governments or Conservation Non-Profits during the 1997-200B Funding Cycles

Grants applied for by local governments mimic grant failure. Local governments overwhelmingly apply for wastewater grants for sewerage or septic improvements. Acquisition projects are the second most applied for grant. Acquisition and wastewater grants are the largest groups for non-completed grants. Figure 9 demonstrates projects applied for by local governments. Figure 10 shows the percentage of grants applied for versus the percent of the total funded grants for each category funded by the Clean Water Management Trust Fund.

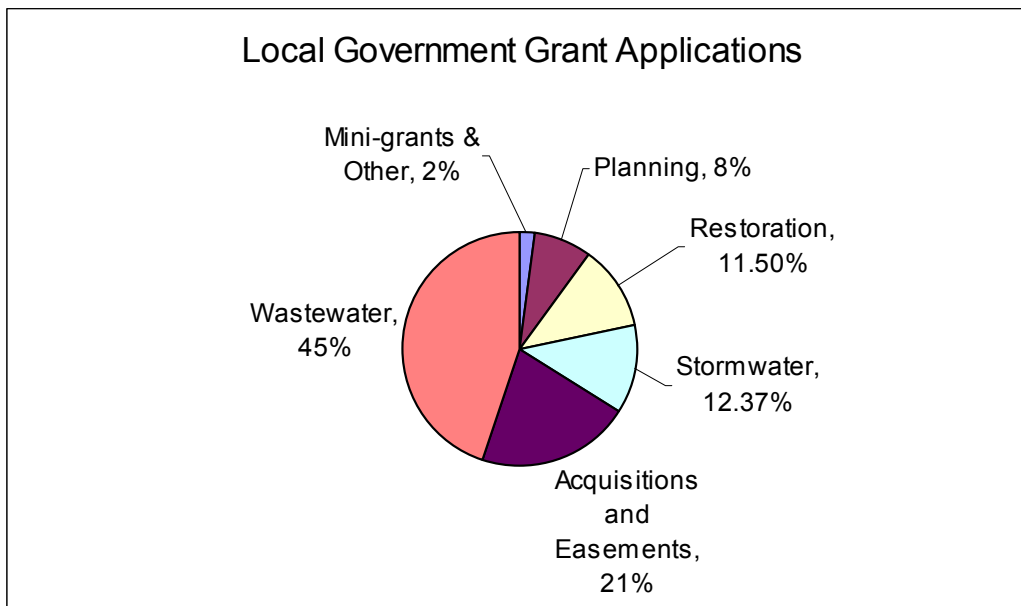


Figure 9: Local Government Grant Applications, 1997-2004A Cycles

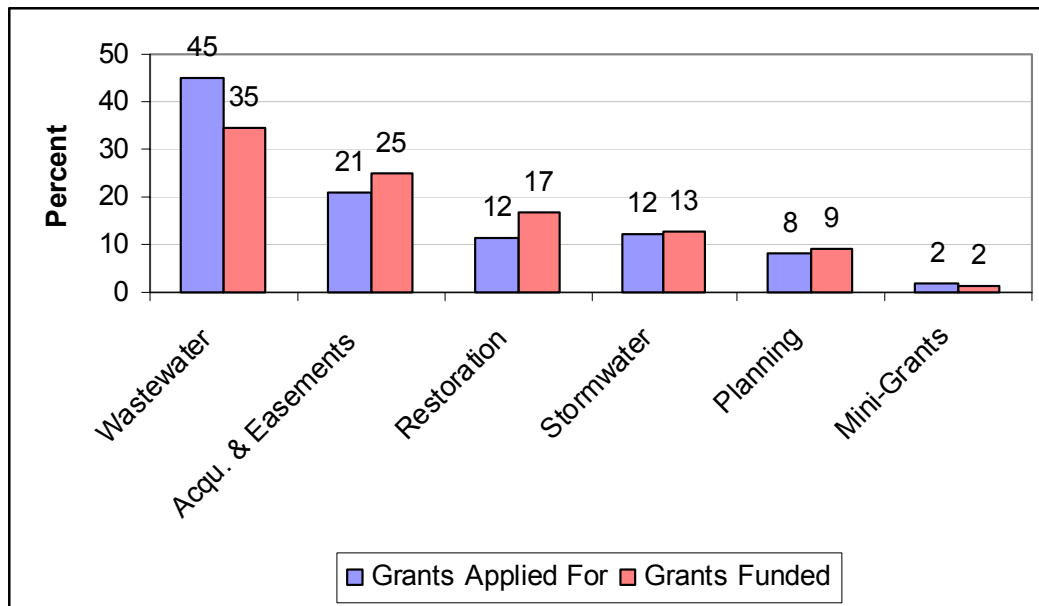


Figure 10: Percent of Grants Applied for by Local Governments versus Percent of Grants Funded to Local Governments During through the 2003B Funding Cycles

Local governments are most likely to apply for and to receive wastewater grants. However, Figure 10 illustrates that wastewater grants are more competitive than other types of grants. Wastewater grants appear to be more difficult to obtain, as percentage of applications is higher than percentage of grants received. It is more likely that a local government that applies for an acquisitions/easements or restoration grant will receive it. Stormwater, planning and mini-grants are awarded to local governments at about the same percentage rate as applications received.

In order to receive a grant, applicants are evaluated on their ability to “contribute toward achieving the principal objectives of the fund” (Annual Report, 2004). After submitting the grant, an initial evaluation assesses water quality benefits of the project and the project cost per pound of pollution prevented. The detailed scoring is based on the many factors that illustrate the differences between the impact of individual projects.

For example, the criterion includes such things as the pristine quality of water body, the reduction in pollutants due to the proposed project, and connectivity of the body of water with other High Quality Waters. After the Clean Water Management Trust Fund staff assesses a water quality score for each grant, the 21-member Board of Trustees reviews each grant individually. The Board then makes final decisions regarding individual project funding. Local government grantees have successfully proven the importance of their grants to water quality in North Carolina.

Evaluation of CWMTF grant implementation process

This project does not review the process for receipt of grants. Instead, it looks at the progress after grantees sign a contract and begin work on the grant. The project uses case files, surveys and short interviews for local governments in six counties. Initially, it was expected that case files would provide much of the information to review grant progression, as grantees are required to submit a quarterly report. However, the Clean Water Management Trust Fund does not require submittal of a specific quarterly report form; grantees make a judgment call on how to report progress. Reports can take the form of short summaries, descriptions of grant financial information, or newsletters. Only acquisition grants have a specific progress report; the North Carolina State Property Office requires grantees to fill out a report that tracks the acquisition process, as each step is completed, not on a quarterly basis. The wide variety of grantee reporting styles makes it difficult to use quantitative methods to review grant progress. As a result, this study uses a case studies analysis of the six counties.

County Selection

In order to evaluate the grant process for local governments, case studies of counties that had received high numbers of grants were used. The case studies involved an analysis of grantee project files, mail surveys, and interviews with local-government staff members in six counties. These counties were chosen based on the percentage of grants to local governments in the county out of the total grants provided by the Clean Water Management Trust Fund. Counties were initially organized according to the total number of grants that each county received. Table 1 illustrates the counties that received the largest number of grants.

Table 1: Counties with the Highest Total Number of Clean Water Management Trust Fund Grants 1997-2003B Cycle

County	Total Grants
Watauga	18
Wake	15
Carteret	14
Surry	14
Mecklenburg	14
Craven	13
Robeson	13
Pender	11
Wilkes	11
Gaston	11
Pitt	11

The number of grants to each county was then broken up into grants to each local governments, non-profit organizations, and state agencies. Table 2 illustrates the counties with the highest total number of grants to local governments.

Table 2: Counties with the Highest Total Number of Clean Water Management Trust Fund Grants to Local Governments 1997-2003B Cycle

County	Grants to Local Governments
Robeson	11
Mecklenburg	10
Pitt	8
Wake	8
Montgomery	7
Lenoir	6
Gaston	6
Craven	6
Surry	6
Randolph	5
Watauga	5

The list of total number of grants to all types of grantees was combined with the list of grants to only local governments to create a group of counties with the highest percentage of grants received by local governments. Counties with fewer than four grants, regardless of percentage of grants to local governments, were discarded from the case study. Table 3 illustrates counties where local governments received 60 percent or more of the total number of grants.

Table 3: Counties with the Highest Percentage of Grants Received by Local Governments (Excluding Counties with Fewer than Four Total Grants) 1997-2003B Cycle

County	Total Grants	Grants to Local Governments	Percent Local Government Grants
Montgomery	8	7	88%
Lenoir	7	6	86%
Robeson	13	11	85%
Johnston	4	3	75%
Nash	4	3	75%
Pitt	11	8	73%
Mecklenburg	14	10	71%
Randolph	7	5	71%
Cumberland	5	3	60%
Guilford	5	3	60%
Madison	5	3	60%

The top six counties were selected for additional investigation, including Montgomery, Lenoir, Robeson, Johnston, Nash and Pitt. Figure 11 illustrates the location of these counties in North Carolina.

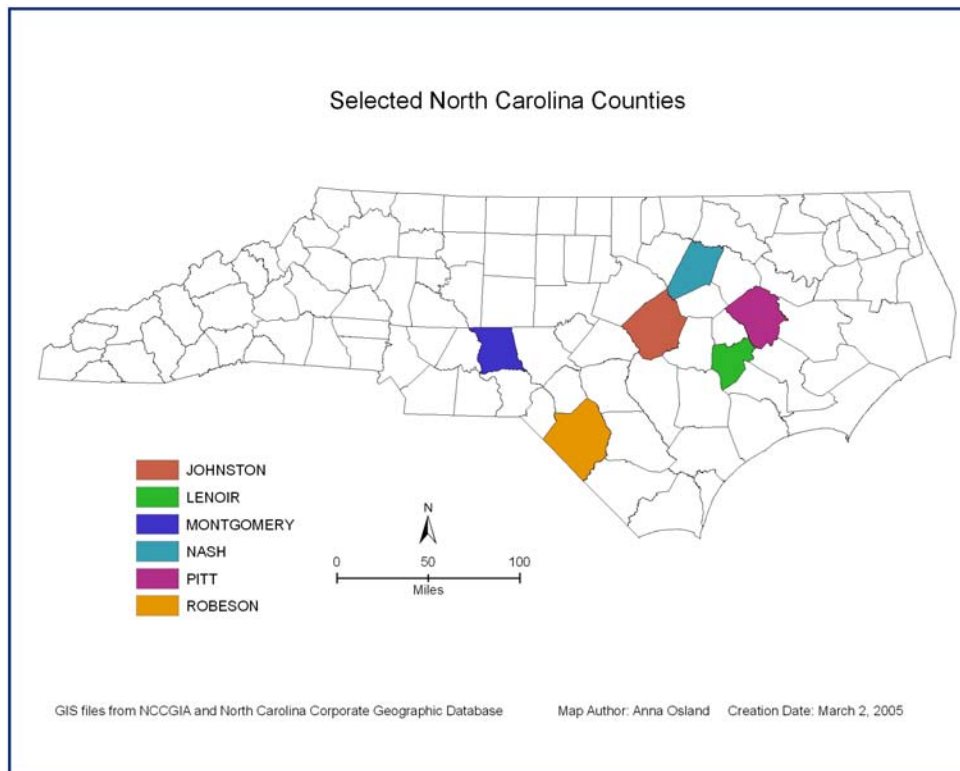


Figure 11: The Six North Carolina Counties Selected as Case Studies

Although these counties were chosen based upon the Clean Water Management Trust Fund grants to local governments, the counties portray a somewhat diverse selection of the State of North Carolina. The counties represent central, eastern and southern North Carolina. However, the selected counties do not include counties in the mountain region. The counties also represent diverse economic areas of North Carolina. According to the North Carolina Department of Commerce tier ranking for 1997-2003,

these six counties have consistently represented tier two through tier five³ (NC Department of Commerce 2004). Of the 40 grants to local governments in the selected counties, 21 projects were completed at the time of the study, three projects had been withdrawn, and sixteen projects remained in progress.

Case Study Methods

The grant data in these six counties ranged from 1997A, the first funding cycle, through the 2003B funding cycle. The methods for evaluating these projects included surveys, grant file evaluation and selected interviews. The Clean Water Management Trust Fund project files for each grant were initially evaluated. Additionally, a mail survey was sent to the grant contact for each grant. Finally, interviews to follow-up on select surveys were conducted with several grantees.

Project files containing all information on grantee progress by the Clean Water Management Trust Fund staff were evaluated in order to glean additional information on each grant. The grant files were scrutinized for information on the proposed duration for project implementation, letters of support for the project, original contract length, date of first reimbursement, number of months from contract signing to first reimbursement, number of extensions, and total number of extension months. Each file was also read to determine if other factors may have caused a need for additional time, hurdles to completion, or reasons for project success.

The survey gathered basic information from each contact person about the grant writing process through grant completion/current status of the project. The local

³ Tier five represents the highest wage standard in the State of North Carolina, tier one the lowest

government surveys provide information on grant implementation strategies that may not have been readily available in reading individual files. Of the 40 grants in the six counties studied, there were 25 different grantees; several local governments received more than one grant. Two of the grantees that received more than one grant had different contacts for two grants. The 27 different grantee contacts each received a survey. Twenty-four grant managers completed the survey and three did not return the survey. All surveys returned were generally complete; however, not all local governments chose to answer all survey questions. Project managers who had supervised several projects often returned only one survey, yet commented on all projects they managed.

In addition to the surveys and the project case files, follow-up phone interviews were conducted with grant managers who returned the survey with unclear answers, or did not initially return the survey. These interview were also carried out interviews with grant managers who had received several grants in order to clarify the information on the surveys. Grantees interviewed also on commented issues that may not have surfaced in the mail surveys or project case files.

Study Results

The study indicates that a common problem for local governments to overcome is matching funding. Other findings indicate that grant implementation proceeded slower than grantees expected in the application; many grantees needed several lengthy extensions to complete the project. The extensions were particularly true with grantees that used third-party managers for grant implementation. Additionally, the study found that grantees used outside help during both grant application and implementation.

Grantees received community input and support by town residents and politicians, as well as grant writing assistance from many different sources (Table 4).

Table 4: Survey and Case File Findings Regarding Grantee Practices

	Total Applicants	Grants Completed	Grants in Progress	Grants Withdrawn
Matching Funding Before Applying	40	15	11	2
No Matching Funding Before Applying		6	5	1
Single manager for life of grant	40(12 have not submitted a progress report that details project manager)	21	4	3, no information
Several managers		0	0	
Third Party Manager	40, (12 have not submitted a progress report that details project manager)	11	2	3, no information
Recipient Manager		10	2	
Letters/ news articles showing community support	40	11	4	0
No letters/ news articles showing community support		10	12	3
Use of Community participation	40, (5 no answer)	12	11	3
No use of community participation		5	4	0
Grant writer from local government staff	40, (2 no answer)	6	9	3
Grant writer not from local government staff		13	7	0

Table 4 (Continued)

	Grantees with extensions*	Grantees without extensions
Matching Funding Before Applying	12	5
No Matching Funding Before Applying	7	0
Single manager for life of grant	19	5
Several managers	0	0
Third Party Manager	12	1
Recipient Manager	7	4
Letters or News Articles showing Community Support	8	5
No Letters or News Articles showing Community Support	11	0
Use of community Participation**	14	1
No Use of community participation	1	4
Grant writer from local government staff***	8	0
Grant writer not from local government staff	9	5

*21 grantees have completed the grant; 3 more have extended but not completed the grant

** 5 grantees did not answer this question

*** 2 grantees did not answer this question

Matching funding is not a requirement for obtaining a Clean Water Management Trust Fund grant; however, the majority of grantees (28 of 40 grantees) found matching funding before applying for the grant. Although almost three-quarters of the local governments did have matching funding before applying for the grant, some of this matching funding was in the form of in-kind work. The survey and case files indicate that matching funding prior to grant application may have contributed to grantee success. All grantees that applied without matching funding were unable to complete the grant

without extensions, while grantees that applied with matching funding were somewhat more successful. Additionally, when survey participants were asked about the necessary elements for project success, many responses related to funding (Table 5).

Table 5: Elements necessary for project success (issues receiving the highest number of responses)

Rank	Issue ⁴ (responses)
1	Additional funding for project (11)
2	Participation of town residents (community awareness/acceptance) (8)
3	Good project design/planning (7)
4	Provide project administration/staff time for administering grant (6)
5 (tie)	Competent constructors/contractors (4)
5 (tie)	Engineering expertise and communication with local government (4)

Interviews with selected grantees also corroborated that funding issues were a problem before receiving the grant or if funding needs changed during the grant process. In the seven interviews, all grant managers stated they felt limited in their ability to find additional funding if the Clean Water Management Trust Fund grant did not prove sufficient; several noted that additional funding outside of the original project expectations and scope became necessary to complete the project.

Much of the rationale behind the suggested elements for a successful project stem from experience with grant delays. Information on completed and in-progress grants showed that the grant progression towards completion often proceeded slower than expected by both grantees and by the Clean Water Management Trust Fund. Table 6 illustrates grant progress in the selected counties. Those counties with grants that had not

⁴ This table is a result of an open-ended survey question. Respondents were asked to state the three things necessary for project success. The rank refers to the issue with the highest number of responses. Twenty grant managers responded to this question.

yet reached the contract completion deadline are not included in the summation for months of extensions.

Table 6: Grant Progress According to Case Files

Progress	Months
Average proposed contract duration (by grantee)	18
Average grant completion time allocated in original contract	21
Average number of months to first reimbursement	15
Average number of months of extensions	15
Median number of months of extensions	12

Of the 40 grants, 20 received one or more extensions. Extension ranged from six to 44 months, with an average extension of fifteen months and a median extension of twelve months. The survey and case file assessment indicate that third-party managers have a higher percentage of grant extensions than grants managed directly by the grantee. Additionally, grantees with low community support in the form of letters or newspaper articles also appear to have more extensions. Grantees that used community participation, such as meetings, emails, mailings or other means of participation did not appear to have a difference in amount of extensions from those grantees that did not use community participation.

Reasons for extensions often stemmed from delays encountered soon after signing the contract. Delays included problems with bidding for the construction contract, engineering firms who postponed initiating the project, issues with field data collection and obstructions to obtaining permits. Scott Stevens, from the City of Kinston stated,

We have had several grants, but the Clean Water Management Trust Fund Grant is the easiest to apply for. That means I can apply without having the permits. You don't really want to get a grant that you can't do. In terms of permits that means that you need to know the real time that you need in order to get them. A grant proposal of 1-2 years might not be enough.

Stevens noted that understanding how the permitting process works helps in understanding the real time necessary for grant completion.

Along with the initial delays, grantees encountered delays later in the process. Hurricane Floyd (September 1999) necessitated postponement of grant progress as local governments labored to regain basic community functions. One community did not notice the impending deadline until receiving a notice that the contract ended in three months. Another community tried to obtain easements, yet ended up in a lengthy court battle. Other grantees trying to accomplish easements underestimated the many steps necessary to completing easements. Ken Tippet, from the City of Greenville, stated that local governments should “be prepared to commit staff resources and time to the effort, recognizing that property acquisition can be time consuming.”

Both project files and survey data illustrate that many local governments did not execute the project themselves. Project files detailed that for fourteen of the 25 completed or in-progress grants, grantees used an outside engineering firm to manage the project. Ten grantees implemented the project themselves, and one grantee had worked in conjunction with Eastern Carolina University. This data parallel information provided in surveys, which indicated that many grant applications were filled out by engineering firms (Table 7)

Table 7: Illustration of the groups filling out applications for Clean Water Management Trust Fund grants to local governments within survey population

Affiliation of Grant Author	Number	Percent
Engineering Firm	11	45%
Staff Member	10	41%
Volunteer	1	4%
Separate Government Agency	1	4%
Non-Profit Organization	1	4%
Other	0	0%

However, all grantees kept a single point person or manager throughout the entire grant process. This manager may have worked for the local government or for an outside entity. The continuity of grant managers, regardless of employer, may help with understanding the project specifics and in facilitating grant completion.

Additionally, the study showed that many local governments in these six counties had significant community backing. Fourteen of the grantees had letters of support or newspaper articles about the project in their files. Letters originated from local, state, and national politicians, from business people, and from local citizens. News articles had been published in local and statewide newspapers. These news stories documented the application for, receipt of, and progression of grants. Moreover, all but nine projects had incorporated either meetings, emails, mailings, or a combination of these processes to gather information from and inform local citizens about the grant. Grantees ranked community support second, after matching funding, for suggestions to enhance project success (Table 5).

Effectiveness of Grant Implementation Process

Local governments have been largely successful as grant recipients; however, some practices may increase grantee success. Strengths include maintaining project managers for the duration of the grant and community support for projects. However, lack of matching funding to complete projects and lengthy project extensions hinders the success of local governments.

Project execution by local governments was often outside of the direct influence of local government managers; many local governments in the case study outsourced

project management to other entities. In these grants, project managers, regardless of their affiliation, stayed for the life of the grant, providing continuity during grant implementation. This practice seems to present managers with the ability to have a strong understanding of the grant progression. However, as engineering firms implement many wastewater, restoration, and stormwater projects, these firms should be more strongly included in the grant application process. Additionally, subcontracting to third parties may leave local governments without the knowledge of grant progression, even as a single project manager (from an engineering firm or other) has strong understanding of the grant progression. Engineering firms or other third parties involved in the project should be included into the scope of grant progression reporting as well.

The use of citizen participation by the majority of the grantees may illustrate that informed and active citizens assist local government in obtaining a grant. However, citizen participation through meetings, mailings, emails or other practices was judged only from the standpoint of local governments and did not portray the view of citizens in areas with Clean Water Management Trust Fund grants. The letters of support from politicians and newspapers articles may indicate that an informed community will better support the entire grant process.

Grantee surveys indicate that finding matching grant funding is difficult for many local governments. The Clean Water Management Trust Fund does not guarantee full funding for grant projects; in fact, it considers matching funds as a positive factor in grant decisions. However, consideration of grantee shortfalls is important; instructing local governments on how to find additional funding may facilitate timely grant completion. Conversations with local officials indicate that real knowledge of project funding needs

was not always clear prior to beginning the grant. First time grantees may underestimate the time necessary for permitting and completing the necessary bureaucratic steps, thus leading to delays later in the process. Additional preparation by local governments might decrease this need while also increasing grant implementation speed.

The Clean Water Management Trust Fund provides grants for several kinds of projects. The large differences among projects and the uniqueness of each grantee made assessing progress difficult. Without a uniform progress report that enables personnel at the Clean Water Management Trust Fund to see how projects are proceeding, it is difficult to gauge when problems are occurring among different grantees. In order to assist local governments that have run into problems with grant implementation, a better understanding of how grant implementation proceeds on a larger scale is necessary. Excessive extensions and unnecessary delays might be bypassed through a better understanding of the grant implementation process. Although the staff has always included a requirement for progress reporting in grant contracts, there is often little or no information in grantee files on project progression.

This deficit of information may be due, in part, to the lack of a consistent system for grantees to follow when making progress reports. Asking for a quarterly report, is very general and can be interpreted differently by many people. The acquisition projects do have a progress report set up by the North Carolina State Property Office, which works with the Clean Water Management Trust Fund staff to ensure appropriate steps are taken during acquisition and easement projects. However, all other projects lack a specific reporting system. In order for staff to better oversee the grant process, it would be advisable to put a more concrete system in place for grant monitoring.

The inherent trust by early Clean Water Management Trust Fund staff that local governments were completing their grant led a few local governments to slip beyond appropriate time limits for grant completion. The present staff has set more restrictions for grantees to obtain contract extensions. As current projects reach contract deadlines, grant progression under the more restrictive system may show improvements in timely project completion.

Reasons for Shortfalls

Shortfalls in meeting project deadlines can be attributed to many factors. Bureaucratic issues that may have stymied early grantees may have changed as the Clean Water Management Trust Fund has required more concise and specific applications over the last eight years. However, local governments share much of the burden for increasing their effectiveness and completing grants in a timely fashion.

The Clean Water Management Trust Fund has made efforts to reach out to local governments and new staff and additional time as a funding agency has streamlined some processes that may have initially seemed cumbersome. The original grant application did not contain some of the questions that the current application requires. The application for grants has become more specific and grantees are required to demonstrate a higher level of efficiency before the contract begins. Grantees who applied under the new application are more recent and less likely to have reached the grant completion deadline. An evaluation of the implementation strategies used by newer grantees may provide additional insights into other needed changes or practices that have proved successful.

Other implementation shortfalls relate to programmatic deficits. Several local governments did not plan sufficient time for obtaining permits, required field data, lack of sufficient funding or other necessary requirements. This lack of planning resulted in the need for additional time and contract extensions. The Clean Water Management Trust Fund staff expects a high level of efficiency by grantees, yet the extensions illustrate that grantees may need additional structure. Similarly, many first time grantees may not realistically understand the time, labor, and funding necessary to coordinate permits, field data collection, and other project objectives.

Study Limitations

This study is limited in scope. Although the project aimed to look at successful programs, available resources limited the selection process. This study examined counties with large numbers and percentages of grants to local governments. Future studies could evaluate specific grantees who have obtained a large number of grants. Additionally, a more specific reporting system would provide Clean Water Management Trust Fund staff with an improved ability to identify problematic issues and recognize areas of strength.

Time and resources also limited the ability to identify which local governments have not applied for Clean Water Management Trust Fund. As local governments have many priorities and options, random polling of all local governments who had not applied for a Clean Water Management Trust Fund grant seemed unlikely to produce tangible results.

Grant recipients who applied for a grant, yet did not receive such a grant were similarly dismissed as inappropriate for study. The appropriations to the Clean Water Management Trust Fund by the North Carolina General Assembly changes from year to year. Grantees who one year did not receive a grant perhaps would have remained eligible during a funding cycle with additional funds available. Furthermore, grantees who did not receive a grant in one cycle may also have reapplied and obtained a grant in a later funding cycle, thus remaining included in the study.

The lack of a specific quarterly report hindered the ability to make comparisons among a larger group of grantees. Although the Clean Water Management Trust Fund does require a quarterly report from all grantees, the subsequent reports delivered by grantees range in quality. Some grantees submit letters describing progress, other only financial statements of progress. Without such a standardized report, understanding individual grants is limited by time constraints required for reading each file.

Options and Alternatives

In order to address local government needs and create better partners for the Clean Water Management Trust Fund, there are several suggestions for grant management changes. These suggestions include the following: (1) a more detailed progress reports that include timelines and progress along the timeline; (2) workshops for local governments run by previous grant recipients; and (3) community involvement in all grants throughout the life of the grant. These suggestions stem from review of grant programs in other states and other North Carolina programs that provide grants to local governments.

A progress report that includes a timelines to map out general details will allow new grantees to better illustrate expected and real progress while providing Clean Water Management Trust Fund staff with the ability to highlight where grantees encounter time-consuming programmatic issues. As the grant progresses, detailed progress reports could refer to the timeline and update it as necessary. This will allow both grantee and grantor to view progress slippages and allow for corrections. Grantees requiring permits should also include information on expected time for permitting within the timeline. Permitting was one item that slowed grant progression. EPA-319 grants, North Carolina Rural Economic Development grants, and North Carolina Hazard Mitigation grants use detailed progress reports. The two later grants also include a check-sheet for how grant progression is occurring—both fiscally and in accordance with the proposed timeline. The Great Outdoors Colorado program uses progress reports only for communities that have been unable to meet project deadlines (Wesley 2004). Florida Forever uses stewardship monitoring reports only (Demetropoulos 2004). The Florida Forever report includes timelines and check-sheets for deadline completion of monitoring activities. For the Clean Water Management Trust Fund, an online report that is automatically recorded into a database would require few staff hours to compile information.

A program where current grantees mentor new grantees or do short workshops for potential grantees may provide potential grantees with realistic understanding of the real time necessary for grant completion. Grantees that have completed projects have insight into how to overcome permitting or other programmatic hurdles. The information sharing that result from mentoring or short grant management workshops will better equip new grantees to complete their project. Additionally, it may help local

governments learn how other grantees have financed the matching funding part of their project. The North Carolina Department of Hazard Mitigation provides sample applications on the website for applying grantees. North Carolina Rural Economic Development Center, Florida Forever, and Great Outdoors Colorado do not have workshops done by past grantees, but do have staff specifically assigned to local governments who are able to answer questions specific to their needs.

In addition to more detailed progress reports, continued use of community support and awareness throughout the life of the grant appears to be useful in promoting grant success. The high community support for the grantees in the study illustrates that local governments are aware of the importance of including community members from local citizens to national politicians. Community support may push grantees to do better work by increasing accountability. Project support also assists in situations where obstructions to project success impede progress. Political officials and members of the community can assist project managers overcome barriers and facilitate continued success. Additionally, when community members are aware of projects, there may be more interest in observing grant completion.

Many other grant-providing organizations require use of community support. For North Carolina Hazard Mitigation grants, community meetings are a required aspect of the grant (Young 2004). The Florida Forever program provides a published list of potential grantees (Florida Forever 2004). The public can therefore comment on potential areas for acquisition while also becoming knowledgeable of grants in their area. Other grant providing organizations suggest community input, but do not require it.

The North Carolina League of Municipalities and North Carolina County Commissioners are investigating the creation of a partnership whereby the Clean Water Management Trust Fund or project applicants will alert them to projects applied for within their area (Holman 2004). Although the idea for this partnership shows that local governments have an interest in land use changes occurring nearby, it also will provide additional community awareness and support for grantees. The use of community support, specific quarterly reports, and a mentoring program may help grantees overcome the hurdles to grant completion. These systems may increase grant management capacity for local governments.

Conclusions

Although there are a few areas for improvement, the Clean Water Management Trust Fund and local governments have thus far made successful partners. Local governments receive the largest number of grants and have a high completion rate for all grants. The grantees in the study demonstrated the following strengths: (1) project managers that, regardless of their affiliation, stay throughout the life of the grant; (2) citizen awareness and knowledge of the grant; and (3) ability by to find matching funding prior to applying for the grant.

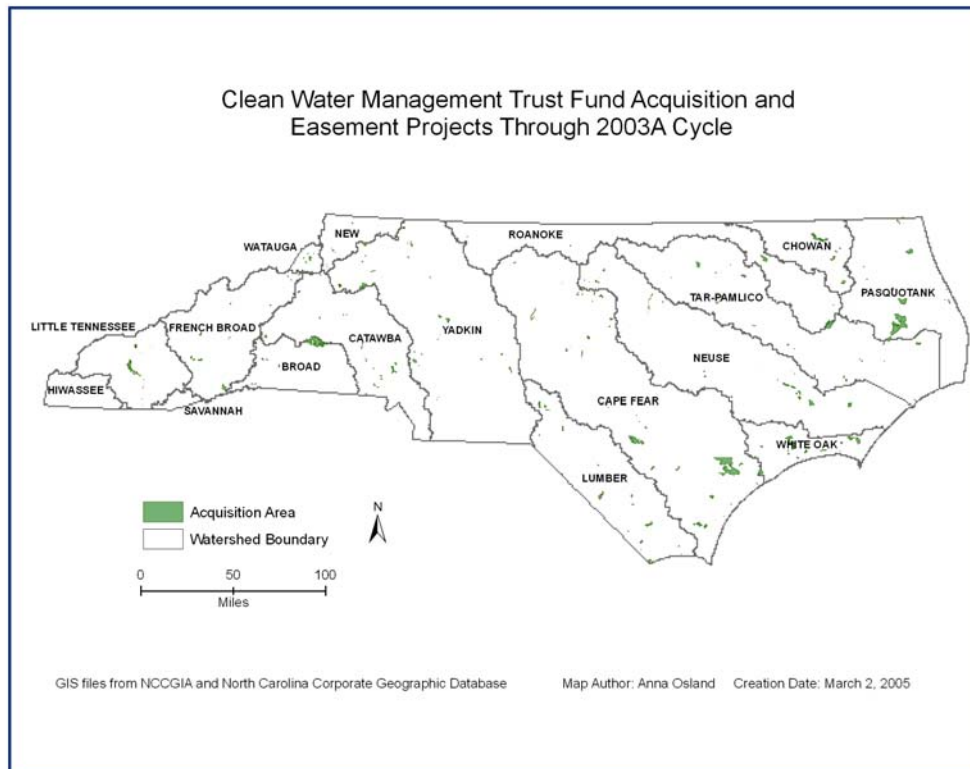
However, the study also uncovered the following weaknesses in the partnership between the Clean Water Management Trust Fund and local government grantees: (1) lack of capacity by local governments to find additional funding if project costs changed; and (2) inability by grantees to complete grants in a timely manner. Suggestions for improving these weaknesses include the creation of a program where previous grant

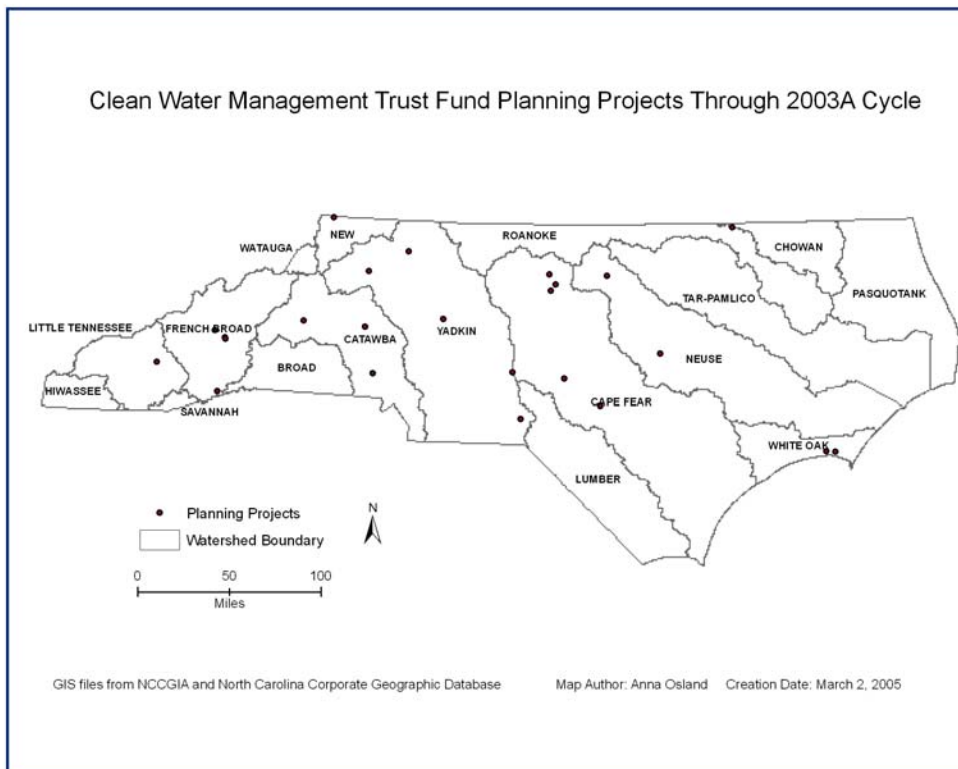
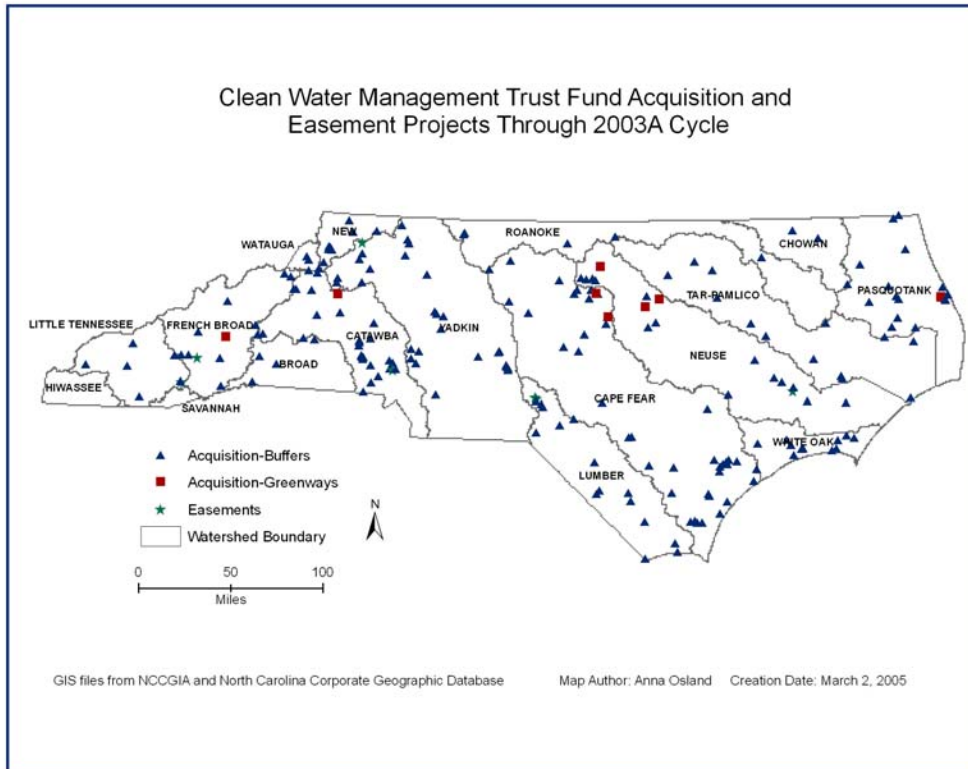
recipients mentor grant applicants, and continued use of citizen participation throughout the life of the grant. Additionally, the use of an improved reporting that includes a timeline and repeatedly updated information on why timeline goals are not completed may flag potential delays early in the grant implementation process.

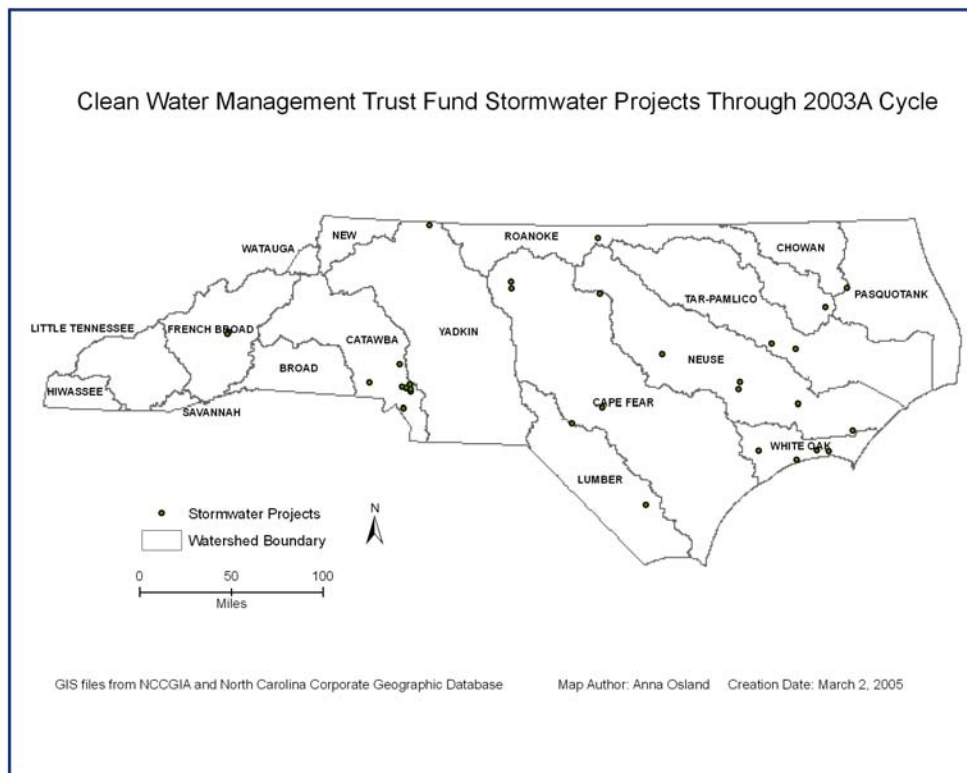
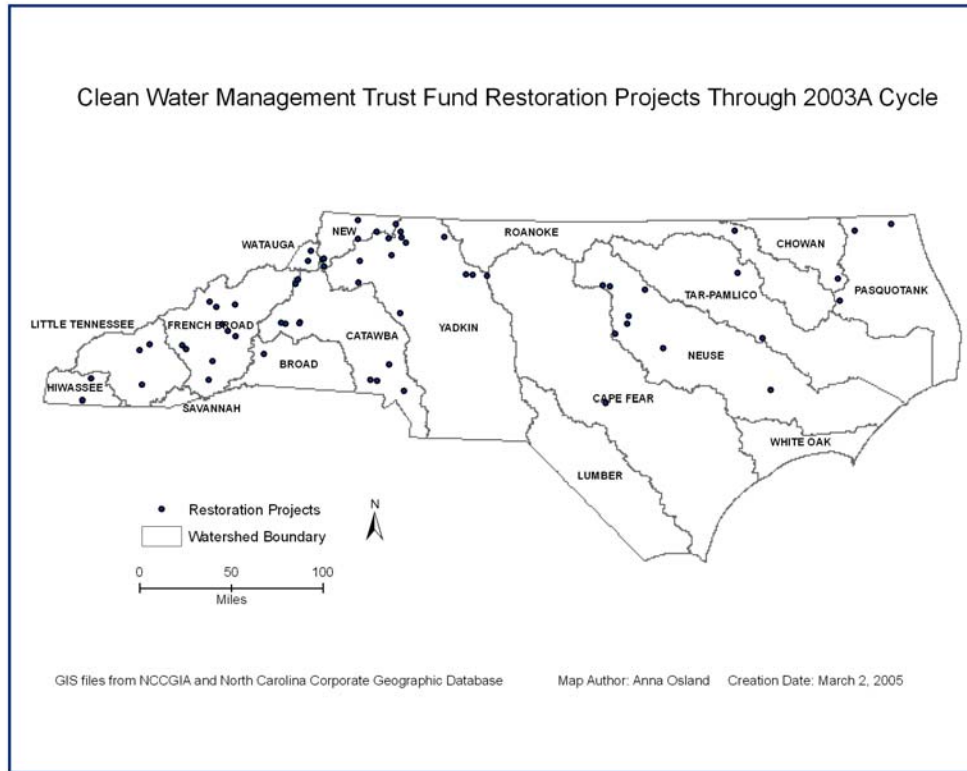
Further study of local governments in the other North Carolina counties will indicate if local government grantees in other counties have similar needs to those within the six counties in this study. The use of a standardized quarterly report will improve the ability of future studies to distinguish differences in grant management among grantees and indicate areas of strength. Facilitating change of the few identified problems will enable continued water quality protection and pollution control in North Carolina.

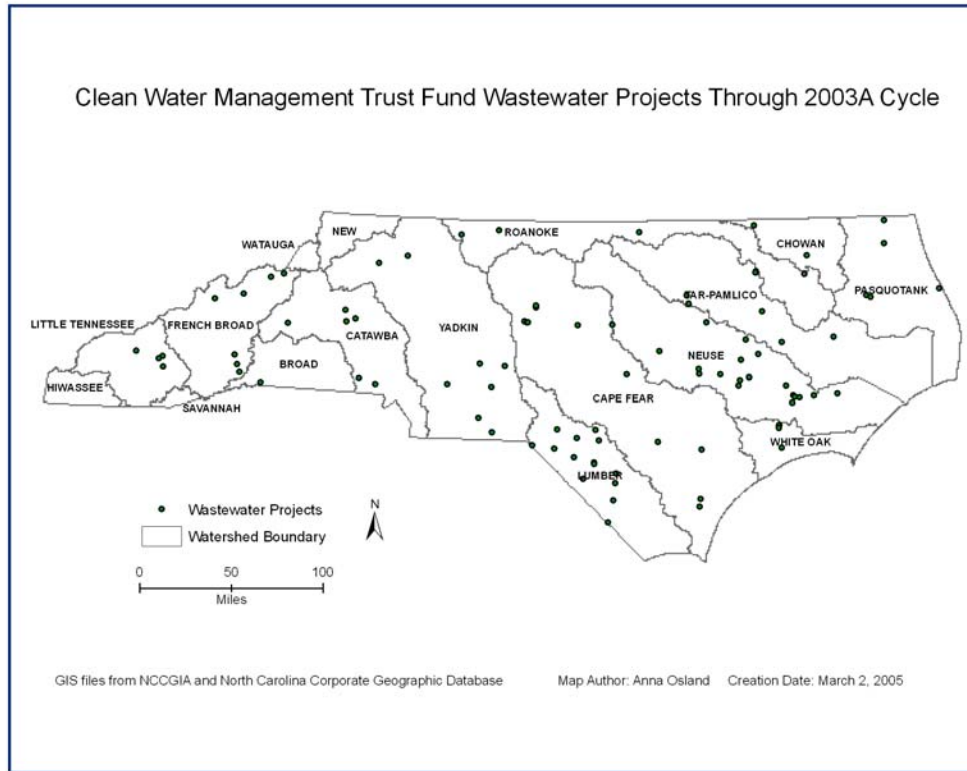
Appendix

Grants funded for acquisition and easements, planning, illustrated by location within major North Carolina watersheds









References

- Associated Press. (1996). River's Fate Hangs on Weather; [Final Edition], Greensboro News Record. Greensboro, N.C. July 21; pp B3.
- Bollens, Scott A. 1992. "State Growth Management: Intergovernmental Frameworks and Policy Objectives," *Journal of the American Planning Association*, 58 (Autumn), 4.
- Berke, Philip R., Kartez, Jack, Wenger, Dennis. 1993. "Recovery After Disaster: Achieving Sustainable Development, Mitigation and Equity," *Disasters* 17, 2.
- Burby, Raymond J., May, Peter J. 1998. "Intergovernmental Environmental Planning: Addressing the Commitment Conundrum," *Journal of Environmental Planning and Management*, 41 (Summer), 1.
- Burby, Raymond J., May, Peter J., Paterson, Robert C. 1998. "Improving Compliance with Regulations, Choices, and Outcomes Local Government," *Journal of the American Planning Association*, 64 (Summer), 3.
- California Environmental Protection Agency. 2004. "2003 Consolidated Grants," State Water Resources Control Board. July 30.
www.swrcb.ca.gov/funding/consolidgrant/html
- Chase, Diane. 2004, July 23. Maryland Environmental Trust. Personal Communication
- Clean Water Management Trust Fund. 2004. "North Carolina Clean Water Management Trust Fund." May 12. www.cwmtf.net.
- Cochran, John. (1996). Budget Vote Set for Today Long-Winded Legislators to Reconvene; [All Edition], Greensboro News Record. Greensboro, N.C., August 3; pp. B1.
- Coyne, William and Elizabeth Ouzts. (2003). *Losing Our Natural Heritage: North Carolina's Disappearing Open Spaces*, *NCPRIG Education Fund*. Chapel Hill, NC.
- Demetropoulos, Linda. 2004. Florida Conservation Trust/Florida Forever. Personal Communication, July 2004.
- Dew, Joe. (1996). Strict Hog Measure Gets Final OK, News and Observer. Raleigh, N.C. June 21; A1.
- 1996b. Negotiations Near Accord on Environmental Spending, News and Observer. Raleigh, N.C. July 27; A3.

- Environmental Protection Agency. (2003). Applying for and Administering CWA Section 319 Grants: A Guide for State Nonpoint Source Agencies, *State- EPA NPS Partnership, Grants Management Work Group*.
www.epa.gov/owow/nps/guide.html.
- 2004. "Raleigh-Durham Indicators," U.S. Environmental Protection Agency.
www.epa.gov/urban/rdu/indicators.htm. 2004, June 22.
- Florida Communities Trust. (2004). Florida Forever Programs. www.dca.state.fl.us/ffct.
2004 August 4.
- Florida Department of Environmental Protection. 2004. "Florida Forever" 2004, May 11. www.dep.state.fl.us/lands/acquisition/FloridaForever/faq.htm. 2004 June 15.
- Florida Office of Environmental Services. 2001. "Florida Forever: Five Year Plan," Board of Trustees of the Internal Improvement Trust Fund.
- Gale, Dennis E. 1992. Eight State-Sponsored Growth Management Programs: A Comparative Analysis," *Journal of the American Planning Association*, 58, 4.
- Great Outdoors Colorado. 2004. "Colorado Lottery Dollars: Great Outdoors Colorado." www.goco.org. June 24.
- Greensboro News Record Staff Editorial. (1996). Clean Water Trust Needs Purification; [All Edition], Greensboro News Record. Greensboro, N.C., June 9; pp F2.
- Holman, Bill. 2004. Forwarded email from Paul Meyer. July 12, 2004.
- Howard, Robert and Bill Holman. (2003). Memorandum regarding Clean Water Management Trust Fund Annual Report. December 29. Raleigh, NC.
- Howard, Robert and Bill Holman. (2005). Annual Report to the North Carolina Environmental Review Commission. January 13. Raleigh, NC.
- Hurley, Janet M., Ginger, Clair, Capen, David E. 2000. "Property Concepts, Ecological Thought, and Ecosystem Management: A Case of Conservation Policymaking in Vermont," *Society and Natural Resources*, 15: pp 295-312.
- Hunt, Nichols Clash on Plans to Protect the State's Rivers; [All Edition], Greensboro News Record. Greensboro, N.C., May 22, 1996; pp B2.
- Leavenworth, Stuart. (1995a). Health Warning Issued for Part of the Neuse, News and Observer. Raleigh, NC; Oct 7; pp A1.

- (1995b). State Officials to Unveil Steps for Cleaning up Neuse, other rivers; [Final Edition], News and Observer. Raleigh, N.C. October 12; pp A1.
- (1996a). Pollution Starts at Home, *News and Observer*. Raleigh, N.C. March 3, pp. A1.
- (1996b). GOP Offers Water Proposal; [Final Edition], News and Observer. Raleigh, N.C. May 16; pp A3.
- (1996c). Ailing Neuse Showing Signs of Last Years's Lethal Problems; [Final Edition], News and Observer. Raleigh, N.C. July 20; pp A1.
- Leavenworth, Stuart and Lynn Bonner. (1995). Dramatic Fish Kills Trouble Scientists, News and Observer. Raleigh, N.C.; A1.
- Leavenworth, Stuart and James Rosen. 1996. Condition of Neuse Remains Notorious, News and Observer. Raleigh, NC; B1.
- Lyons, J.R. 1997. "Urban Ecosystem Management: Bring Science and Policy Together," Urban Ecosystems, 1, pp: 77-83.
- Maryland Environmental Trust. 2004. "Maryland Environmental Trust, www.dnr.state.md.us/met/index.html. July 8
- North Carolina Department of Commerce. 2004. "North Carolina County Profiles," Economic Development Information System. <http://cmedis.commerce.state.nc.us/countyprofiles>. June 18. County Profiles for Johnston, Montgomery, Nash, Pitt, Robeson, and Lenoir Counties.
- "County Tier Designation," 2004. Commerce Finance Center. www.nccommerce.com/finance/tiers/. June 18. Tier information for 1996-2004.
- North Carolina Emergency Management. 2004. "Hazard Mitigation in North Carolina," www.dem.dcc.state.nc.us/mitigation/index/htm July 7.
- North Carolina Rural Economic Development Center. 2004. "Water and Sewer Grants Programs: Building Healthier, More Prosperous Rural Communities," www.ncruralcenter.org/grants/water.htm, July 7.
- North Carolina State Data Center. 2004. "Public Law 94-171, Census 2000," http://census.state.nc.us/maps/pop_map_table.html, June 18.
- Rosen, James. 1995. EPA Says Offer on Hog Waste Rejected, News and Observer. Raleigh, N.C. September 9; A1.

- Rossi, Peter H., Mark W. Lipsey, and Howard E. Freeman. (2004). *Evaluation: A Systemic Approach, 7th Edition*. Thousand Oaks, CA: Sage Publications Inc.
- Schell, Lisa. 2004. Land and Water Conservation Efforts Advance with Governor's Signature, Clean Water Management Trust Fund. www.cwmtf.net/govcops.htm
- Selingo, Jeff. 1996. N.C. Coastal Summit; Environmental Concern Low, Polling Says, Morning Star. Wilmington, NC: Oct 19, pp 1B, 4B.
- Selingo, Jeff and Associated Press. (1997). EPA Sued; Neuse Suit Could Flow Down River to Others, Morning Star. Wilmington, N.C., Jan 31; pp 3B.
- Simpson, Bob. 1994. Reminiscing on Days of Fat Oysters, Clean Water, News and Observer, Raleigh, N.C. September 25; B14.
- Smutny, Gayla. 1998. "Legislative Support for Growth Management in the Rocky Mountains: An Exploration of attitudes in Idaho," Journal of the American Planning Association, 64 (Summer), 3.
- Steelman, Toddi A. 2000. "Innovation in Land Use Governance and Protection: The Case of Great Outdoors Colorado," American Behavioral Scientist, 44 (December), 4.
- 2002. "Land Use Protection in Colorado: A Study of Great Outdoors Colorado," Department of Forestry: North Carolina State University. July 2004 Board Packet, Clean Water Management Trust Fund.
- Stith, Pat and Joby Warrick. (1995). Who's in Charge? Big Pork Pours Tens of Thousands of Dollars into Political Campaigns in North Carolina, News and Observer. Raleigh, N.C. February 26; A1.
- Theobald, David M., Hobbs, N.T., Bearly, Tammy, Zack, Jim A., Shenk, Tanya, Riebsame, William E. 2000. "Incorporating Biological Information in Local Land-Use Decision Making: Designing a System for Conservation Planning," Landscape Ecology, 15: pp 35-45.
- Towne, Mark A. 1998. "Open Space Conservation in Urban Environments: Lessons from Thousand Oaks, California," Urban Ecosystems, 2: pp. 85-101.
- US Bureau of the Census. 2004. "State Population Rankings," U.S. Bureau of the Census, Population Division, Population Paper Listing #47, Population Electronic Product #45." July 07.
- (2004). Population Percent Change 2002-2003, *U.S. Bureau of the Census*. www.census.gov/Press-Release/www/2003/cb03-197table3.xls. July 7.

- Wesley, Aimee. 2004. Great Outdoors Colorado. Personal Communication. July.
- Warrick, Joby. 1995. State Finds 60 Farms Dump Waste, News and Observer. Raleigh, NC. Sept 15; pp. A1.
- 1996a. Well Tests Canceled, Revived, News and Observer. Raleigh, N.C. Jan 18; pp. A3.
- 1996b. Pollution Fighting Strategy has Farmers Up in Arms; [Final Edition], News and Observer. Raleigh, N.C. Jun 16; pp A1.
- Young, Hannah. 2004. North Carolina Department of Hazard Mitigation. Personal Communication. July.