

## CHAPTER 6: ECONOMIC ANALYSIS, ENHANCEMENT SUMMARY, AND FUNDING OPPORTUNITIES

### A. Economic Analysis and Proposed Enhancements

The Town of Cary has an extensive stormwater conveyance system to maintain. There are numerous challenges to keeping it operational, not the least of which are the financial requirements to do so. This section combined with previously presented economic data in Chapter 5, provides an economic analysis of the stormwater program and its proposed options to determine the anticipated costs in the next five to twenty years.

#### Establishment of Baseline Stormwater Related Budget

To understand how the options for enhancement will impact the Town budget it was necessary to develop a baseline budget framework for stormwater related activities within the Town. Currently, costs for stormwater management are spread across both the Engineering Division and PWUT. Based on an analysis of historical and current budgeting data, a proposed baseline budget was developed. This is detailed in the sections below.

#### Public Works and Utilities Department Work Order Database

The Public Works and Utilities Department (PWUT) maintains a work order database that allows them to track resources allocated for maintaining the stormwater conveyance system. PWUT staff downloaded the labor and equipment costs for addressing stormwater conveyance system maintenance issues in the past five fiscal years. The costs of responding to those incidents by year are provided in the following table:

Table 6.2 - Work Order Cost Summary

Year	Amount Spent	# of Incidents	Avg. Cost/Incident
FY2007	\$208,119	669	\$311
FY2008	\$272,828	709	\$385
FY2009	\$299,584	760	\$394
FY2010	\$352,136	673	\$523
FY2011	\$413,908	638	\$649

The average cost per incident has increased annually in the five-year period to the point that they have more than doubled between FY2007 and FY2011. Looking more closely at the annual cost breakdowns provided in the table below, several observations can be made that help to explain the increase.

Table 6.3 - Work Order Cost Category Breakdown

Year	Cost Category			
	Labor	Equipment	Material	Contracted
FY2007	\$121,888	\$61,766	\$24,042	\$423
FY2008	\$99,477	\$78,507	\$17,895	\$76,949
FY2009	\$115,849	\$88,516	\$9,000	\$86,220
FY2010	\$133,156	\$122,485	\$14,803	\$81,693
FY2011	\$150,305	\$102,170	\$74,283	\$87,152

- First, the BMP maintenance program raised the contracted costs considerably beginning in 2008. This accounts for nearly all of the *overall* increase from FY2007 to FY2008 and FY2009.
- Otherwise, the main increase in costs occurred between FY2009 and FY2010, primarily due to labor and equipment cost increases.
- The difference in FY2010 and FY2011 can be explained by the higher material costs in the latter year.

The data from FY 2007-2011 indicates an average number of 690 incidents per year being addressed by PWUT at an average cost of \$309,315 over the five years. For the purposes of the baseline budget, an estimated cost for addressing Public Works Work Orders will be \$400,000.

## Street Sweeping Budget

Street sweeping is regularly conducted by PWUT and is considered a non-structural stormwater BMP since it removes sediment and pollutants from the roadways, stormwater conveyance system, and stream network. As such, 33% of the cost for street sweeping can be considered as part of the Town's stormwater management costs. Using the PWUT work order system, the following street sweeping costs shown in Table 5.6 were incurred.

Table 6.4 - Annual Streetsweeping Cost Summary

Year	Total Amount Spent	Portion to Stormwater Management
FY2007	\$216,938	\$71,590
FY2008	\$199,781	\$65,928
FY2009	\$233,774	\$77,146
FY2010	\$204,384	\$67,447
FY2011	\$202,912	\$66,961

Based on the above figures, the projected budget for annual street sweeping operations needs to be approximately \$70,000 per year.

### **Budget for Town Policy 35 and 146**

Section 3E included a discussion of a potential change to Policy 35 whereby the Town might consider a cost share arrangement with private landowners based on the percentage of public water that passes through the infrastructure that is in need of replacement/rehabilitation. Currently, the Town's recommended budget for Policy 35 is \$250,000 for FY 2013 and that increases to \$500,000 per year from FY 2014 through FY 2023.

Policy 146 is the funding mechanism to provide general culvert replacements. It considers the project's cost, public benefit, mitigation requirements, future maintenance issues, and funding issues, among other factors. Currently, the Town's recommended budget for Policy 146 is \$100,000 for FY 2013 and that increases to \$600,000 per year from FY 2014 through FY 2023.

### **Town Personnel Costs Associated With Stormwater Management Program**

To estimate the total budget the Town of Cary spends on stormwater management, it is necessary to consider personnel costs for individuals that contribute to it. A portion of the Public Works personnel costs are captured in the work order database. However, salaried staff is not included in those cost estimates. It is estimated that three full-time equivalents are devoted to stormwater management. Assuming an annual cost of \$80,000 per employee (for salary plus 40% for benefits) sums to \$240,000 for PWUT salaried staff.

The Engineering Department has a recommended FY2013 budget of \$6,578,313 in the general fund. There are 62 employees in the Engineering Department and eight work on stormwater management as part of the Engineering Services/Stormwater Division. Assuming staff from this group are paid similarly to the rest of the Engineering Division, the amount applied to the stormwater management budget would be approximately \$850,000 (i.e., multiply department budget by 8 and divide by 62).

Thus, personnel costs from PWUT and Engineering staff focused on stormwater management are estimated to sum to \$1,090,000 per year.

## Total Baseline Stormwater Management Budget

An estimate of the Town's total annual stormwater budget is provided in the table below:

Table 6.5 - Stormwater Management Budget

Category	Annual Budget
Engineering Salaried Personnel	\$850,000
Public Works Salaried Personnel	\$240,000
Public Works Work Orders	\$400,000
Street Sweeping	\$70,000
Policy 35	\$500,000
Policy 146	\$600,000
<b>Total</b>	<b>\$2,660,000</b>

One omission in the annual budget is additional funding for street storm drainage rehabilitation under the Transportation Capital Improvements Fund. This is not a recurring funding mechanism so it was not included. This line item was funded at \$500,000 in FY 2008, FY 2009, and FY 2011, but not funded in FY 2010 and FY 2012. Additionally, it is not included in the ten-year capital improvement plan.

The budget shown above is an estimate of the average budget under current funding and level of service to the community. This study (has identified up to \$50 million in potential infrastructure improvements, flood mitigation improvements, BMP retrofits, capital investments, and watershed studies (see Chapters 3 – 5) that would largely be outside of the typical budget. To implement all the suggested improvements and recommendations would likely require a significant increase in the annual budget. As a simple example, if one spreads out the \$50 million over a 20 year period that would add approximately \$2.5 million per year to the annual budget. However, it is noted again that this would be providing a level of service to the community that is well above the current level, as well as, that of many other communities. A less aggressive approach that still provides an increase from the current level of service could be selected to reduce the increase to the budget.

## Summary of Proposed Stormwater Maintenance Program EOS/LOS Enhancements

### Option Public Assistance 1

As previously mentioned in Chapter 2, this master plan provides a new methodology to assist property owners with the cost of broken storm drainage pipes on their property and to assist the Town with its approach for determining cost share under Policy 35. Projects that are typically addressed by Policy 35 in cooperation with private property owners are problems only related to structural flooding and structural damage due to severe erosion. The potential enhancement to Policy 35 is to allow for addressing broken storm drainage pipes on private property with a cost share based on determining the percent of public water that passes through the stormwater infrastructure at the point of concern and applying the cost share accordingly. Adding this calculation method in determining how the cost share is applied is expected to

have an annual cost of approximately \$40k. The primary benefit to this modification is to expand the existing program to cover broken storm drainage pipes; provide a method for determining cost share of the repair; gives the Town better information for decision-making to address a stormwater concern; and sets a standard by which the Town can partner with private owners for maintenance of storm systems off the Town-maintained ROW.

## **Option Inspection/Assessment 1 - Increased Routine Maintenance**

One option to improve how the Town addresses stormwater conveyance problems and maintenance requirements is to increase routine maintenance of infrastructure within the Town ROW by adding a 3-person crew (supervisor, field chief, and helper), a dedicated vacuum truck, and a pickup truck and tools. The estimated costs for this crew and equipment are shown below. This would be a formal program for routine maintenance. Currently, as described in Section 2B, the Town's conveyance system maintenance is predominantly driven by responses to complaints and identified problems, routine maintenance for 10-15% of the conveyance systems, and maintenance of all pipes/culverts/bridges over 72 inches in diameter. The goal of more routine maintenance would be to anticipate these problems and provide maintenance before they arise. Routine maintenance would include: clearing sediment and debris from structures and pipes that are known to clog, repairing infrastructure that requires regular maintenance, and other routine tasks.

**Table 6.1 - Increased Maintenance Costs**

Initial Costs	
Vacuum truck	\$325,000
Pickup truck	\$25,000
Tools	\$15,000
<b>Total</b>	<b>\$365,000</b>
Annual Costs	
Equipment maintenance	\$20,000
Supervisor	\$65,000
Field crew chief	\$55,000
Crew	\$40,000
<b>Total</b>	<b>\$180,000</b>

Equipment maintenance is based on the Town's cost of maintaining two jet/vacuum trucks and two pickup trucks in FY2011.

Thus, for an estimated \$365,000 initially and \$180,000 annually, PWUT could provide more routine maintenance of the stormwater conveyance system. Increasing routine maintenance of the stormwater systems would have the benefit of addressing problem areas prior to the public identifying them, thereby reducing citizen complaints. This would improve customer satisfaction and increase the lifespan of infrastructure since it would incur less frequent damaging conditions (e.g., clogging, flooding). According to the FY11 data, if the use of an additional maintenance crew dedicated to stormwater system maintenance resulted in a theoretical drop of incidents by 43% (277 incidents at a cost of \$649 per incident), it would be sufficient to cover the cost of the additional crew. It may not be reasonable to assume that this reduction would occur immediately, but the additional crew would double the current capacity for addressing drainage concerns and customer satisfaction would increase. A more detailed financial analysis by Town staff may be needed to confirm if the additional crew would be revenue neutral. For the purpose of this master plan, the costs are considered to be an addition to current PWUT budgets with the financial benefits being related to increasing the lifespan of the infrastructure.

The above consideration based on annual costs does not include the initial capital outlays for the vacuum truck, pickup truck, and tools. However, some of these may need to be added regardless of the additional crew, particularly the vacuum truck which is the most expensive item. Having a dedicated vacuum truck for stormwater would benefit the Town because it would ensure that such a truck is not used for both the sanitary sewer system and the stormwater conveyance system.

### **Options Inspection/Assessment 2 and 3 – Clean, Inspect and Assess Storm Drain Networks by a Subcontractor**

Based on the investigations for this master plan as documented in Chapter 5, it is in the interest of the Town that a regular program for cleaning, inspecting, and assessing the condition of the storm drainage systems inside and outside the Town ROW would enhance the function and longevity of these systems. The benefit to cleaning and inspection of storm systems is it will; remove debris allowing the system to operate as designed; reduce nuisance flooding, and allow Public Works to identify and address problem areas before concerns are registered by the public. This allows for a planned maintenance schedule that would improve overall efficiency and responsiveness of the maintenance program. Failure to implement a program of this nature could result in increased citizen complaints, system failures, and higher maintenance costs with time. It is anticipated that this type of work would be contracted out by the Town. The cost to clean, inspect and assess the networks by a subcontractor at a rate of 12 miles per year is \$320,000.

## **Summary of Water Quantity Enhancement Options**

### **Option Stormdrain Upgrade 1 - Pipe Conflict Areas**

This option represents four project areas identified through analysis of Town GIS, Town inventory, citizen reports, and PWUT work order database data to be areas of concerns. The conflicts are related to situations where a larger pipe flows downstream into a smaller pipe and the problem was confirmed with citizen complaints of storm drain blockage. The cost for pipe replacements in these 4 areas covering 1466 linear feet of pipe is \$300,000+/- . The benefit to fixing these known problem areas will be to reduce nuisance flooding and reduce cost of future maintenance.

### **Option Culvert Upgrade 1 - TCAP Crossings**

This option represents 15 project areas previously identified under the 2006 TCAP Drainage System Analysis and reviewed within this study in Chapter 3 and 5. These are areas within the TCAP area where the current storm drainage pipe or culvert does not meet current Town standards for passing the 25-year storm event. Areas impacted are along Coles Branch, Walnut Creek, Walnut Creek Tributary and the Swift Creek Tributary. Upgrading these pipe or culvert systems to improve their level of service would reduce



potential flooding in the TCAP area and ensure crossings meet Town standards. The estimated cost for implementation of this option is \$7.61 million.

**Option Culvert Upgrade 2 - FEMA Roadway LOS Improvements**

In addition to the TCAP crossings, 33 FEMA crossings were identified throughout the rest of the Town that did not meet Town design standards for passing the 100-year storm event. Of the 33 crossings identified, 18 are Town-maintained crossings, 14 are NCDOT-maintained, and one is private. While upgrading these crossings can be cost prohibitive and would require significant coordination and planning with NCDOT, there would be benefit in reducing future maintenance, reduction in nuisance or structural flooding in floodplain as well as minimizing the potential for road closure in an extreme event. The cost to upgrade these 18 crossings to Town standards is estimated at \$5.34 million.

**Options Pipe 1 and Pipe 2 - Improvements to Damaged and Older Town-Owned Pipes**

Based on the age and condition of the pipes as determined by the Stormwater Inventory and GIS analysis and as discussed in further detail in Chapters 3 and 5, a method of prioritization for repair or replacement was developed for stormwater systems inside and outside the Town ROW. The costs are shown below in Table 6.2 and reflect several options to repair and replace pipes that are currently rated in fair or poor condition. As previously mentioned, further inspection and pipe condition assessment will help to refine this need. This assessment is based upon the assumption that 50% of pipes rated as “High” and 20% of pipes rated as “Medium” will need to repaired or replaced. The benefit to the systematic repair of the affected systems is it will reduce flooding concerns and reduce potential damage to public and private property.

Table 6.2 - Summary of Storm System Repair Cost Estimates

Storm System Repair	In Town ROW (High, Medium Priority) Option Pipe (1A, 1B)	Outside Town ROW (High & Medium Priority) Option Pipe (2A, 2B)
Slipline Repair Option Total Cost	\$900,000 (1A)	\$365,000 (2A)
Replace Option Total Cost	\$1,250,000 (1B)	\$515,000 (2B)

**Summary of Water Quality Enhancement Options**

**Options BMP Retrofit (1-5) - Potential BMP Retrofits**

As part of addressing current and future State and Federal requirements, the master plan has identified a number of potential stormwater BMP retrofit sites to improve water quality in runoff from existing developed areas. Most of these opportunities are located on Town of Cary property and will be enhancements to the

existing site drainage or BMP's. Parks and Recreation was consulted in the conceptualization of these sites. The benefit to implementing these retrofits will be improvement to water quality, reduction in site runoff, and aiding the Town in meeting and exceeding regulatory requirements. In addition several of these solutions can be constructed to be an amenity to the public and Cary parks. Nineteen sites are listed as potential projects with approximate total estimated cost of \$19.7 million. A breakdown of the projects and costs by potential is shown in Table 2 below:

**Table 6.3 - Summary of BMP Retrofit Cost Estimates**

Potential	Estimated Cost
Top 4 Projects (Retrofit 1)	\$300,000
Very High (Retrofit 2)	\$8,000,000
High (Retrofit 3)	\$2,560,000
Medium (Retrofit 4)	\$995,000
Low (Retrofit 5)	\$8,175,000

## Summary of Flood Risk Reduction Enhancement Options

### Option Flood Risk 1 - Outreach

Based on the Risk Assessment results from Chapter 3, the Town can provide outreach to the 11 high and moderate risk property owners within the TCAP area to discuss risk awareness and their flood mitigation options. The benefit in providing this outreach is to increase public awareness to flooding and potential for property damage. The negative impact to not having this outreach is that many of these property owners remain at risk for flood damage and they may not know they can obtain flood insurance since they are not currently in an area that requires flood insurance. The anticipated one-time cost to provide Outreach is \$50,000.

### Option Flood Risk 2 - Quick-Buy Option

The "quick-buy" option is property acquisition mitigation technique where a floodprone property is purchased and converted to open/natural space (i.e. buildings and improvements are removed). Property acquisition is considered to be a preferred mitigation technique as it physically removes the buildings or other features, and thus removes the risk, rather than engineering a protection measure (e.g. flood barrier) that keeps some level of residual risk (e.g. risk that flood barrier will be overtopped or will fail). In addition, property acquisition can provide water quality or other use benefits as it can be used for green infrastructure improvements (e.g. stream restoration, BMPs, etc.) and public amenities. The main caveat about the "quick-buy" option is that a property is acquired shortly after a flooding event while it is still in a "damaged" condition, rather than after a longer period of time when the structure may have been repaired or subject to further damage.



The main benefits of a quick-buy approach over a more traditional post-flood option include:

- Quickly eliminates future damage, as well as, the potential for reinvestment in a property that would likely flood again since the property is purchased soon after a flood event.
- Provides an owner of the subject property with an immediate alternative of “getting out” of owning a property with high risk to themselves and their property.
- Provides a potential cost savings to the public agency acquiring the property as it is bought in a damaged condition which is accounted for in the purchase price.
- Provides an administrative mechanism by which properties at risk could be brought to the Town Council for consideration.

The quick-buy option has advantages, however, there are a number of items that should be considered beforehand that are integral to the success of a quick-buy. Several key considerations are outlined below, followed by a brief case study of implementation of a successful quick-buy program in Mecklenburg County, North Carolina.

### **Funding**

Funding is a key element to the quick-buy option, as consideration must be given to both the source and amount of funding. Due to their fast nature, a quick-buy option will likely need to be implemented with local funding rather than outside funding sources (e.g. grants) as these external sources typically require a much longer time frame for action. Similarly, since it is impossible to know when the next flood event will occur and what buildings will be damaged, a quick-buy option would likely require the set-up and use of an emergency or a “rainy day” fund. The amount of the funding available for a quick-buy program requires consideration of a number of factors such as potential for flood damage in the community (estimated from historic records and/or flood studies), and availability to “absorb” contingency in available budget or political motivation to increase budget.

The Flood Risk Assessment data from Chapter 3 indicates there are 462 primary buildings located within the existing 100-yr floodplain with an approximate building value of \$173 million. Based on the Flood Risk findings it is estimated that approximately 6% of these primary building would fall in areas covered by a quick buy option and be at-risk. Therefore the Town would need to have available approximately \$10.8 million available to initiate the option after an event. It is anticipated this funding would be appropriated by the Town Council as needed.

### **Qualifying/Prioritizing Criteria**

In the event of a large flood damage event, it is likely that there will be more properties that are damaged than could potentially be purchased with available funding. Thus, it is prudent to establish qualifying and/or ranking criteria beforehand to have a justifiable process that is documented. Several examples of potential criteria are listed below.

- Amount (%) of building damage in current flood event

- Previous history of flood damage
- Building type and/or land use
- Location in high hazard areas (e.g. floodway, high depth and or velocity zones, etc.)
- Cost to purchase property
- Location of property or potential for incorporation of future public amenities
- Regulatory compliance of structure (e.g. no violations)
- Liens or other encumbrances on the property

### **Implementation Logistics**

The quick-buy process involves a number of technical, legal, political, and logistical elements that all happen in a condensed time-frame with property owners that are distressed. It is important to figure out how these various elements will be addressed and by whom. For example, technical assessment will undoubtedly be required to identify and assess properties against qualifying criteria. Does the Town have the expertise and resources to perform these assessments? Similarly, a quick-buy is a real estate and legal transaction – who will perform all the appraisals, negotiations, and legal filings? Another important consideration is should the program be voluntary or should the Town consider involuntary acquisition. These and many other questions will need to be addressed to implement a quick-buy program.

### **Quick-Buy Case Study - Mecklenburg County, NC**

Mecklenburg County, North Carolina has successfully used the quick-buy option to acquire over 50 properties following major flood events in 2003, 2008, and 2011. The quick-buys have all been locally funded using a “rainy day” fund, which the County tries to maintain at a \$2M - \$2.5M balance. The criteria that the County has established to determine eligibility for the quick-buy process have evolved slightly through the different phases. However, requirements used for the 2011 phase are listed below:

- Single-family homes
- Flooding in living space or more than 25% in building damage
- Inside Community Encroachment Floodway or in vicinity of past buyout areas
- No floodplain ordinance violations

After the flood events happened, the County sent staff and hired a surveying firm to assess and survey damaged buildings. The County staff then evaluated each building against qualifying criteria (see graphic below). Qualified properties were prioritized first on whether they are located within the Community Encroachment Floodway and then by descending order based on the amount of flood damage.

**Figure 6.24** Flooded Building after August 2011 Event and Example Qualifying Criteria Map for Mecklenburg County Quick-Buy



The County established a protocol to calculate offer amounts equal to the current tax value (or pre-flood appraisal) minus estimated flood damages (if property did not have flood insurance) or insurance claims (if property did have flood insurance). A real estate firm was hired to appraise, negotiate, and assist in document preparation and associated logistics for purchase. All quick-buys were voluntary. County staff did have to go to the County Board for approval of the program and actual purchases of the properties. Appendix 6-1 provides a copy of a presentation from County staff given to the County Board, as well as, an adopted resolution by the Board. The quick-buys have provided a means to reduce flood risk in the community in a cost-effective manner. More information on Mecklenburg County's Quick-Buy Program can be found at <http://charmeck.org/stormwater/DrainageandFlooding/Pages/FloodplainQuickBuyProgram.aspx>

## Stormwater Management Program Level Enhancement

### Option Study 1 - Watershed Planning

As recommended in Chapter 5, the Town has the option to proceed with watershed based planning studies for the five primary watersheds (Crabtree, Swift, Walnut, Middle and Jordan) over the next several years. These plans will allow for developing comprehensive stormwater models (SWMM or equivalent). The in-depth modeling will provide a higher degree of accuracy in determining flood impacts, storm network deficiencies and can be the basis for future water quality modeling as well. This can also provide a consistent modeling foundation by which new development can be incorporated or analyzed for future conditions impact. Coupled with inspections and assessments of the networks, this option will also aid in identifying and prioritizing specific projects to reduce flooding, improve infrastructure and reduce water quality impacts. It is estimated that all the Cary watersheds could be analyzed for \$250,000 per watershed with a watershed being analyzed each year for five years.

## B. Funding Approaches

### Funding 1 – Existing Approach

As mentioned previously in Chapter 2, the Town of Cary maintains a significant stormwater program compared to its peers. The current funding source of these efforts is through the Ad Valorem Tax structure. Funding needs as identified in Chapter 5 indicate that the current structure is not sufficient to immediately address identified needs such as storm drainage system inspections or TCAP and FEMA LOS improvements. However, the Town can evaluate programming these resolutions over a longer time period and seek injections of capital expenditure for specific critical items as necessary. This would allow for continuation of the current fiscal system with mechanisms to assist in future planning of stormwater needs.

### Funding 2 – Enhanced Grant Approach

There are a variety of options for funding various types of stormwater and environmental restoration projects available to municipalities. The Town has been successful in obtaining alternative funding for some of its stormwater and natural resources restoration projects in the past. Some examples include [USDA Conservation Technical Assistance Program funding for projects on Swift and White Oak Creeks](#), a [Water Resources Project Development Grant to stabilize a bank along Swift Creek in Hemlock Bluffs](#), and [funding from the Ecosystem Enhancement Program for stormwater BMPs along the Higgins Greenway](#). The following are descriptions of applicable grant type funding opportunities that could be compatible with the Town's stormwater program goals and organization.

#### **Section 319 Grant Program**

Section 319 of the Clean Water Act establishes a program that provides funding to State and Tribal agencies to address nonpoint source pollution. Funds are then allocated to non-profit and local municipalities via a competitive application process. Appropriate projects for which funding can be applied include: innovative BMPs, water quality modeling and monitoring, environmental education and technology transfer, assessment and development of Indices of Biologic Integrity, restoration of waters impaired due to nonpoint source pollution, and TMDL development and implementation projects. Proposals are classified as either Base or Incremental. Base projects include education, outreach, research, and demonstration of innovation. Incremental projects are ones directed toward restoring water quality in impaired waters (as listed on DWQ's 303(d) list).

The proposed project must be in a targeted watershed. According to the NC Watershed Restoration Action Strategy, the entire Town planning boundary is located within existing or future watersheds targeted for proposals. Subbasin 03030002 in the Cape Fear River basin is an existing investment watershed and sub-basin 03020201 in the Neuse River basin is a future investment watershed.

- **Typical Award:** Base \$57,500, Incremental (Restoration) \$177,000



- **Annual Grant Total:** \$2.7 million (Total annual funding is approximately \$4.5 million, 60% of which is available through competitive grant process while 40% is used for State projects).
- **Match Requirement:** Non-Federal match must be no less than 40% of total project budget.
- **Application Cycle:** RFP typically released in early spring. Response period is 3 months.
- **Administering Organization:** DWQ Nonpoint Source Planning Unit

The Town contains a number of impaired streams and watersheds that drain to impaired streams. Currently, there is a TMDL only for the Swift Creek watershed. However, other watersheds could be subject to TMDL or Category 4b requirements in the future. One way the Town could proactively address the requirements of the Swift Creek TMDL or potential future requirements in other impaired watersheds is to conduct its own monitoring or develop its own biological integrity assessment methods using 319 Grant funding. For example, developing a biological integrity assessment method that is relevant to the Town's geology and situation would provide a more realistic means of assessing actual stream impairment. This may prevent streams being falsely listed as impaired or may provide an index that more accurately describes achievable biological integrity goals for urban systems.

## Clean Water Management Trust Fund

The North Carolina Clean Water Management Trust Fund (CWMTF) was established in 1996 and receives a direct appropriation from the general assembly. The fund aids local governments, State agencies, and non-profits with grants for projects that specifically aim at addressing water pollution. Projects eligible for grant funding include: enhancement or restoration of degraded waters, protection of unpolluted waters, and/or providing riparian buffers and greenways for environmental, educational, and recreational benefits. Project types are classified as either: wastewater, restoration/stormwater, greenway, or land acquisition.

- **Typical Award:** \$261,700 average award in 2011.
- **Annual Grant Total:** \$12,039,208 approved funding for 2011.
- **Match Requirement:** Match must be no less than 20% of total project budget. In 2011, CWMTF funds leveraged 67% in matching funds.
- **Application Cycle:** Applications due February 1<sup>st</sup>. Awards announced August/September.
- **Administering Organization:** Allocation of funds is administered by an independent, 21-member Board of Trustees.

CWMTF grants can be used for either restoration projects or stormwater projects. Typically, CWMTF requires conservation easements be placed on restoration projects. The funding and awards for this program have been dramatically reduced since 2008. CWMTF grants can be leveraged with other funding sources and grants as well.

CWMTF funding can help leverage water quality benefits for the Town because the potential matching sources are so flexible. For instance, CWMTF considers easements or land, other projects that provide

water quality benefit in the immediate watershed, staff time, and other creative situations as matching sources to leverage grant funding. Although, CWMTF will accept a 20% match, the Town could expect better success by providing a minimum 50% match.

## **Department of Justice – Environmental Enhancement Grants Program**

The North Carolina Attorney General and Smithfield Foods Inc. signed an agreement in July 2000 which committed Smithfield Foods to provide funds to support environmental programs in North Carolina. The Environmental Enhancement Grants (EEG) program was created in 2003 with collaboration between NCDENR, Smithfield Foods, and the Attorney General. The agreement provides funding not to exceed \$2 million each year for 25 years for the purpose of enhancing the environment of North Carolina. The EEG Program funds projects that restore and protect impaired, degraded, or endangered surface waters. The program also provides funding to promote long-term environmental enhancement programs that preserve and protect targeted natural areas. These grants can apply to projects in both the Neuse and Cape Fear Basins among others. While any environmental improvement project is technically eligible, wetlands restoration and preservation as well as projects developing better disposal methods for hog waste are specifically mentioned in the signed agreement. Subsequently, many of the projects that have received grants since 2002 are wetland preservation projects, though some restoration projects have received grants as well.

- **Typical Award:** \$200,000 average award in 2009.
- **Annual Grant Total:** Not to exceed \$2,000,000
- **Match Requirement:** No specified minimum match.
- **Application Cycle:** Applications due in September.
- **Administering Organization:** NC Attorney General

## **NC Ecosystem Enhancement Program**

The North Carolina Ecosystem Enhancement Program (EEP) was established as a Memorandum of Agreement between NCDOT, NCDENR, and the USACE Wilmington District. The program was created to satisfy mitigation needs between NCDOT and NCDENR. EEP offers several in-lieu fee mitigation programs to meet state and federal laws and regulations regarding compensatory mitigation. In-lieu fee programs include: NCDOT stream/wetland, statewide stream/wetland, riparian buffer, and nutrient offset. In-lieu fee programs are a transfer of permit liability from the applicant of a Section 404, Section 401, or CAMA permit requiring compensatory mitigation to EEP.

The current fee schedule set July 1, 2011 (fee schedules are adjusted annually and become effective July 1st) for mitigation and nutrient offsets are illustrated in the tables below:



**Table 6.6 - Stream, Wetland, and Buffer Mitigation Fees**

Fee Category	Credit Unit	Fee per Unit
Riparian Buffer	square foot	\$0.99
Stream	linear foot	\$349
Non-riparian Wetland	acre	\$46,230
Riparian Wetland	acre	\$64,077
Coastal Wetland	acre	\$157,627

**Table 6.7 - Nutrient Offset Fees**

Watershed	Nutrient	Rate/Pound
Neuse – Falls Lake Watershed	N	\$21.64
	P	\$134.23
Jordan Lake Watershed	N	\$21.64
	P	\$134.23

In 2009 and 2011, the NC General Assembly passed Session Law 2009-337 and 2011-343, respectively, which promoted the utilization of privately-owned mitigation banks to satisfy permit compensatory mitigation requirements. According to the EPA, “a mitigation bank is a wetland, stream, or other aquatic resource area that has been restored, established, enhanced, or (in certain circumstances) preserved for the purpose of providing compensation for unavoidable impacts to aquatic resources permitted under Section 404 or a similar state or local wetland regulation.” By enacting Session Laws 2009-337 and 2011-343, the purchase and procurement of credits through approved mitigation banks is now required if such credits are available, even if EEP’s price is lower.

Although, the EEP may not be a source of direct alternative funding for the Town, the Town has successfully engaged the EEP to fund the design and construction of a stormwater wetland in the Town limits as part of the nutrient offset program. Typically the EEP buys nutrient credits from private mitigation bankers that are based on the restoration of riparian buffers in rural areas, providing little to no benefit to water quality in urban areas. The Town could consider leveraging this fact to request NCDENR to require the EEP to establish water quality improvement projects in the Swift and Williams Creek TMDL watershed or other impaired watersheds preferentially, since the TMDL requires such improvements.

The primary benefit to the Town could potentially be that the Town would not necessarily have to appropriate staff time or other Town resources to implement a project. However, the Town may have to spend considerable effort to approach NCDENR to convince EEP to implement a project.

### **Other In-Lieu Fee Programs and Mitigation Credit Unions**

Currently, Raleigh, Greensboro, and Charlotte are the only municipalities with their own mitigation banks/credit unions. S.L. 2011-343 requires that the Town of Cary make use of a private mitigation bank prior to using the NC Ecosystem Enhancement Program if credits are available (see above). This law also may prevent the Town of Cary from establishing a bank with credits for sale to other entities. However, DWQ and the USACE may allow the Town to establish mitigation credit for its own use per NCDENR's guidance dated July 2011, "Implementation of N.C. General Assembly Session Laws 2009-337 and 2011-343." The credit could be documented and pre-approved by the USACE and DWQ using a mitigation banking instrument set up as a "credit union" as only the Town could use the credit. Credit could not be used by other entities. Additionally, it may be possible for the Town to set up an in-lieu fee system for density transfers if allowable under North Carolina Law as this activity is not specifically covered by S.L. 2011-343. In other words, the Town may be able to set up a mitigation banking instrument to sell density transfers to private developers since this type of mitigation banking is not precluded by S.L. 2011-343.

The benefits to the Town are that the Town already has projects that could be used for mitigation credit and establishing a bank or a "credit union" would formally document such credit for the Town's use. This would prevent the possibility that mitigation credit that the Town may assume that it already has from being denied by the agencies at a later date. The main benefit is that mitigation can be very costly, and if the Town has already completed projects that could be used for mitigation or is going to develop projects that could be used for mitigation, it could be cost effective to have those credits available rather than having to purchase them from a bank or the EEP as is the current Town practice.

Another potential application for an In-Lieu Fee Program would be to establish a bank for density transfers in Water Supply Watersheds such as the Swift Creek and Jordan Basins. Session Law 2012-200 has created the ability to allow density averaging between non-contiguous properties within the same watershed in water supply watersheds with some limitations.

### **Hazard Mitigation Grant Program (HMGP)**

The Hazard Mitigation Grant Program provides assistance to States and local governments to implement long-term hazard mitigation measures to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

Post-disaster activities eligible for grant funding include: acquisition or relocation of structures from hazard-prone areas, retrofitting/elevation of existing structures, vegetative management programs, minor or local flood control projects that protect critical facilities, building code related activities during reconstruction process, and development or improvement of flood warning systems.

Proposed project criteria must be in conformance with a State (and local) hazard mitigation plan, provide beneficial impact to a disaster area, meet environmental standards, solve a recognized problem, and be cost-effective.

- **Typical Award:** \$12 million average, within 24 months of disaster declaration.
- **Annual Grant Total:** Fluctuates considerably. NC receives 15% of the Public and Individual Assistance funding for the HMGP, with historic allocations ranging between \$1 million - \$800 million, with an "average" around \$12 million.
- **Match Requirement:** FEMA funds up to 75% of eligible project costs; match can be in-kind. Funding amounts fluctuate based on the number and severity of declared disasters.

**Application Cycle:** Within 12 months of disaster declaration. (May be extended up to 180 additional day, upon written approval)

**Administering Organization:** NC Emergency Management (NCEM)

Please note that for all of these mitigation programs, NCEM works closely with local officials and their consultants to provide technical assistance. This assistance includes face-to-face project implementation meetings and site visits, as well as the dissemination of pertinent policy memos and Standard Operating Procedures.

## Flood Mitigation Assistance Program (FMA)

The Flood Mitigation Assistance Program implements cost-effective measures that reduce or eliminate the long-term risk of flood damage to structures insured under the NFIP.

Grant funding is based on three separate categories; planning, project, and technical assistance. Eligible activities include: preparation of flood mitigation plans (Planning Grants); structure acquisition, demolition, relocation, and elevation, and local flood control projects (Project Grants); and assistance from the State to administer FMA grants (Technical Assistance Grants).

Eligible applicants are NFIP-participating communities that wish to prepare Flood Mitigation Plans (Planning Grant) or have approved Flood Mitigation Plans (Project Grants).

Proposed project criteria include conformance with a HMA (Unified) plan, whether the structure is a repetitive loss, and cost effectiveness.

- **Typical Award:** \$937,000 average award in 2009.
- **Annual Grant Total:** Not to exceed \$3.3 million to a community in a five (5) year period.
- **Match Requirement:** 10% - 25%; FEMA funds up to 75% of eligible project costs; match can be in-kind. Up to 90% Federal cost share is available for the mitigation of severe repetitive loss properties for any applicant that has a repetitive loss strategy in its approved State or Tribal (Standard or Enhanced) Mitigation Plan and has taken actions to reduce the number of repetitive loss properties.
- **Application Cycle:** Applications due to NCEM by November, final application due to FEMA in December. Awards announced in early summer.
- **Administering Organization:** NC Emergency Management (NCEM)

## Pre-Disaster Mitigation Program (PDM)

The Pre-Disaster Mitigation Program provides funding assistance for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Eligible activities include: voluntary acquisition of real property for open space conversion, relocation of public or private structures, elevation of existing structures to avoid flooding, hydrologic and hydraulic studies/analyses, engineering studies, and drainage studies for the purpose of project design.

Eligible applicants are NFIP-participating communities. Priority is given to local application by NCEM, community mitigation efforts and involvement, percent of population benefiting from the project, and protection of critical facilities.

- **Typical Award:** Varies as appropriated, \$90 million allocated to fund in 2009.
- **Annual Grant Total:** Maximum \$800,000 for developing new hazard mitigation plan; \$400,000 for updating hazard mitigation plan and \$3 million for implementing mitigation project.
- **Match Requirement:** 10% - 25%; FEMA funds up to 75% of eligible project costs; match can be in-kind. Small impoverished communities may be eligible for up to a 90% Federal cost share.
- **Application Cycle:** Applications due to NCEM by November, final application due to FEMA in December. Awards announced early summer.
- **Administering Organization:** NC Emergency Management (NCEM).

## Repetitive Flood Claims Program (RFC)

The Repetitive Flood Claims Program reduces and eliminates the long-term risk of flood damage to structures insured under the NFIP. Eligible activities include structure acquisition, demolition, relocation, and elevation, and local flood control projects.

Eligible applicants are NFIP participating communities and properties must have received one or more insurance payments.

FEMA ranks eligible projects on basis of greatest savings to NFIP based on benefit/cost ratio.

- **Typical Award:** \$1.0 million average award.
- **Annual Grant Total:** \$10 million consistent over a period of three (5) years.
- **Match Requirement:** 0%; 100% funded if applicant demonstrates proposed activity cannot be funded under FMA. Awards announced early summer.
- **Administering Organization:** NC Emergency Management (NCEM)

## Severe Repetitive Flood Claims Program (SRL)

The Severe Repetitive Flood Claims Program reduces and eliminates claims under the NFIP through project activities that produce the greatest savings to the NFIP. Eligible activities include acquisition,

structure demolition, structure relocation; elevation of structures, minor localized flood control projects, and mitigation reconstruction, etc. for residential structures classified as a SRL property.

FEMA ranks eligible projects on a basis of greatest savings to NFIP based on benefit/cost ratio.

- **Typical Award:** \$150,000 average award.
- **Annual Grant Total:** \$80 million consistent over a period of three (3) years.
- **Match Requirement:** 10% - 25%; FEMA funds up to 75% of eligible project costs; can fund up to 90% for applicants with a repetitive loss strategy in its approved Mitigation Plan and has taken actions to reduce the number of repetitive loss properties.
- **Administering Organization:** NC Emergency Management (NCEM)

## Water Resources Development Project Grant Program

The Water Resources Development Project Grant program provides cost-share grants with municipalities in North Carolina for a wide variety of water resources projects including stream restoration and land acquisition for facility development for water-based recreation. The grant awards are typically small sums (< \$50,000) and the project types vary widely from stream restoration to buying property for parks and trails. The fraction of the total project cost paid by the program varies depending on the project type from 50% to 80%.

- **Typical Award:** \$50,000 average award in spring 2012.
- **Annual Grant Total:** Historically varies between \$500,000 and \$1,500,00
- **Match Requirement:** Minimum match varies from 50% to 80%. Currently a matching limit is set at 50% for all projects until rescinded by N.C. General Assembly
- **Application Cycle:** Bi-annual, applications due January 1<sup>st</sup> and July 1<sup>st</sup>
- **Administering Organization:** NCDENR – Division of Water Resources – Water Project Section

The Town currently benefits from this program in that the application process is relatively straight-forward and the grants are relatively easy to obtain; however, the award amounts are small.

## NCDOT Partnership

One source of indirect alternative funding is through partnership with the North Carolina Department of Transportation (NCDOT). Two potential means of partnership have been established in the past with municipalities such as Durham, Raleigh, Greensboro and Charlotte/Mecklenburg.

The first is NCDOT's BMP retrofit program. This program is required by NCDOT's Individual NPDES Stormwater Permit and administered by NCDOT's Hydraulics Unit. The concept is to divide BMP costs and design and maintenance responsibilities. For example, there may be locations where the Town would like to establish a BMP, but the only available land is on NCDOT right-of-way (ROW). Or, alternatively, there may be an opportunity where NCDOT would like to retrofit a BMP on Town-owned property. In the past, DWQ



has allowed both NCDOT and the municipality to share the credit. The benefit is that, to date, both entities get to claim full credit as opposed to splitting the credit.

The second alternative is to look for retrofit opportunities as part of road improvements or new location roadway projects. The option is similar to the first except such projects may be administered through NCDOT Division 5, as opposed to the Hydraulics Unit. The Town may have to agree to permanently maintain such devices, but the benefit is that the Town would not have to use Town resources to design or construct the BMP.

### **Funding 3 – Stormwater Utility Option**

Establishing a stormwater utility is a common way for municipalities to fund stormwater capital improvement projects as well as fund maintenance and repairs. Most of the municipalities in North Carolina that are close to the size of the Town of Cary or larger have established stormwater utilities. Thus far the Town has very successfully managed its resources such that it has been able to provide all of its services and improvements related to stormwater through its general budget.

The NC General Statutes (NCGS) authorize municipalities to create a public enterprise and establish a user fee for the services furnished [§160A-311-314]. A public enterprise includes “stormwater management programs designed to protect water quality by controlling the level of pollutants in, and the quantity and flow of, stormwater and structural and natural stormwater drainage systems of all types” [§160A-311(10)]. The NCGS allow the Town to finance the cost of the public enterprise [§160A-313]. An ordinance, separate from the stormwater ordinance proposed elsewhere in the master plan, would establish the authority to implement the utility.

Rates for a utility for providing stormwater management may vary based on property type (residential, commercial or industrial), property use, property size, the quality and quantity of runoff, characteristics of the watershed, and other factors. However, the amount of impervious surface on a given parcel is the most common factor for determining a fee schedule. Impervious surface is any hard surface that does not readily absorb water, including roofs, driveways, parking areas, sidewalks, patios, decks, tennis courts, concrete or asphalt streets, and compacted gravel surfaces. The parcel owner would be assessed a user fee based on the amount of runoff that the property potentially creates. The term ‘potential’ is used because storm events are also needed to produce runoff. More runoff leads to the need for more stormwater management, and thus a higher user fee is considered by many to be equitable.

Benefits from implementing a stormwater utility include:

- New Funding Source – Revenue generated by implementing a stormwater utility could be used as a new source of funds to supplement, or create the Town’s stormwater management funding.
- Supplemental Funding Source – Revenues from a stormwater utility can be used to replace current general funds, from taxes, used for stormwater related project, which enables the tax based funding to be used for other community needs.



- Bondable Revenue Stream – Bonds for capital improvements can be issued to facilitate constructing stormwater management facilities because the revenue generated from a stormwater utility can be used to pay back bonds.
- Encouraging land stewardship – Land stewardship can be encouraged by rewarding property owners who reduce stormwater runoff from their property. Credits should be given for those who implement structural or non-structural BMPs that reduce stormwater runoff and/or improve water quality.

Stormwater utilities can also bring a number of possible disadvantages. These disadvantages may be particularly important for an established community such as the Town of Cary, where residents have become accustomed to a particular way of life and cost of living. In many cases, stormwater utilities are unable to gain political traction without a major water quality concern. Other commonly cited disadvantages of stormwater utilities include:

- New fees perceived as taxes – Stormwater utility fees are often viewed as new taxes even though a fee-for-service is not a tax. The implementation of a stormwater utility fee is not typically accompanied by a decrease in municipal tax rates and therefore can be perceived as an increase in the total cost of owning property.
- Basis for fees is unclear and, therefore, arbitrary – Stormwater utility fees are generally based the area of impervious surface on a parcel. But, the general public often has difficulty understanding the concept of impervious surface and grasping the link between impervious surface and stormwater management.
- Initial ramp up costs – In order to put a utility in place, the Town would need to establish the impervious areas for all parcels, which would require new data acquisition. This would also have to be updated annually. The infrastructure for billing and collections would also need to be in place if not utilizing current administrative options.
- May require a significant public campaign to generate support – Because the concepts of stormwater management are often viewed by the general public as complex and unnecessary, and since fees associated with a stormwater utility are generally unpopular, establishing a stormwater utility would require a public education campaign.
- Staffing commitments – A stormwater utility would require additional staffing for administration and enforcement. This would increase the operational cost to the Town.

In summary, the utility is an equitable, dedicated funding mechanism for the Town to consider funding the stormwater management services it provides. It may be used as a potential source of funds to upgrade the infrastructure by fixing problems and implementing BMPs, and to generally improve the water quality and quantity within the Town limits. While disadvantages are present, considerable benefits can be realized if a stormwater utility is implemented and the Town should make careful consideration of the benefits and disadvantages.