Technical Memorandum

Watershed Planning Needs Survey of Coastal Plain Communities

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CENTER FOR WATERSHED PROTECTION

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1.0 INTRODUCTION

The Atlantic coastal plain province is one of the fastest growing regions in the United States, and this rapid growth has resulted in a loss and degradation of natural resources and a rise in public health concerns. Despite the recognition of coastal impacts from urban development, the understanding of the linkage between land use changes specific to coastal watersheds remains poorly integrated into broader land management initiatives. Unique features and patterns of development in the coastal plain include flat terrain, high water tables, unique tidal water ecosystems, water-oriented development patterns, large seasonal population fluxes, and small local government entities. Many of the tools used to manage urban watersheds throughout the U.S. have not been designed to address these unique characteristics of coastal watersheds.

In 1998, the Center for Watershed Protection (the Center) created a comprehensive local framework for watershed planning known as the eight tools of watershed protection (CWP, 1998). This framework addresses each stage of land development in the watershed from initial land zoning, development plan review, construction and occupancy. Since its development, the Center has applied the Eight Tool Framework in more than 40 local watershed plans across the country and has continuously tested, refined and updated the basic framework (See CWP, 2005 and Schueler et al, 2005).

The Eight Tool Framework has been acknowledged by the U.S. EPA and several states in their watershed planning guidance and has been adopted by several hundred communities (EPA, 2005). However, much of the scientific support for the framework was derived from the Piedmont physiographic region and is oriented toward protection of streams rather than coastal waters. It also has not been rigorously studied or refined to address the physiographic characteristics in the Coastal Plain.

To assess the needs and current practices of watershed planning in coastal communities, the Center developed and implemented a web-based survey. The survey was designed around the eight tools of watershed protection. The information generated from the survey will be used to determine the watershed techniques that are most commonly applied, the major gaps in watershed management, and examples of innovative programs and practices. The results will guide the adaption of the Eight Tool Framework for coastal plain watersheds to be featured in a special issue of the Center's publication *Watershed Protection Techniques*. This memorandum summarizes the survey methods, results and analyses.

2.0 DESCRIPTION OF SURVEY AND METHODS

The Center developed a web-based survey to better understand what coastal communities are doing to protect or restore local watersheds in the coastal plain. The survey included 140 questions and was organized by the following three sections:

- Section 1 addressed community contact information and community characteristics,
- Section 2 asked questions about the technology and information needs in the community, and
- Section 3 was divided into nine topic areas about how communities addressed various aspects of watershed protection and restoration.

All respondents were asked to answer Sections 1 and 2. Guidance was provided to help identify which topic areas were most relevant to the respondent's job responsibilities and expertise to answer questions in Section 3. For topic areas outside of the respondent's knowledge base, it was recommended to skip them or ask someone else from the municipality to respond to these topic areas.

A draft survey was pretested in July 2008 using a selected group of professionals working in the coastal plain with whom the Center has a working relationship to ensure timely and constructive feedback. The survey was revised based on this feedback and was put into an appropriate format for a web survey. A copy of the final survey is provided as Attachment A.

An invitation to participate in the survey was emailed to 355 coastal plain community contacts in thirteen states in late July (Table 1). The survey was also distributed through Cooperative Institute for Coastal and Estuarine Environmental Technology's (CICEET) network of coastal managers. New contacts were added and the survey invitation resent where necessary due to inactive email addresses or replacement of staff. A total of 73 surveys were completed for an overall response rate of 23.3%, with variable response rates to individual questions.

Table 1. Coastal community survey distribution and responses

State	Number Distributed	Number of responses
AL	10	1
DE	22	3
FL	44	17
GA	16	8
LA	22	3
MD	23	7
MS	16	4
NC	36	8
NJ	17	2
PA	17	1
SC	81	12
TX	16	4
VA	35	4
TOTAL	355	73

3.0 SURVEY RESULTS

3.1 General Community Characteristics

The coastal communities responding to the survey represented urbanizing coastal areas of all sizes, with the exception of a couple communities that were more rural in character. A summary of general community characteristics is provided in Table 2. The three land use types that comprised the majority of land area in the community were residential (43%), open space (27%) (e.g., trails, playgrounds, playing fields, golf courses, and natural areas), and agriculture land use (19%).

Table 2. Summary of key community characteristics

Population	Responding communities (%)	Land area (sq. miles)	Responding communities (%)	Land use	Land use (%)
Less than or equal to 10,000	19	Less than 5	10	Low Density	19
10,0001 – 25,000	19	5 – 9	8	Medium Density	15
25,001 – 50,000	15	10-19	0	High Density	7
50,001 – 100,000	10	20-29	5	Institutional	10
Greater than 100,000	37	30-39	2	Commercial	10
		40-49	2	Industrial	6
		50-74	2	Agriculture	19
		75-100	6	Open Space	27
		> 100	61	Other	7

Survey results reinforced our knowledge about the development trends of coastal areas with nearly 68% of the communities indicating moderate growth rates (between 10-25%). In general, smaller communities (e.g. populations less than 25,000) experienced a greater proportion of high growth rates (greater than 25%). The influx of seasonal population has a significant and pervasive influence on the growth of coastal communities. For example, survey results indicate that seasonal populations are relatively large for all communities and are not proportional to the permanent population or land area (Table 3). For example, 77% of coastal communities with populations from 10,001 to 25,000 have an estimated seasonal population equivalent to their permanent population. The only consistent relationship found was that communities with populations greater than 100,000 and land areas greater than 100 square miles experienced seasonal population increases of greater than 50,000 people. An example of more extreme effects of seasonal population included two communities with populations less than 10,000 and areas less than 5 square miles that experienced seasonal growth by more than 25,000 residents on an annual basis (Ocean City, MD and City of Tybee, GA).

Table 3. Percent seasonal population by permanent population category					
	Permanent Population				
Seasonal Population	10,000 or less	10,001 - 25,000	25,001 - 50,000	50,001 - 100,000	Greater than 100,000
1,001 - 2,500	18	8	0	0	0
2,501 - 5,000	9	0	0	17	0
5,001 - 10,000	27	0	11	33	10
10,001 - 25,000	9	77	0	17	0
25,001 - 50,000	18	8	67	0	10
Greater than 50,000	18	8	22	33	81

The most critical issues confronting coastal communities included hurricane preparedness, protection of quality of life and natural resource protection. Economic issues were not ranked as highly (somewhat critical or not an issue), nor was too much development seen as a critical issue (ranked somewhat critical by 45% of the surveyed communities). However, these same communities indicated that the top three environmental issues facing coastal communities, whether large or small, were flood/drought conditions, erosion and sedimentation, and increased stormwater runoff, all of which are impacts from development. Additional environmental issues included drinking water protection and regionally significant environmental features such as Everglades restoration.

To assess the capacity of coastal communities to address these critical environmental issues, the survey asked coastal communities to list the federal regulatory drivers used to protect water resources. Results show that the federal regulatory environment has a strong influence on the activities of coastal communities to protect water resources. All but one coastal community surveyed was regulated by either a Phase I or II National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit. The Clean Water Act (CWA) was also a significant regulatory driver where many sections of the CWA, such as Section 404 wetlands permits, CWA 303d impaired waters, and TMDLs, are used to protect water resources as identified by approximately 70% of the communities surveyed.

3.2 Watershed Planning

Watershed planning is a planning process that involves managing land and water resources on a watershed basis to protect and restore the quality of these resources. Watershed planning was identified by 93% of the communities surveyed (n=55) to be a moderate to high need. However, only 52% of coastal communities currently use watershed plans as a tool for watershed protection.

Of the communities that have watershed management plans, 61% also had additional planning documents specific to water resources such as a Special Area Management Plan, Nonpoint Source Action Strategy, Source Area Protection Plan or TMDL strategy. In

communities that did not have a watershed management plan, eight communities identified at least one other planning document listed in Table 4.

Although watershed plans are used in the majority of coastal communities, only a few specific actions to support the watershed plans have been more broadly adopted. For example, Figure 1 illustrates the percent of communities that have taken or plan to take specific actions to support watersheds plans. The most common actions taken are to include information related to stormwater management (78%) and to establish specific regulations to reduce the impact of development on natural resources (57%). The least commonly adopted elements included limiting the location or density of development and establishing impervious cover limits. Box 1 provides examples of specific recommendations that have been implemented in communities that have adopted a watershed plan.

Table 4. Type of water protection or restoration plans used in coastal communities (n=44)

Type of Plan	Percent Response
Watershed management plan	52
Special Area Management Plan (SAMP)	16
Non point source (land based pollution) action strategy	25
Source Water Protection Plan	18
TMDL Strategy	27
Other*	21
None	14
Don't know	5

*Other plans include: Coastal area management plan, stormwater management plan and natural resource inventory, waterbody management plan, well protection zones, comprehensive conservation management Plan for the Maryland Coastal Bays

Technological and Non-Technological Tools

The survey finds that a majority of communities have a high need for technological tools and are well-equipped to implement a watershed-based approach to planning. For example, 93% of communities have digital mapping capabilities (GIS), 56% have computer models, 71% have data management software and 83% have GPS. Survey responses to other questions suggest the extent to which these technological tools are used to support watershed planning is more limited.

Coastal communities placed less emphasis on the need for non-technology tools such as assessments and evaluations, outreach and education tools, but their use in communities is quite widespread. For example, networking and partnerships were identified as a high need by less than half of the respondents, but were used by more than 70% of the communities. The majority of communities did identify a high need and use for standards and criteria for stormwater management.

Box 1. Examples of water resource protection/restoration recommendations officially adopted in coastal communities.

Density limits in watershed resource protection zones, wetland protection setbacks, impervious surface limits in watershed resource protection zones (Wilmington, NC)

A $1.70 fee increase to fund structural and non-structural projects identified to improve stormwater quality phased at $.34/eru/yr over 5 years beginning in Oct 2004 (Tallahassee, FL)

Executive Order The Energy Independence and Security Act of 2007; requires Low Impact Development for new or redevelopment projects with a footprint of 5000 square feet (0.11 acres). Additionally, sites involving at least 0.11 acres of disturbance must include flow calculations demonstrating concentrated runoff flows from peak rain events will not impact (a) the existing stream, (b) upstream systems and (c) downstream systems of the site is required. (Fort Stewart, GA)

Stormwater ordinance and design manual, construction site inspection program (Town of Bluffton, SC)

An environmental assessment ordinance that requires an Environmental Impact Statement (EIS) for major subdivisions and site plans. (Township of Upper, NJ)

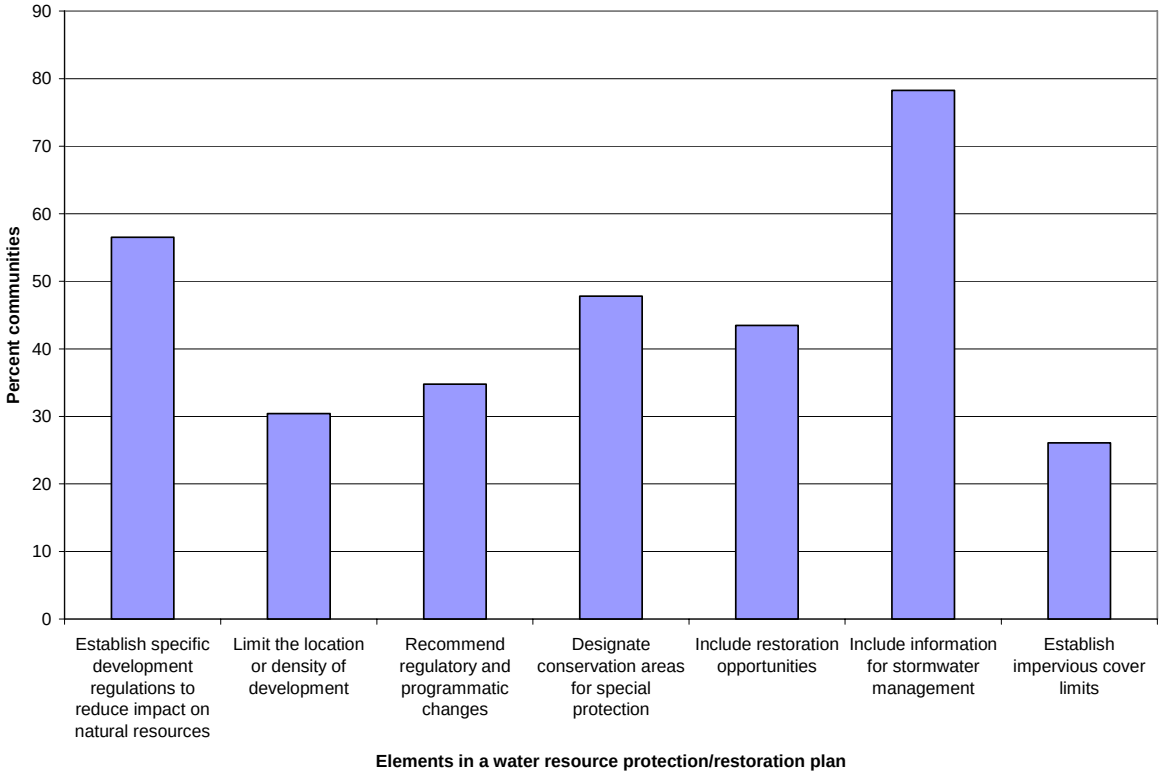

Figure 1. Actions taken or planned in communities to support watershed plans.

Data and information needs

Data and other information to support the watershed planning process and watershed plans vary across coastal areas. Overall, coastal communities draw from diverse sources of information for watershed planning and technical support. The predominant sources include local or regional organizations such as Soil and Water Conservation Districts and their respective County government. A moderate level of technical support is provided through private consultants to 47% of the communities. Given the regulatory pressures on coastal communities, federal organizations are also seen as a source for information and technical assistance to include the U.S. EPA and USGS along with state departments. A lower number of coastal communities rely on coastal-specific types of organizations such as National Oceanic and Atmospheric Administration (NOAA), Nonpoint Education for Municipal Officials (NEMO), National Estuarine Research Reserve System (NERR) and CICEET. Additional technical support is provided by Universities, Sea Grant extension offices, professional organizations and the Center for Watershed Protection to approximately one-third of the communities surveyed.

Of the 40 communities responding to the question about available GIS layers in their community, the majority (80%) had recent (less than 5 years) land use/land cover layers and had delineated watershed boundaries (75%). However, significantly fewer communities have extended the use of the data to map land use by watersheds or develop impervious cover estimates for their watersheds. For example, 48% of the respondents have land use estimates by watershed and 43% have impervious cover estimates. For some communities there was reported difficulty in delineating watershed boundaries due to flat terrain (33%), but only about one fifth of communities indicated insufficient data, money, or technical expertise. A similar proportion of communities (32%) indicated that it was not difficult to accurately delineate drainage boundaries.

Watershed Learning

Survey results found that communities have an interest in many topics to advance watershed planning, especially learning about funding options to support their programs or as an element of a coastal plain network. This is not surprising as a lack of funding was consistently identified as the most challenging element to implement many of the eight tools of watershed protection. From the list of topics provided in the survey, the most prevalent topics to learn about were: new research on the impact of impervious cover on coastal water quality and biodiversity and local program financing options (Table 5). All other topics were favorably received by the majority of communities with the exception of new techniques to restore wetlands in tax ditches.

Communities strongly supported websites (74%) and short 1-2 day workshops (67%), followed by the more standard reports and publications (44%) and direct technical assistance (43%) as the most effective ways to access and learn new information (Table 6). Webcasts, listserves and 3-4 day workshops were seen as less effective learning tools. Networking with peers was preferred by a little more than one-third of coastal communities. Three major elements identified by coastal communities to include in a network to advance watershed planning focused on funding resources, training, and sharing of information (discussion groups) (Table 7).

Table 5. Topics coastal communities want to learn about to advance watershed planning (n= 60)	
Topic	Percent Response
Dealing with coastal Total Maximum Daily Loads	55
New techniques to restore wetlands in tax ditches	35
New research on the impact of impervious cover on coastal water quality and biodiversity	77
Local program financing options	68
Stormwater program building techniques	62
Coastal plain watershed planning guidance	57
Low Impact Development (LID) techniques	68
Open space planning and preservation	65

Table 6. Techniques identified by coastal communities to access and learn new information (n=61)	
Techniques	Percent Response
Websites	74
Webcasts	3
Direct technical assistance	43
Networking with peers	36
Conferences	31
Short (1-2) day workshops	67
Extended (3-5) day workshops	5
Pre-packaged training tool kits	12
Reports and publications	44
Listserves	5
Other (please specify)	2

Table 7. Preferred elements to include in a coastal plain network to help your community advance watershed planning (n=60)	
Elements of a Network	Response Percent
A forum to post questions and get answers	33
Contact information for expertise	57
Funding resources	87
Data clearinghouse (please suggest data types in comments section)	32
Sharing of information (discussion groups)	58
Training	65
List of resources (please suggest topic areas in comments section)	30
None are needed, too much of this stuff out there already	3
Other (please specify)	12

3.3 Tools of Watershed Protection and Management

This section highlights key findings of Section 3 of the survey, which asked a series of questions about how communities addressed various aspects of watershed protection and restoration. Survey results are organized by the eight tools of watershed protection described below.

Tool 1: Land use planning involves making decisions about the amount and location of development that occurs in a community based on the capacity of the land to support it. The most basic tools of land use planning include comprehensive planning and zoning and these can be applied at the watershed scale to redirect development, preserve sensitive areas, or reduce impervious cover in a given portion of each watershed.

Tool 2: Land conservation permanently protects the most critical areas in the community, such as endangered species habitats, wildlife corridors, hydrologic reserve areas, contiguous forests and wetlands, from development using techniques such as acquisition or conservation easements.

Tool 3: Aquatic buffers are vegetated areas along a shoreline, wetland, or stream where development is restricted or prohibited. The primary function of aquatic buffers is to physically protect and separate a stream, lake or wetland from future disturbance or encroachment. This tool involves making choices about how to maintain the integrity of streams, shorelines and wetlands and protect them from encroachment.

Tool 4: Better site design practices are used to minimize the negative impacts of new development on water resources by reducing the amount of impervious cover, increasing natural lands set aside for conservation, and using pervious areas for more effective stormwater treatment. Open space design, green infrastructure, and environmentally sensitive design are often used interchangeably to discuss the principles of better site design.

Tool 5: Erosion and sediment control deals with the clearing and grading stage in the development cycle, when stormwater runoff can deliver high sediment loads to downstream waters. This tool reduces the impact of sediment by requiring specific temporary practices that reduce erosion and prevent sediment from entering downstream waters to be installed at construction sites.

Tool 6: Stormwater management identifies how, when and where to provide post-construction stormwater management within a watershed and which combination of stormwater treatment practices will best meet watershed objectives. These practices include structural, engineered facilities such as ponds, swales, and filtering practices, as well as non-structural practices and program activities such as street sweeping.

Tool 7: Non-stormwater discharges include any discharges to the drainage system that are not composed entirely of stormwater, such as wastewater from residences and business, chlorinated pool water, and oil and grease from automotive shops and restaurants. This tool involves making decisions about how to control these discharges to reduce impacts to water resources.

Tool 8: Watershed Stewardship involves creating programs to increase public awareness about watershed management efforts, get participation in the process to ensure that citizens practice good pollution prevention practices on their own property, and develop funding to sustain watershed management efforts.

The most common barriers or challenges to adopting a set of tools for watershed protection included funding and limited staffing (Table 8). Although land conservation funding was the most commonly cited challenge, a lack of interest from residents was the second most commonly cited barrier. Overall, elected officials place a high priority to protect high quality local water resources (53%) and therefore the survey results indicated that less than one-third of the communities found that a lack of support from elected official was an impediment or challenge. Further, limited technical expertise was not seen as a challenge, which is consistent with survey results that found widespread use of technological tools to support watershed planning.

Table 8. Challenges to implement specific tools for watershed protection (reported as percent of survey respondents)*

Challenge	Watershed Protection Tool				
	Land Use Planning	Land Conservation	Aquatic Buffers	Stormwater Management	Stewardship
Lack of Funding	83	83	55	77	85
Limited Staff	51	39	52	47	67
Lack of interest from residents and business owners	44	49	36	43	42
Lack of support from elected officials	37	37	21	30	29
Lack of education of our elected officials, businesses etc.	n/a	**44	37	37	56
Competing interests about future use and management of land	31	46	27	37	31
Limited technical expertise or staff	20	39	21	30	23

* The survey did not ask this question for all eight tools.
** This challenge was re-worded for the Land Conservation tool as “Lack of information to inform elected official, business owners, residents, staff etc. of the need”

Tool 1: Land Use

The current level of development varied across the communities where 41% (n=16) of the communities stated that greater than 50% of their land area was developed. Extensive build-out, where 80% of the land within their jurisdiction was developed, was reported for 31% of these coastal communities. In terms of future growth, the most predominant future land use type reported was low and medium density residential land uses, with 51% of the communities indicating that 20% of their growth is planned for this land use. A slight increase in high density residential along coastal areas or major transportation corridors was reported, with 41% of communities projecting an increase in high-density residential land use from 7% to 10%.

A large majority (81%, n= 48) of communities have a comprehensive plan that has been recently updated in the past two to five years. Nine communities surveyed did not have a comprehensive plan. The most common elements of comprehensive plans in at least half of the communities surveyed included the following:

- general guidance to protect natural resources,
- vision statement includes environmental protection,
- identifies or prioritizes natural resource conservation areas, and
- addresses stormwater runoff.

Less than half of the communities indicated that their comprehensive plans address specific issues related to water resources other than reducing stormwater runoff. For example, although 60% of the communities are regulated by TMDLs, only a small proportion of communities have incorporated the associated water quality impairments into their comprehensive plans (20%). Given this fact and that only 41% (n=16) of the communities have included watershed maps in their plans, it is not surprising that many communities do not direct development away from specific watersheds or water bodies through comprehensive planning efforts. In fact, often times the growth is actually occurring near these water bodies.

Staffing may be an issue with some communities as 30% have two planning staff or fewer, but 56% of the communities have at least three planning staff. The staffing levels in the communities are not related to the population of the community where it may be assumed that larger communities would have more land use planners on staff compared to smaller coastal communities.

The majority of coastal communities use the following planning and development practices to guide the location and intensity of development: overlay zoning, planned unit development (PUDs), infrastructure planning and road standards regulations. It is encouraging that approximately one- third (37%) of the communities use impervious cover limits, conservation subdivisions (30%) or infill/community redevelopment incentives to guide development (32 %). Three communities reported the use of watershed-based zoning: Wilmington, NC, Miami Dade County, FL and Townsend, DE. Wilmington, NC also employs impervious cover limits and infill/community redevelopment incentives to guide development.

According to the majority of respondents, the most problematic types of development to review included: large PUDs, commercial developments (big box, strip malls) and waterfront redevelopment. This was attributed to regulations that are convoluted or too complex in some communities, or in other communities, too generic. Communities also commented that redevelopment is occurring under more rigid standards compared to when parcels were initially developed. With the moderate to high growth rate experienced by coastal communities, there is the need to balance development with natural resource protection. In communities where little developable land is available, the remaining parcels are more challenging to develop because this land has site constraints that would typically limit development (e.g. steep slopes, wetlands, sensitive areas, soils).

Tool 2: Land Conservation

More than 50% of the communities surveyed stated that local land acquisition programs, third party non-government organizations, and State and Federal agencies have been used to plan and acquire lands for conservation. Table 9 lists the techniques used for coastal land conservation. Of the 40 respondents to this question, 14 communities stated that there is no local land acquisition program in their community.

Table 9. Techniques used to conserve natural resources in coastal areas (n=38)

Technique	Percent Response
Land acquisition programs	58
Conservation easements (purchased by public agencies)	63
Voluntary conservation easements (landowner stewardship)	68
Natural resource protection regulations	47
Planning and zoning techniques	63
Greenway or other plan	47
Others include: Land Trust for the Mississippi Coastal Plain, State and Federal wetland laws, Trust for Public Land	

Overall, a relatively small proportion of land area in coastal communities is designated for natural resource protection. For example, 49% (n=19) of the communities reported that 1-10% of the land area in their community is designated for conservation. Larger expanses of natural resource protection areas are found in 46% of the communities where up to 25% of land is conserved as natural resource areas. Where these lands are present, in general, the State provides the only, or the most stringent, regulations to protect a range of natural resource types (e.g. barrier islands, islands, tidal shorelines, wetlands, forest, etc.), followed by the federal government and then local communities. Some exceptions included federal regulations to protect endangered species and that all levels of government have similar influence in their regulations to protect large contiguous tracts of forests. State and local governments were reported to have similar levels of influence in terms of their ability to limit development in sensitive areas. For example, local regulations are used to limit development in riparian corridors and floodplains, but a

similar number of communities rely on State regulations to limit development in these areas.

A series of questions in the survey pertained to wetland protection and management given the ecological benefits provided by wetlands (see Wright et al. 2006 for a summary of these benefits). The CWA Section 404 wetland permits was one of the most predominant regulatory drivers identified by 71% of the coastal communities surveyed to protect water resources. However, control over wetlands is not necessarily at the local level, but rather wetland management strategies in coastal communities are regulated entirely by the State or Army Corps of Engineers. The jurisdiction's responsibility is to require that all evidence for the state and federal wetland permits have been secured prior to plan approval. Ultimately, for the majority of communities, there is little local control over wetland protection. Encouragingly, 32% (or 13) of the communities surveyed have a wetland mitigation strategy in the jurisdiction.

Tool 3: Aquatic Buffers

The majority of coastal communities have some type of guideline or local regulation for aquatic buffers (Figure 2). Of the communities that have a local ordinance or voluntary guidelines, 93% also have a department that is responsible for enforcement. Despite the extensive buffer regulations at the local level, more stringent regulations are found at the State level in many communities.

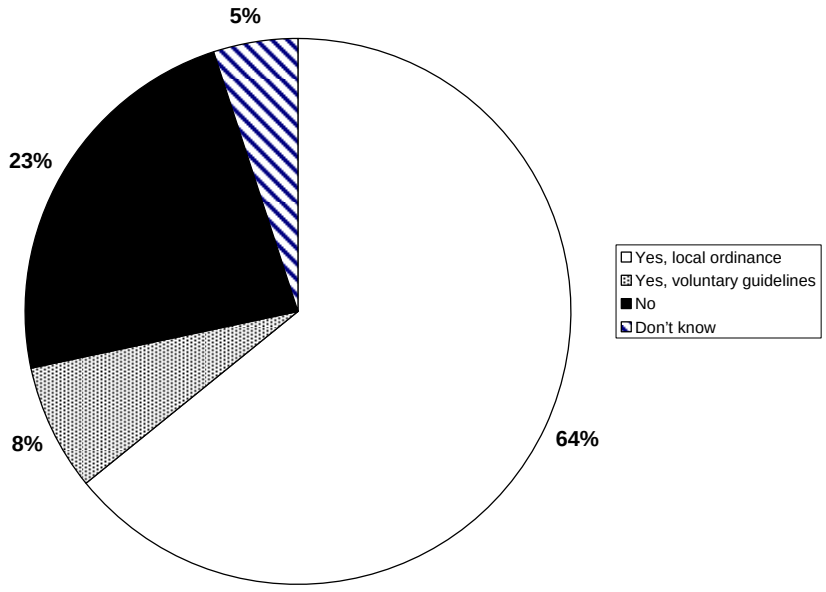

Figure 2. Riparian buffer management in coastal communities.

Responses to a series of questions to characterize the management of aquatic buffers revealed minimal data and limited criteria for effective protection. Although 96% of communities that have a buffer ordinance specify a minimum buffer width, only 15% to 48% of the communities include other criteria, such as specifying the type of vegetation required in the buffer, requiring invasive species control, and restrictions on use of

herbicides/pesticides. Box 2 highlights a handful of communities that have more comprehensive local aquatic buffer regulations. Data to understand the quality and extent of buffers in jurisdictions is limited as only a small proportion of communities have completed a stream inventory, or identified the location of aquatic buffers on zoning or other maps. Further, despite the high proportion of coastal communities using GIS (93%), it is not being widely used for aquatic buffer mapping or analysis. Only 26% (or 9 communities) identified aquatic buffers on maps.

Even where aquatic buffer ordinances include a comprehensive set of performance criteria, issues with long-term enforcement and maintenance are common. The top three issues identified that limit the effectiveness of aquatic buffer ordinances included:

- lack of standards for long-term maintenance (60%),
- enforcement limited to plan review (48%), and
- encroachment and clearing of buffers by property owners (40%).

Box 2. Example communities with comprehensive aquatic buffer regulations.

St. Mary's County, MD, Ocean City, MD, Northhampton County, VA and Washington, NC specify, at a minimum, the following five criteria in their aquatic buffer ordinance:

- minimum buffer width
- minimum requirements for vegetative cover
- re-vegetation required if vegetation currently does not exist
- program/mechanism to inform new property owners
- invasive species control plan, no use of herbicides/pesticides.

Tool 4: Better Site Design

With the moderate to high growth rate experienced in coastal communities, a large number of site plans are reviewed each year. Survey results find that 41% of communities are reviewing 100 or more site plans per year, while a small proportion review (on average) between 50-100, and 32% review less than fifty. In general, individual staff are reviewing about 10-20 plans a year, but there are a few outlying communities where a single staff person is reviewing more than 50 plans per year.

Overall, coastal communities demonstrate support for Better Site Design (BSD) practices in their communities. The practices are most commonly implemented by exceptions rather than as requirements. Table 10 summarizes the percentage of communities that do not allow, allow by exception, or require BSD practices for open space conservation, streets and parking lots. The most commonly required BSD practices include: limits of disturbance must be shown on construction plans, parking lot ratios are set as both a minimum and maximum, and landscaping is required for parking lots. In general, all other practices are allowed by the majority of the communities surveyed.

Table 10. The application of Better Site Design practices in coastal communities (n=30, n=32*) (expressed as percent)			
BSD Practice	Not allowed	Allowed	Required
Open space conservation			
LEED certified criteria for new development	8	88	4
Open space or cluster development designs	7	83	10
Irregular lot shapes	10	86	3
If present on site, some forest or specimen trees have to be conserved	4	50	46
Limits of disturbance shown on construction plans	0	35	65
Rooftop runoff must be directed to lawn	0	78	22
25 % open space requirement for new development	4	77	19
Street Design*			
Swales instead of curb and gutter in new residential streets	16	84	0
Sidewalks on one side of street	10	72	17
Minimum right of way width for residential streets is 45 ft or less	37	57	7
Alternatives to standard cul-de-sac requiring radius greater than 45ft	34	59	7
Landscaped islands can be created in cul-de-sacs	21	79	0
Parking Lots			
Minimum street width so parking lanes serve traffic (i.e. queuing streets)	32	68	0
Minimum and Maximum parking ratios	11	46	43
Incentives to build parking garages	52	48	0
Parking lot landscape requirements (tree canopy requirements)	10	38	52
Shared parking to reduce parking requirements in residential areas	33	67	0
Minimum parking stall width is 9ft or less	39	46	14
Minimum parking stall length is 18 ft or less	41	44	15
Pervious parking surfaces	17	77	7
*Different BSD question			

There are few incentives and many impediments to adopt BSD practices by both local jurisdictions and the development community. In communities where incentives are used, they typically include: density bonuses and off-site mitigation. A smaller proportion of communities provide stormwater credits (12.5%) (St. Mary's County, MD, Kent County, MD, Washington, NC, Ocean City, MD). In 34% of the communities surveyed, incentives are not provided to encourage the use of BSD as they are largely not required

by regulation, while 19% of the communities stated they were unaware of current BSD practices. The three most commonly reported impediments to using BSD include:

- developers seek to maximize development of parcel (e.g., build-out the site to extent allowable by zoning) (87%)
- developers achieve minimum local requirements (55%) specified by local zoning ordinances, and
- site plans reflect standard design templates (55%).

As the majority of communities allow, rather than require, BSD practices, pre-consultation meetings between site plan reviewers and the developers was reported as an effective mechanism by 72% of the coastal communities to further implement BSD practices.

Tool 5: Erosion and Sediment Control

Erosion and sediment control (ES&C) is a tool used to address sediment leaving construction sites and entering coastal water bodies. The majority of coastal communities identified sediment as a priority pollutant and have an ES&C program (83%, n =25) that either follows local or State regulations. However, the majority of local communities have the delegated authority to enforce the regulations (66%). Table 11 identifies the proportion of communities adopting a set of ES&C practices. The most commonly adopted practices include requiring tree conservation, temporary seeding and an inspector/contractor certification program. This is consistent with the survey finding that 65% of coastal communities require the BSD practice of showing the limits of disturbance on construction plans (see Table 10).

Table 11. Erosion and sediment control practices used in coastal communities (n= 24)

ES&C Practice	Percent Response
Inspector and contractor certification program	58
Phased clearing restrictions (e.g. 20 acres at a time)	16
Require tree conservation practices	67
Preservation of natural areas is enforced	38
Site fingerprinting or clearing limits	25
Require temporary seeding practices	63
Sediment basins often converted into permanent practices	50
Sufficient fees to support the program	13
Third party inspectors	13
Developers pay for inspectors	8

Despite the widespread adoption of ES&C programs, only 19% of survey respondents reported that their ES&C program was either effective or very effective. The majority of communities (65%) indicated only adequate or somewhat effective ES&C programs. The problems that may be contributing to the low proportion of effective programs are not technical in nature, but rather driven by regulatory and community issues. For example, the most commonly reported problems included: small sites that are not regulated (e.g.

less than 1 acre), discharge of sediment occurs to wetlands, and the perception by the community that sediment is not issue. Communities who reported satisfaction with their program indicated that the authority to issue stop work orders, and dedicated, experienced and trained inspectors using effective 'checklists' all contributed to effective ES&C programs.

Tool 6: Stormwater Management

A common set of priority pollutants was identified by coastal communities to include: sediment (65%), nitrogen (60%), and trash/debris (46%). Bacteria (43%) and phosphorus (38%) were also an issue, but in fewer communities. Of the communities surveyed, 47% reported problems with harmful algal blooms due to excessive nutrient pollution and tidal flushing of stormwater ponds. Harmful algal blooms in coastal waters are attributed to high nutrient loadings (Mallin et al, 2004).

Local stormwater management plans and design manuals are the main tools used to address stormwater in coastal communities, where few communities rely on State-based manuals alone. It is typical for more than one department to review and approve stormwater management plans. In 33 out of the 34 communities responding, local governments have at least one part in the review of stormwater management plans and also rely on other local departments, Conservation districts or State agency for review or approval responsibility. Other tools such as stormwater retrofit inventories have yet to be widely adopted and most communities are not managing stormwater at the watershed scale by incorporating stormwater into local watershed plans. However, it is encouraging to note that 24% (n=29) of the communities have integrated their stormwater management plans with their local watershed plans (Galveston Bay Watershed, TX, Bluffton, SC, Volusia County, FL, Washington, NC, Mississippi Power Company, MS, Dickinson Bayou Watershed, TX Fort Stewart, GA). Other communities have linked these pollutants to their NPDES and TMDL permit as required by these regulatory programs.

Sediment removal and flood controls are the most common elements of stormwater management plans. A little more than half of the communities have extended volume and rate control to also address stream bank erosion, as well as incorporating elements of pollutant reduction into their plans. A list of elements commonly a part of stormwater programs and plans are listed in Tables 12 and 13.

The practices and techniques used to manage stormwater pollutants are partly addressed by programs such as litter control programs and lawn care management, which have been adopted by 62% and 58% of the coastal communities surveyed, respectively. The most widely adopted structural practices are wet ponds used in 81% (32) of the communities, open channels (66%) and dry ponds (53%). Less than 5% of the communities had filtering practices or proprietary devices as part of their stormwater program. The less frequent use of some practices is attributed to high water tables or poor soils that inhibit the use of infiltrating practices, or the flat terrain or lack of head that constrain the use of many stormwater practices used in non-coastal areas. Also, the ability to use excavated

soil from ponds to apply as fill elsewhere on the site is a primary driver influencing the use of ponds.

Table 12. Elements of coastal community stormwater management programs (n=28)	
Program Elements	Percent Response
Current database of practices	46
Any GIS mapping for outfalls, pipes, and/or practices	79
Use of maintenance agreements as part of plan approval	46
Maintenance tracking program or database for stormwater practices (e.g., BMPs)	46
Local government maintains all practices public and private	21
Individual property owners (public or private) are responsible for maintenance	54
As-built plans of stormwater practice submitted to approval authority	64
Training for staff for developing stormwater technologies or practices	32

Table 13. Elements of coastal community stormwater management plans. (n = 34)	
Plan Elements	Percent Response
Sediment removal	82
Contaminant/pollution reduction	56
Floatable trash separation	35
Volume and rate control to adjacent water bodies to reduce stream bank erosion	56
Volume and rate control to adjacent water bodies to protect habitat	21
Volume and rate control to adjacent water bodies to reduce thermal impacts	18
Volume and rate control to adjacent water bodies for flood control	74
Groundwater recharge	24

Few communities rely on a single source of funding to support their stormwater management program. Residential taxes are the most common source of funding (69%), but development impact fees and stormwater utility fees were also commonly used in 54% and 46% of the communities, respectively. Overall, 58% of the communities used more than one funding source. The stormwater budget for a local jurisdiction is generally spread out amongst a variety of program elements (Table 14), and only a limited number of communities spend most of their funds on a single program element (e.g., plan review and ditch maintenance).

Table 14. Distribution of funding amongst stormwater program (n=25)			
Program element	Proportion of funding allocated		
	<30%	30-60%	>=70%
Plan review	60	20	8
Inspectors	72	24	0
Development or update of stormwater plan, regulations, codes	40	4	0
Maintenance	52	16	0
Ditch maintenance	40	24	8
Training	44	4	0
Retrofits	48	0	0
Cost-share programs (with residents)	16	0	0
Education and outreach	32	0	0

Although the sample size was small for the communities responding to these budget questions, communities with populations greater than 100,000 did tend to have the largest stormwater program budgets (greater than $1,000,000). In general, there was no relationship between the size of the budget and sources of funding used to support the program, which differs from what has been found in some other studies. For example, Law et al. (2005) found municipalities in the Chesapeake Bay with larger street sweeping budgets tended to be communities with a stormwater utility fee.

Tool 7: Non-stormwater Discharges

Coastal communities generally rely on local staff or state agencies to review and approve wastewater plans as well as investigate and remediate illicit discharges. The wastewater systems in coastal communities are typically separate from storm sewer systems, with only one community reporting a combined sewer system (Bryan County, GA). It appears that coastal communities may be moving away from the use of on-site wastewater treatment and disposal. For example, 44% of the communities reported that 25% or less of their community relies on septic systems, whereas only nine communities indicated that more than half of their development relies on septic systems.

A number of programs are in-place to address non-stormwater discharges including illicit discharge detection and elimination (IDDE), Clean Marinas, household hazardous waste collection, septic system inspection and hotspot detection. With the exception of discharges from construction sites, the adoption rates of these programs are not necessarily related to documented or reported occurrences of these types of discharges. The discharges that were most commonly identified as being the most severe in terms of confirmed occurrences include: discharges from construction sites, septage from septic systems and washwater from residential and commercial sources. The most common non-stormwater discharge programs include: household hazardous waste, automotive fluid/recycling program and a spill response program where 41-50% of the communities had such a program. For the other programs listed, the adoption rates were low, ranging from 11% to 41% (Table 15).

Table 15. Programs to control non-stormwater discharges (n=27)	
Program	Percent Response
Illicit discharge detection and elimination (IDDE) program	41
Spill response program	44
Stormwater hotspot outreach and education program (e.g. automotive repair facility education program, restaurant grease storage and disposal program)	11
Clean Marina program	30
Septic system inspection program	33
Septic system maintenance program	22
Stormwater hotspot inspection program	11
Automotive fluid collection/recycling program	48
Household hazardous waste collection program	52
Storm drain stenciling program	41
None	15

As failing septic systems may be a significant source of nutrient and bacterial pollution to coastal waters, there is a need to ensure the proper functioning of septic systems. Only a small percentage of communities had septic system inspection programs and a required maintenance program. Seventy-nine percent (n=19) of the communities rely on citizen reporting as a way of identifying failing systems. However, of these communities, only 24% (or six communities) had an illicit discharge hotline available for citizen reporting. Overall, the greatest challenges or obstacles to effectively manage discharges from non-stormwater discharges focused on septic systems and included: an unawareness of failing septic systems, lack of information on maintenance requirements, limiting physiographic conditions such as high water tables, and a lack of information and resources in general on these types of discharges (Table 16).

Table 16. Major challenges and obstacles to manage non-stormwater discharges in coastal communities (n=22)	
Challenge or Obstacles	Percent Response
Unaware of failing systems	58
Low separation distance (e.g. high water table)	50
Insufficient sizing of systems (e.g. redevelopment for vacation homes)	19
Lack of information on maintenance requirements	54
State program that lacks of local resources to address local problems	58
Limited technical expertise of staff	12

Tool 8: Stewardship

Education and outreach was identified as a key tool to adopt a watershed approach in coastal communities. Most communities with populations greater than 100,000 had two to three staff dedicated to stewardship efforts, while it was more common for communities with less than 100,000 to staff the equivalent of a half or one staff person. The stewardship programs in both community types predominantly focus on the general public, permanent resident population with significantly fewer targeted programs for seasonal residents. Municipal employees were the second highest targeted group, where 57% of the coastal communities have programs specific for municipal employees. Five communities reported having no outreach and education program.

There are a number of outreach and education campaigns used to foster good watershed stewardship practices. Table 17 lists the types of education and outreach programs that are related to water resource protection and the percentage of communities adopting each program. Of the 45 communities answering this question, eight communities have adopted 10 or more programs while the average number of programs adopted is five (See Box 3). Community size and NPDES status did not appear to influence the number of education and outreach programs adopted by a community.

Table 17. Percent Communities Adopting a Stewardship Program (n=45)

Stewardship Program	Percent Response
Proper lawn care management	58
Water conservation/reuse	62
Buffer encroachment	44
Proper waste oil disposal	64
Septic system maintenance (bacteria)	49
Pet waste pick-up	49
Better management of boat/marina sewage	42
Better management of boat/marina trash or fuel spills	38
No littering	62
Stormdrain markers	53
Downspout disconnection program	29
Wildlife protection (e.g. Lights out!)	36
Adopt-a-pond	2
No wake zones	51
Other	11

Box 3. Coastal communities adopting 10 or more stewardship programs*

6 Coastal Counties of South Mississippi**
Volusia County, FL
Galveston Bay, TX
Worcester County, MD
Hernando County, FL
Town of Hilton Head, SC
Collier County, FL
Glynn County, GA

** Two additional communities indicated 10 or more programs adopted in their community but did not identify the name of the community*
***Survey respondent from MS USDA*

Although the major focus of these programs was on the general public, permanent population, survey results did not indicate a high rate of implementation of stewardship practices in this group or any other group (e.g., seasonal residents, commercial or institutional sector). Survey results suggest that only 24% of the general public and 30% of municipal employees have an implementation rate greater than 25%.

4.0 CONCLUSIONS

Overall, according to the survey, local officials in coastal communities place a high value on the protection of high quality water resources. To protect these resources, the majority of communities are using a few of the tools of watershed protection, but are limited in their effectiveness or level of implementation. Although most communities indicate the challenges of insufficient resources to adopt these tools, local communities may benefit from a more critical analysis to help better align or strengthen existing programs and regulations to improve watershed protection. For example, the technological capacity of these communities does not seem to be an issue for the vast majority, but the application of these tools for watershed protection has been limited with regards to the application to watershed planning efforts.

The survey results suggest that communities are using their resources to satisfy regulatory mandates which may leave them with few, if any resources to 'add' new initiatives, such as watershed planning. However, greater consolidation or coordination between land use planning, watershed management, and stormwater management programs may help to alleviate resource constraints to improve watershed protection while continuing to meet federal mandate requirements. An example area to highlight is the adoption of additional criteria to improve the protection and management of aquatic buffers. Strengthening local aquatic buffer regulations by going beyond minimum buffer widths, along with a more broad-reaching education and outreach program on buffer management to permanent and seasonal residents would help to protect local water resources.

For each of the eight tools of watershed protection, these types of survey findings will be used to determine the specific needs or adaptations for coastal watershed management. Other survey data regarding watershed planning topics of interest, community characteristics, pollutants of concern, and obstacles to tool implementation will be used to develop articles describing the adapted Eight Tools Framework for coastal plain watersheds. In addition, communities with advanced programs and methods will be contacted for additional information in order to utilize their experience in developing the new tools. Survey responses regarding elements needed in a coastal plain watershed network, and preferred methods of receiving watershed information will be used to develop the network.

5.0 REFERENCES

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Attachment A

Watershed Planning Needs Survey of Coastal Plain Communities

Coastal Communities Needs Survey

Thank you for taking time to complete this survey. The purpose of the survey is to get a better understanding of what coastal communities are doing to protect or restore local watersheds along the Atlantic and Gulf coastal plain. The survey should take about one hour to complete, depending on how many sections you feel comfortable answering.

You were selected to participate in the survey based on input from your state coastal management program, sea grant and/or NEERs community training and nonpoint source programs.

There are three parts to the survey and we request that all respondents answer Sections 1 and 2. Section 1 solicits information about who you are and some general features of your community. Section 2 asks questions related to where you get your technical information and data related to watershed planning.

Section 3 is divided into topic areas about how your community addresses various aspects of watershed protection and restoration. Guidance is provided to help you identify which topic areas are most relevant to your job responsibilities and expertise. For topic areas outside of your knowledge base, we recommend asking someone else, with expertise in those areas, to respond or skipping them, if need be.

The information you provide will help us determine which watershed techniques are most commonly applied, the major gaps in watershed management, and examples of innovative programs and practices. Results will be incorporated into a Center for Watershed Protection publication that provides guidance specifically for coastal communities.

The first 25 participants to complete the survey will be mailed a free CD of the Center for Watershed Protection's comprehensive text, The Practice of Watershed Protection. All participants completing the survey will be entered in a random drawing to receive up to 8 hours of Center for Watershed Protection consultation services.
All survey participants will be acknowledged in subsequent reports and materials that summarize the survey results.

Please submit your survey by Monday, August 11th.
Thank you for your participation!

INSTRUCTIONS:

Navigate through the survey using the "Next page" and "Previous page" buttons. Your answers will be saved on your computer. You can resume the survey at any time using the same link on the same computer to add or change responses. Make sure that cookies are enabled in your browser settings before beginning the survey.

If someone else is answering a section(s), please have them use the same computer so that we receive one complete survey from your office.

Once you select the "Submit" button at the end of the survey, your responses will be sent to us and you will no longer be able to add or change your answers. Please make sure that you do select "Submit" once you are completely done.

If you have any questions, please contact Rachel at rs@cwp.org or 410-461-8323 ext. 209.

Coastal Communities Needs Survey

Section 1. Getting to Know You and Your Community

1. Please enter the information indicated below.

Name	
Jurisdiction	
Department	
Position title	
Email	
Phone	
Mailing address	

2. What is the current permanent population of your community?

3. What is the average seasonal population of your community?

4. What is the approximate land area of your community (square miles)?

5. Overall, how critical are the following issues facing your community?

	Very critical	Critical	Somewhat Critical	Not an issue	Don't know
Hurricane preparedness	◯	◯	◯	◯	◯
Eroding tax base	◯	◯	◯	◯	◯
Diversifying economic development	◯	◯	◯	◯	◯
Too much development	◯	◯	◯	◯	◯
Protecting quality of life	◯	◯	◯	◯	◯
Maintaining community character	◯	◯	◯	◯	◯
Natural resource protection	◯	◯	◯	◯	◯
Natural disaster planning	◯	◯	◯	◯	◯
Stormwater management	◯	◯	◯	◯	◯
Reliable drinking water supply	◯	◯	◯	◯	◯

Please specify if other issues are amongst the most critical facing your community.

Coastal Communities Needs Survey

6. Based on your professional experience, please indicate if the following environmental issues are affecting your community.

	Yes, being addressed	Yes, not being addressed	No, not an issue	Don't know
Water quality degradation (e.g. closure of shellfish beds, algae bloom)	◯	◯	◯	◯
Aquatic habitat loss (e.g. sea grass beds, wetlands)	◯	◯	◯	◯
Terrestrial habitat loss (e.g. maritime forest)	◯	◯	◯	◯
Reduced species diversity (aquatic or terrestrial)	◯	◯	◯	◯
Flooding or drought conditions	◯	◯	◯	◯
Erosion/sedimentation (e.g. lake sedimentation, construction runoff)	◯	◯	◯	◯
Increased stormwater runoff (e.g. from loss of permeable surfaces)	◯	◯	◯	◯

Please specify if other environmental issues are important in your community.

7. Which of the following federal regulatory drivers have been used to protect water resources in the community? Please select all that apply.

- ☐ National Pollutant Discharge Elimination System (NPDES) Phase I
- ☐ NPDES Phase II
- ☐ Clean Water Act (CWA) Section 303(d) impaired waters
- ☐ CWA Total Maximum Daily Loads (TMDLs)
- ☐ CWA Section 404 permits (Wetlands)
- ☐ CWA Section 401 Water Quality Certification
- ☐ Coastal Zone Management Act
- ☐ Safe Drinking Water Act (Source Water Protection Plans for Drinking Water)
- ☐ Endangered Species Act
- ☐ None apply
- ☐ Don't know

Coastal Communities Needs Survey

8. What types of restoration projects to restore degraded natural resources have been completed in the community in the past 5 years? Please select all that apply.

- [ ] Wetland restoration
- [ ] Stormwater retrofits
- [ ] Stream or ditch restoration
- [ ] Structural shoreline stabilization (e.g.jetties, groins, breakwaters, bulkheads)
- [ ] Non-structural shoreline stabilization (e.g. vegetation, living breakwater)
- [ ] Shellfish (or other aquatic species) restoration activities
- [ ] Beach/river trash or debris cleanup
- [ ] Wastewater discharge upgrades/repair
- [ ] Restorative/native planting (in buffers, dunes, etc)
- [ ] Beach renourishment
- [ ] No restoration projects have been completed
- [ ] Don't know
- [ ] Other (please specify)

9. Please provide us with a brief, 2-3 sentence description of a key restoration project, or provide the link to a web site describing the project. Include the type of project, cost, funding source(s), and project partners.

10. How great a priority do the local decision makers in the community place on protecting high quality local water resources (e.g. preventing or minimizing pollutants entering water bodies, preserving natural areas, etc.)?

11. Is there a non-government organization in the community that provides assistance, support or advocacy to advance watershed protection in the community?

12. Please provide the name of the non-government organization(s) and up to three examples of the type of assistance, support or advocacy the organization provides.

Coastal Communities Needs Survey

Section 2. Information Needs to Protect Watersheds in the Coastal Plain

1. What are the sources of information used by your office for watershed protection and restoration efforts? Please select all that apply.

- [ ] Environmental Protection Agency (EPA)
- [ ] National Oceanic and Atmospheric Administration (NOAA Coastal Services Center)
- [ ] United States Geological Survey (USGS)
- [ ] US Department of Agriculture/National Resources Conservation Service (USDA/NRCS)
- [ ] State Coastal Zone Management Office
- [ ] State University Sea Grant, Extension Agent or Community Specialist
- [ ] State Department of Natural Resources
- [ ] Nonpoint Education for Municipal Officials (NEMO)
- [ ] National Estuarine Research Reserve System (NERR) Coastal Training Program
- [ ] Center for Watershed Protection
- [ ] Cooperative Institute for Coastal & Estuarine Environmental Technology (CICEET)
- [ ] Universities, a non-State Sea Grant Extension office
- [ ] Soil and Water Conservation Districts
- [ ] County government
- [ ] Professional Organization
- [ ] Consultants
- [ ] Other (please specify)

Coastal Communities Needs Survey

2. What are the sources for technical support used by your office for watershed protection and restoration efforts? Please select all that apply.

- [ ] Environmental Protection Agency (EPA)
- [ ] National Oceanic and Atmospheric Administration (NOAA Coastal Services Center)
- [ ] United States Geological Survey (USGS)
- [ ] US Department of Agriculture/National Resources Conservation Service (USDA/NRCS)
- [ ] State Coastal Zone Management Office
- [ ] State University Sea Grant, Extension Agent or Community Specialist
- [ ] State Department of Natural Resources
- [ ] Nonpoint Education for Municipal Officials (NEMO)
- [ ] National Estuarine Research Reserve System (NERR) Coastal Training Program
- [ ] Center for Watershed Protection
- [ ] Cooperative Institute for Coastal & Estuarine Environmental Technology (CICEET)
- [ ] Universities, a non-State Sea Grant Extension office
- [ ] Soil and Water Conservation Districts
- [ ] County government
- [ ] Professional Organization
- [ ] Consultants
- [ ] Other (please specify)

Coastal Communities Needs Survey

3. What are the TOP THREE ways you prefer to access and learn new information to help you better do your job?

- [ ] Websites
- [ ] Webcasts
- [ ] Direct technical assistance
- [ ] Networking with peers
- [ ] Conferences
- [ ] Short (1-2) day workshops
- [ ] Extended (3-5) day workshops
- [ ] Pre-packaged training tool kits
- [ ] Reports and publications
- [ ] Listserves
- [ ] Other (please specify)

4. How necessary are the following technology-based tools to implementing a watershed-based approach to improve the management of your community's natural resources?

	Not Needed	Low Need	Moderate Need	High Need	Don't know
Digital mapping capabilities (e.g. GIS)	◯	◯	◯	◯	◯
Computer models (e.g. buildout analysis, simulation)	◯	◯	◯	◯	◯
Data management tools (e.g. software)	◯	◯	◯	◯	◯
Global Positioning Systems (GPS)	◯	◯	◯	◯	◯

5. What technology-based tools are currently available?

	Available	Not Available	Don't know
Digital mapping capabilities	◯	◯	◯
Computer models	◯	◯	◯
Data management tools	◯	◯	◯
Global Positioning Systems	◯	◯	◯

Coastal Communities Needs Survey

6. How necessary are the following non technology-based tools to assist with implementing a watershed-based approach to improve the management of your communities natural resources?

	Not needed	Low need	Moderate need	High need	Don't know
Assessment/Evaluation techniques to evaluate resources	◯	◯	◯	◯	◯
Standards or criteria for remediation and restoration	◯	◯	◯	◯	◯
Standards or criteria for stormwater management	◯	◯	◯	◯	◯
Networking and partnership building	◯	◯	◯	◯	◯
Dissemination of emerging research	◯	◯	◯	◯	◯
Watershed plan development	◯	◯	◯	◯	◯
Outreach and education	◯	◯	◯	◯	◯
Involving relevant stakeholders (beyond the general public)	◯	◯	◯	◯	◯

7. What non-technology based tools are currently used?

	Used	Not Used	Don't know
Assessment/Evaluation techniques to evaluate resources	◯	◯	◯
Standards or criteria for remediation and restoration	◯	◯	◯
Standards or criteria for stormwater management	◯	◯	◯
Networking and partnership building	◯	◯	◯
Dissemination of emerging research	◯	◯	◯
Watershed plan development	◯	◯	◯
Outreach and education	◯	◯	◯
Involving relevant stakeholders (beyond the general public)	◯	◯	◯

8. Looking forward, what are the types of issues you would be most interested in learning more about to advance watershed planning to improve the management of the coastal plain environment? Please select all that apply.

- ☐ Dealing with coastal Total Maximum Daily Loads
- ☐ New techniques to restore wetlands in tax ditches (A tax ditch is a public government body of individual landowners desiring their lands be drained or protected from flooding.)
- ☐ New research on the impact of impervious cover on coastal water quality and biodiversity
- ☐ Local program financing options
- ☐ Stormwater program building techniques
- ☐ Coastal plain watershed planning guidance
- ☐ Low Impact Development (LID) techniques
- ☐ Open space planning and preservation
- ☐ Other (please specify)

Coastal Communities Needs Survey

9. What elements are needed in a coastal plain network to help your community advance watershed planning?

- [ ] A forum to post questions and get answers
- [ ] Contact information for expertise
- [ ] Funding resources
- [ ] Data clearinghouse (please suggest data types in comments section)
- [ ] Sharing of information (discussion groups)
- [ ] Training
- [ ] List of resources (please suggest topic areas in comments section)
- [ ] None are needed, too much of this stuff out there already
- [ ] Other (please specify)

Coastal Communities Needs Survey

Section 3

To get a sense of your community's approach and challenges to water resource management, the following section is divided into nine topics: stewardship; land use; watershed planning; land conservation; aquatic buffers; site design; stormwater management; non-stormwater discharges; and erosion and sediment control. Each topic has approximately fifteen questions.

Based on the descriptions provided below and at the beginning of each sub-section, we suggest that you only complete the topic areas most relevant to your knowledge and expertise - even though it may be outside of your job responsibilities. If there is someone else who can help you fill in additional sections, please feel free to ask them. Please use the descriptions provided as guidance to help you select the topic areas you feel most comfortable in answering. If you do not want to complete a section, scroll to the bottom of that page and select the "Next page" button.

For example, if you are involved in planning or decision making related to land use, recreation or natural resources planning or are familiar with public education and outreach programs, we ask that you complete questions in the following topic areas for:

3.1 Stewardship
3.2 Land Use
3.3 Watershed Planning
3.4 Land Conservation
3.5 Aquatic Buffers
3.6 Site Design

If you are involved in decisions about the land development process that involve review or inspection of plans for stormwater, wastewater and other discharges, or erosion and sediment control from construction sites, we ask that you complete the questions for the following topic areas:

3.1 Stewardship
3.7 Stormwater management
3.8 Non-stormwater discharges
3.9 Erosion and sediment control

Coastal Communities Needs Survey

Section 3.1 - Stewardship

Watershed stewardship involves increasing public awareness about watershed management efforts, and getting participation in the process to ensure that citizens practice good pollution prevention practices on their own property and homes, including proper waste disposal, lawn care practices, etc.

If you are familiar with any programs in your community that address such topics, please answer this set of questions. This topic has 9 questions.

1. What is the total number of staff responsible for developing or implementing a public education and outreach program?

2. What audiences are targeted by the community education or outreach programs to prevent pollution, protect, manage or restore coastal resources? Please select all that apply.

- [ ] General Public
- [ ] Permanent Residents
- [ ] Renters/Seasonal Residents
- [ ] Commercial Sector
- [ ] Industrial Sector
- [ ] Municipal Employees
- [ ] Institutional
- [ ] Not applicable, there is no community education or outreach program
- [ ] Other (please specify)

Coastal Communities Needs Survey

3. What type of stewardship programs are in place? Please select all that apply.

- [ ] Proper lawncare management (e.g. use native plants, reduce fertilizers, pesticides, herbicides)
- [ ] Water conservation/reuse
- [ ] Buffer encroachment
- [ ] Proper waste oil disposal
- [ ] Septic system maintenance (bacteria)
- [ ] Pet waste pick-up
- [ ] Better management of boat/marina sewage
- [ ] Better management of boat/marina trash or fuel spills
- [ ] No littering
- [ ] Stormdrain markers
- [ ] Downspout disconnection program (e.g. use of rain barrels or rain gardens)
- [ ] Wildlife protection (e.g. Lights out!)
- [ ] Adopt-a-pond
- [ ] No wake zones
- [ ] Other (please specify)

4. Approximately what percentage of the targeted audience is implementing the stewardship practices? Select "N/A" (not applicable) if this audience is not targeted by any community education and outreach program.

	Less than 5%	5 to 25%	Greater than 25%	N/A
Permanent Residents	◯	◯	◯	◯
General public	◯	◯	◯	◯
Public - permanent residents only	◯	◯	◯	◯
Public - renters/seasonal residents only	◯	◯	◯	◯
Commercial Sector	◯	◯	◯	◯
Industrial Sector	◯	◯	◯	◯
Municipal Employees	◯	◯	◯	◯
Institutional	◯	◯	◯	◯

Other (please specify)

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5. What techniques are used as part of your public education and outreach program? Please select all that apply.

- [ ] Radio ads, public service announcements
- [ ] Television ads, public service announcements
- [ ] Billboards
- [ ] Information signs (smaller than billboards)
- [ ] Printed information (e.g. pamphlets, newsletters)
- [ ] Demonstration projects
- [ ] Working with local business (e.g. Realtors/Rental companies)
- [ ] Working with septic service providers
- [ ] Surveys
- [ ] Website
- [ ] Information or Training Workshops
- [ ] Other (please specify)

6. Please share a weblink or description of a program you are particularly proud of in your jurisdiction.

7. What are your three largest sources of external funding to support stewardship programs or activities?

First

Second

Third

8. What are the MAJOR challenges or obstacles to implementing a stewardship program(s)? Please select all that apply.

- [ ] Lack of support from elected officials
- [ ] Lack of interest from residents and business owners
- [ ] Lack of education for our elected official, business owners, residents, etc.
- [ ] Lack of funding
- [ ] Limited technical expertise or staff
- [ ] Limited number of staff
- [ ] Competing interests
- [ ] Our state or local regulations don't allow us to do this
- [ ] Too much in-fighting/local politics to get anything done
- [ ] We don't have any real champions for environmental issues
- [ ] Watershed protection is not required by the EPA or the State so we can't get any support for it
- [ ] Other (please specify)

9. What are the TOP THREE needs that, if met, would help your community effectively protect watersheds through the implementation of stewardship practices?

- [ ] More support from elected officials
- [ ] More interest from the community
- [ ] More funding
- [ ] Additional staff to do the work
- [ ] Regulations that we can actually enforce
- [ ] Training for our staff (Please specify the type of training in the comments section.)
- [ ] Education of our elected officials, developers etc. to raise support
- [ ] More data (Please specify the type of data in the comments section.)
- [ ] Information to make the case for why this is important (e.g., it will help us meet those TMDL or NPDES requirements, reduce infrastructure costs and beach closures)
- [ ] New or improved computer capabilities (hardware, software)
- [ ] Other (Please specify in the comments section.)

Comments

Coastal Communities Needs Survey

Section 3.2 - Land Use

Land use planning involves making decisions about the amount and location of development that occurs in a community based on the capacity of the land to support it. The most basic tools of land use planning include comprehensive planning and zoning. These tools can be applied at the watershed scale to redirect development, preserve sensitive areas, or reduce impervious cover in a given portion of each watershed.

Please answer this set of questions if you are involved in zoning, local land use decisions, or comprehensive watershed planning. This subsection has 13 questions.

1. Does your community have a comprehensive development plan?

2. Please indicate the elements included in the current comprehensive plan. Please select all that apply.

- [ ] Includes environmental protection in community vision statements or overall goals
- [ ] Addresses Total Maximum Daily Loads (TMDLs) and water quality impairments
- [ ] Includes watershed maps
- [ ] Includes stormwater infrastructure planning
- [ ] Directs development to or away from specific watersheds or waterbodies
- [ ] Is integrated with adjacent jurisdiction or regional comprehensive plan
- [ ] Identifies or prioritizes natural resource conservation areas
- [ ] Includes maps of aquatic buffers
- [ ] Updated in the past 2-5 years or will be updated soon (within next 2 years)
- [ ] Is more than 10 years old and no update is planned
- [ ] Provides general guidance to protect natural resources
- [ ] Addresses specific issues such as reducing stormwater runoff to protect waterbodies
- [ ] None of the above
- [ ] N/A (Our community does not have a comprehensive development plan.)

3. How many land use planners are on staff within the community?

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4. What percentage best approximates the current level of developent within the community?

- ◯ < 10%
- ◯ 10-19%
- ◯ 20-29%
- ◯ 30-39%
- ◯ 40-49%
- ◯ 50-59%
- ◯ 60-69%
- ◯ 70-79%
- ◯ 80-89%
- ◯ > 90%

5. To the best of your ability, roughly estimate the current percentage of each land use type in your community. This must total 100%.

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
High Density Residential	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Med Density Residential	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Low Density Residential	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Commercial	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Industrial	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Institutional (military, schools, government)	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Agriculture	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Open space/Forest	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Other	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

If other, please specify.

6. What category best describes the rate of new development in your community over the past 5 years?

7. Roughly estimate the percentage of new development over the past 5 years for each of the following categories. This may NOT total 100% as more than one category may apply to a single development. For example, infill development may occur on land annexed into the community.

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Green field development (in undeveloped areas i.e. forest/agriculture)	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Redevelopment (converting developed parcel to different use/structure)	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Infill (on undeveloped parcels within existing developed areas such as in a forested lot between two existing residential parcels)	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Annexed into the community	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Annexed out of your jurisdiction	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Along the waterfront or immediate coastline	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Inside existing water and sewer service areas	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Along primary transportation route	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

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8. For remaining undeveloped areas zoned for future growth, roughly indicate the percentage of each type of land use anticipated (for example, 80% of our anticipated development will be medium density residential). This should total 100%.

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
High Density Residential	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Med Density Residential	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Low Density Residential	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Commercial	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Industrial	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Institutional (military, schools, government)	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Agriculture	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Open space/Forest	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Other	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

9. Has your community ever imposed a moratorium on new development?

10. Check all of the following GIS data sets that are available for land use analysis:

- ☐ Land cover, land use or zoning data less than 5 years old
- ☐ Watershed boundaries
- ☐ Current land use data by watershed
- ☐ Future zoning (e.g. land use considered for future development) by watershed
- ☐ Current land use, land cover or future zoning but not organized by watershed
- ☐ Current land cover data (e.g. orthophotographs, satellite imagery) by watershed
- ☐ Current and future impervious cover estimates by watershed
- ☐ Population density per watershed
- ☐ Remaining developable land by watershed
- ☐ There is no GIS data
- ☐ Other (please specify)

Coastal Communities Needs Survey

11. Which of the following planning and zoning practices do you use to guide the intensity and/or location of development in the community? Please select all that apply.

- [ ] Overlay Zoning
- [ ] Large Lot Zoning
- [ ] Planned Unit Developments (PUDs)
- [ ] Performance Zoning
- [ ] Infill/community redevelopment incentives
- [ ] Transfer or Purchase of development rights (TDRs, PDRs)
- [ ] Watershed-based zoning
- [ ] Urban Growth boundaries
- [ ] Impervious cover limits
- [ ] Infrastructure planning (public sewer, water, wastewater, transportation)
- [ ] Conservation subdivisions
- [ ] Road standard regulations
- [ ] None of the above
- [ ] Other (please specify)

12. Which of the following types of development projects have been problematic to review? Please select all that apply.

- [ ] Golf Courses
- [ ] Large Planned Unit Developments (PUDs)
- [ ] Conservation Design Developments (LID or neo-traditional)
- [ ] Marinas
- [ ] Waterfront Redevelopment
- [ ] Vacation Rentals
- [ ] Retirement Communities
- [ ] Commercial developments (e.g. big box, strip malls, lifestyle centers, etc.)
- [ ] Other (please specify)

13. Please share a short description of the problems associated with reviewing the plans indicated above.

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Section 3.3 Watershed Planning

A watershed is the area of land where all of the water that drains off goes into the same stream, lake or other water body. A watershed can cross county and state lines. Watershed planning involves making decisions about how land is developed and managed to reduce the negative impacts of development on water and other natural resources within watersheds.

Please answer this set of questions if you are involved in zoning, local land use decisions, or comprehensive watershed planning. This subsection has 7 questions.

1. Does your community have any of the following water resource protection/restoration plans? Please select all that apply.

- [ ] Watershed management plan
- [ ] Special Area Management Plan (SAMP)
- [ ] Non point source (land based pollution) action strategy
- [ ] Source Water Protection Plan
- [ ] TMDL Strategy
- [ ] None
- [ ] Don't know
- [ ] Other (please specify)

2. Which of the following elements are included in any of the water resource protection/restoration plans selected above? Please select all that apply.

- [ ] Establish specific development regulations to reduce impact on natural resources
- [ ] Limit the location or density of development
- [ ] Recommend regulatory and programmatic changes
- [ ] Designate conservation areas for special protection
- [ ] Include restoration opportunities
- [ ] Include information for stormwater management
- [ ] Establish impervious cover limits
- [ ] N/A (Our community does not have such a plan.)

3. Have any recommendations in the plan(s) been officially adopted by the community.

- ◯ Yes
- ◯ No
- ◯ Don't know
- ◯ N/A (Our community does not have such a plan.)

If yes, please provide an example of an adopted recommendation.

4. Which of the following have been or are planned to be completed in your community? Please select all that apply.

- ☐ Stream inventory
- ☐ Classify sub-watersheds by levels of current and future impervious cover
- ☐ Modify Master Plans or Comprehensive Plans to correspond with watershed plans
- ☐ Integrate local watershed plans with larger basin-wide or regional planning
- ☐ Adopt watershed-specific protection strategies
- ☐ Monitoring to evaluate the effect of land use change on water resources
- ☐ None of the above
- ☐ Don’t know

5. What are the major difficulties, if any, in accurately delineating drainage boundaries (watersheds and catchments) in the jurisdiction?

- ☐ Not difficult
- ☐ Data to generate maps are not available or difficult to obtain
- ☐ State or other data is insufficient at local level or scale
- ☐ Flat terrain
- ☐ Lack of expertise or training
- ☐ Insufficient computing / software capabilities
- ☐ Money to contract it out
- ☐ Don’t know, never attempted
- ☐ Other (please specify)

Coastal Communities Needs Survey

6. What are your community's MAJOR challenges or obstacles to implementing a watershed based management approach in your jurisdiction? Please select all that apply.

- [ ] Lack of support from elected officials
- [ ] Lack of interest from community
- [ ] Lack of funding
- [ ] Limited technology or technical expertise
- [ ] Limited number of staff
- [ ] Competing interests
- [ ] Our state or local regulations don't allow us to do this
- [ ] Too much in-fighting/local politics to get anything done
- [ ] We don't have any real champions for environmental issues
- [ ] Watershed protection is not required by EPA or the State so we can't get any support for it
- [ ] Other (please specify)

7. Tell us the most important thing your community does to protect and/or restore water resources.

Coastal Communities Needs Survey

Section 3.4 - Land Conservation

Land conservation permanently protects the most critical areas in the community, such as endangered species habitats, wildlife corridors, hydrologic reserve areas, contiguous forests and wetlands, from development using techniques such as acquisition or conservation easements.

If you are familiar with natural areas protection, greenway planning, or land acquisitions in your community please answer this set of questions. This subsection has 12 questions.

1. In the past 5 years, who has been involved in the conservation of natural areas through planning, voluntary easements, acquisition or other programs in your community?

	Involved	Not Involved	Don't know
Local land acquisition program	◯	◯	◯
Non-government local land trust (third party)	◯	◯	◯
State	◯	◯	◯
Federal	◯	◯	◯

Other (please specify)

2. What criteria are used to identify lands for conservation?

3. In the past 5 years, what techniques have been used to conserve existing natural resource areas in your community? Please select all that apply.

- ☐ Land acquisition programs
- ☐ Conservation easements (purchased by public agencies)
- ☐ Voluntary conservation easements (e.g. Landowner stewardship)
- ☐ Natural resource protection regulations
- ☐ Planning and zoning techniques (e.g. overlay zoning)
- ☐ “Greenway” or other plan that identifies open space centered on natural features (e.g. streams, wetlands, dunes)

Please provide a brief description or a weblink to a case study if you feel any technique has been particularly effective for your community in land conservation. Also, specify if other techniques have been used.

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4. What funding sources are available and/or have been used in the last five years to purchase land for conservation in your community?

	Available and Used	Available but Not Used	Not available	Don't know
Local land acquisition program (e.g. funds from local taxes or other)	◯	◯	◯	◯
Non-government local land trust (third party)	◯	◯	◯	◯
State funding	◯	◯	◯	◯
Federal funding	◯	◯	◯	◯

If other, please specify.

5. Is there a Natural Resources Plan, Greenway Plan or other open space plan for the community that identifies areas for conservation and/or their priority for acquisition?

6. Is your community open space plan part of your comprehensive plan?

7. Which of the following elements are part of the open space plan? Please select all that apply.

- ☐ Identifies corridors of open space centered on connecting natural features such as stream, wetland, and/or dunes
- ☐ Identifies or prioritizes parcels for conservation
- ☐ Areas of special environmental or protected designation (local, state or federal)
- ☐ Criteria to identify areas for protection (e.g. environmental sensitive areas)
- ☐ Don't know
- ☐ N/A (Our community does not have an open space plan.)
- ☐ Other (please specify)

8. Currently, what percent of the land area in the community is designated or conserved as natural resource areas that protects natural areas, habitat, wildlife and quality from development?

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9. Please indicate which level of government provides the most stringent, or only regulations for each type of natural resource area listed. Select N/A if the resource area listed does not exist in your community.

	Local	State	Federal	Don't know	N/A
Barrier islands	◯	◯	◯	◯	◯
Islands	◯	◯	◯	◯	◯
Tidal shorelines	◯	◯	◯	◯	◯
Tidal Wetlands	◯	◯	◯	◯	◯
Non-tidal wetlands	◯	◯	◯	◯	◯
Isolated wetlands	◯	◯	◯	◯	◯
Maritime forest	◯	◯	◯	◯	◯
Large contiguous forest tracts	◯	◯	◯	◯	◯
Endangered or protect species	◯	◯	◯	◯	◯
Habitat	◯	◯	◯	◯	◯
Drinking water aquifers	◯	◯	◯	◯	◯
Historic sites	◯	◯	◯	◯	◯
Agricultural areas	◯	◯	◯	◯	◯
Other	◯	◯	◯	◯	◯

If other, please specify the type of natural resource area.

10. Please indicate if any local, state, or federal regulations apply to limit development in the following areas. Select N/A if the area listed does not exist in your community.

	Local	State	Federal	Don't know	N/A
Steep slopes	◯	◯	◯	◯	◯
Riparian corridors/buffers	◯	◯	◯	◯	◯
Floodplains	◯	◯	◯	◯	◯
Karst areas	◯	◯	◯	◯	◯
Erodible soils	◯	◯	◯	◯	◯
Water supply reservoirs	◯	◯	◯	◯	◯
Isolated or contiguous wetlands	◯	◯	◯	◯	◯

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11. Which of the following statements are true about wetlands in your community? Please select all that apply.

- [ ] Wetland permits are regulated entirely by the State or Corps of Engineers; our community does not get involved
- [ ] Our state or community's wetland regulations protect a wider range of wetlands than the federal CWA Section 404 wetland permit process (e.g., at least some protection is provided for isolated wetlands)
- [ ] The jurisdiction requires evidence that all state and federal wetland permits have been secured prior to plan approval
- [ ] Wetland delineation disputes are a major problem during development review
- [ ] Ditching or filling of wetlands is a common practice
- [ ] There is a wetland mitigation strategy in the jurisdiction
- [ ] More needs to be done to protect wetlands in the community
- [ ] Other

If other, please specify the other important trends.

12. What are the MAJOR challenges or obstacles to implementing land conservation measures to effectively protect watersheds?

- [ ] Lack of support from elected officials
- [ ] Lack of interest from residents and business owners
- [ ] Lack of information to inform elected official, business owners, residents, staff etc. of the need
- [ ] Lack of funding
- [ ] Lack of data to identify areas in need of conservation
- [ ] Limited technical expertise of staff
- [ ] Limited number of staff
- [ ] Competing interests about future use and management of land
- [ ] Our state or local regulations don't allow us to do this
- [ ] Too much in-fighting/local politics to get anything done
- [ ] We don't have any real champions for environmental issues
- [ ] Watershed protection is not required by EPA or the State so we can't get any support for it

Coastal Communities Needs Survey

Section 3.5 - Aquatic Buffers

An aquatic buffer is a vegetated area along a shoreline, wetland, or stream where development is restricted or prohibited. The primary function of aquatic buffers is to physically protect and separate a stream, lake or wetland from future disturbance or encroachment.

Please answer this set of questions if you are familiar with issues or planning decisions related to local buffer regulations and maintenance. This subsection has 14 questions.

1. Do guidelines or regulations exist in the community to restore, protect or maintain aquatic buffers?

2. Is there a department that is responsible for enforcing buffer regulations?

If yes, please specify.

3. Please indicate which level of government provides the most stringent, or only regulations for each type of aquatic buffers indicated. Select N/A if the type of aquatic buffers does not exist in your community.

	Local	State	Federal	Don't know	N/A
Perennial Stream	○	○	○	○	○
Intermittent stream	○	○	○	○	○
Ephemeral Stream	○	○	○	○	○
Tidal wetland	○	○	○	○	○
Non-tidal wetland	○	○	○	○	○
Shoreline	○	○	○	○	○
Critical area	○	○	○	○	○
Other	○	○	○	○	○

If other, please specify the type of aquatic buffer.

4. Please list the minimum total buffer required by the regulation for each type of aquatic buffer (include the width from both sides of the stream). If other, please also specify the other type of aquatic buffer.

Intermittent stream	
Ephemeral Stream	
Tidal wetland	
Non-tidal wetland	
Shoreline	
Critical area	
Other	

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5. What elements are specified in the aquatic buffer ordinance or regulation? Please select all that apply.

- [ ] Minimum width specified
- [ ] Type of vegetation
- [ ] The buffer regulations specify minimum requirements for vegetative cover (e.g. 80% must be forest cover)
- [ ] Re-vegetation required if vegetation currently does not exist
- [ ] A program or mechanism to inform new property owners about the buffer regulations and benefits
- [ ] An invasive species control plan
- [ ] No use of herbicides or pesticides (e.g. “no-spray” policy)

6. Would you be willing to share with us information about your buffer regulation?

7. Are aquatic buffers identified on zoning maps, land use plans or other plans?

8. Are priority sites identified in the community to re-vegetate and restore aquatic buffers to a natural condition or state?

9. What MAJOR challenges or obstacles to implementing a local ordinance to restore or maintain aquatic buffers in a natural state to effectively protect watersheds?

- [ ] Lack of support from elected officials
- [ ] Lack of interest from residents and business owners
- [ ] Lack of education for our elected official, business owners, residents, etc.
- [ ] Lack of funding
- [ ] Limited technical expertise of staff
- [ ] Limited number of staff
- [ ] Competing interests
- [ ] Our state or local regulations don’t allow us to do this
- [ ] Too much in-fighting/local politics to get anything done
- [ ] We don’t have any real champions for environmental issues
- [ ] Watershed protection is not required by EPA or the State so we can’t get any support for it
- [ ] Other (please specify)

10. Please identify the major issues that limit the requirement of maintaining or re-establishing aquatic buffers in a natural state in the community. Please select all that apply.

- [ ] Enforcement of regulations are limited to plan review
- [ ] Site visits following plan approval are rarely or ever made
- [ ] Buffers not identified on site plan or land owner plat
- [ ] There are no vegetative requirements stated in the buffer ordinance to preserve existing vegetation cover (e.g., 80% forest cover).
- [ ] There are no re-vegetation requirements stated in the buffer ordinance to re-establish a buffer during development (e.g. previous agricultural land, or lost due to construction activity)
- [ ] There are no minimum required buffer widths in the ordinance.
- [ ] There are no standards for long term maintenance of the buffers (e.g. invasive species control).
- [ ] Encroachment and clearing of buffers by property owners is common after construction is complete.
- [ ] Ditches or storm drain pipes are allowed to cross the buffer
- [ ] The buffer ordinance does not require expansion to include wetlands, steep slopes, or the 100-year floodplain.
- [ ] No demonstration of the benefit of buffers
- [ ] No enforcement of buffer ordinance due to limited staff capacity
- [ ] Developers/contractors don't have any guidance on how to protect buffers during construction
- [ ] The delineation or definition of streams in the jurisdiction limits the application of the buffer ordinance (e.g. streams are actually ditches, or only applies to "blue-line perennial streams")

11. Approximately what percentage of the local stream drainage network has been altered, piped, ditched or channelized?

12. Approximately what percentage of the local stream drainage network (including very small streams and ditches) has been mapped?

13. Is there a process in place for updating drainage network maps as new streams are delineated in the field?

14. Has your community implemented restoration projects to improve altered drainage to a more natural state?

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Section 3.6 - Site Design

Tools are available for site design to minimize the negative impacts of new development on water resources by reducing the amount of impervious cover, increasing natural lands set aside for conservation, and using pervious areas for more effective stormwater treatment. Open space design, green infrastructure, and environmentally sensitive design are often used interchangeably to discuss the principles of better site design.

If you are involved in the development process and local site plan review, please answer this set of questions. This sub-section has 13 questions.

1. What is the total number of staff dedicated to site plan review?

2. What is the total number of local building code officials that are LEED certified?

LEED refers to Leadership in Energy and Environmental Design, a nationally recognized certification program for the design, construction and operation of buildings that incorporate high performance elements to reduce the consumption or use of natural resources or impact on the environment.

3. How many site plans are reviewed on average for any given year?

4. How long ago were the development codes for the jurisdiction last updated?

5. Which of the following are considered or defined as "public open spaces"? Please select all that apply.

- [ ] Golf courses
- [ ] Playgrounds
- [ ] Playing fields
- [ ] Trails
- [ ] Agriculture
- [ ] Natural vegetation such as forest or native vegetative
- [ ] None of the above
- [ ] Other (please specify)

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6. Below is a general range of environmentally sensitive design (ESD) practices to reduce or minimize the impact of development on the environment through the conservation of open space, reduction in impervious cover or promoting energy efficiency. To the best of your knowledge, please complete the table below to indicate if the following are not allowed, allowed (by exception to regulations), or required by regulation or ordinance.

	Not allowed	Allowed	Required
LEED certified criteria for new development	◯	◯	◯
Open space or cluster development designs	◯	◯	◯
Irregular lot shapes	◯	◯	◯
If present on site, some forest or specimen trees have to be conserved	◯	◯	◯
Limits of disturbance shown on construction plans	◯	◯	◯
Rooftop runoff must be directed to lawn	◯	◯	◯
25 % open space requirement for new development	◯	◯	◯

7. Below is a list of environmentally sensitive design (ESD) practices related to street design. As above, to the best of your knowledge, please complete the table below to indicate if the following are not allowed, allowed (by exception to regulations), or required by regulation or ordinance.

	Not allowed	Allowed	Required
Swales instead of curb and gutter in new residential streets	◯	◯	◯
Sidewalks on one side of street	◯	◯	◯
Minimum right of way width for residential streets is 45 ft or less	◯	◯	◯
Alternatives to standard cul-de-sac requiring radius greater than 45ft	◯	◯	◯
Landscaped islands can be created in cul-de-sacs	◯	◯	◯
Minimum street width so parking lanes serve traffic (i.e. queuing streets)	◯	◯	◯

8. Below is a list of environmentally sensitive design (ESD) practices related to parking lot incentives and requirements. As above, to the best of your knowledge, please complete the table below to indicate if the following are not allowed, allowed (by exception to regulations), or required by regulation or ordinance.

	Not allowed	Allowed	Required
Minimum and Maximum parking ratios	◯	◯	◯
Incentives to build parking garages	◯	◯	◯
Parking lot landscape requirements (tree canopy requirements)	◯	◯	◯
Shared parking to reduce parking requirements in residential areas	◯	◯	◯
Minimum parking stall width is 9ft or less	◯	◯	◯
Minimum parking stall length is 18 ft or less	◯	◯	◯
Pervious parking surfaces	◯	◯	◯

9. Are there developments in your community that are LEED certified?

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10. What incentives are available to conserve land on a development site? Please select all that apply.

- [ ] Density bonuses
- [ ] Density Compensation (for lost house lots)
- [ ] Stormwater credits
- [ ] Lower property tax rates
- [ ] Open-space design
- [ ] Transferrable development rights (TDRs)
- [ ] Off-site mitigation
- [ ] There are no incentives
- [ ] Don't know
- [ ] Other (please specify)

11. What are the THREE most common impediments to implementing ESD in your community?

- [ ] Not part of current regulations
- [ ] Developers seek to maximize development of parcel
- [ ] Developers achieve minimum local requirements
- [ ] Standard design template (e.g. “cookie cutter” development)
- [ ] Existing and/or dated regulations limit flexibility
- [ ] Regulations restrict more innovative practices (e.g. curb and gutter requirements prohibit open section roads)
- [ ] Review process limits time with client/developer (no pre-consultation meeting)
- [ ] Limited staff or resources to change existing practices and to discuss options
- [ ] Training needed to better understand situations where ESD is applicable or where ESD techniques can be implemented
- [ ] Other (please specify)

12. Do you think pre-consultation meetings between reviewers and developers/designers help to implement environmentally sensitive design practices?

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13. Please provide a brief description or a weblink that showcases an example of ESD in your community.

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Section 3.7 - Stormwater Management

Post-construction stormwater management includes any practices used to capture and treat stormwater runoff. These practices often include structured, engineered facilities such as ponds, swales, and filtering practices. Stormwater management also includes program activities such as street sweeping.

If you are in involved in the design, review, inspection, and maintenance of post-construction stormwater practices or the administration of NPDES permits we ask that you complete this set of questions. This subsection has 23 questions.

1. Based on your professional expertise, please check the top three priority pollutants of concern in the community.

- [ ] Sediment
- [ ] Nitrogen
- [ ] Phosphorus
- [ ] Bacteria
- [ ] Trace Metals
- [ ] Oil and Grease
- [ ] Pesticides
- [ ] Toxics
- [ ] Trash/Debris
- [ ] Don't Know
- [ ] None
- [ ] Other (please specify)

2. Are any of the priority pollutants linked to the following? Please select all that apply.

- [ ] Stormwater management program
- [ ] Watershed plan
- [ ] National Pollutant Discharge Elimination System (NPDES) permit
- [ ] Total Maximum Daily Load (TMDL)
- [ ] Coastal Zone Management Plan

3. Are there problems with harmful algal blooms due to excessive nutrient pollution and tidal flushing of stormwater ponds?

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4. What tools does the community use to manage stormwater? For each tool that is used please indicate if it is local or state-wide.

	Not Used	Local	State
Stormwater Management Master Plan	◯	◯	◯
Stormwater Design Manual	◯	◯	◯
Stormwater retrofit inventory	◯	◯	◯

5. Are any of the tools from the previous question associated with a watershed plan for the community?

If yes, please specify.

6. Who has the authority to review and approve stormwater management plans? Please select all that apply.

- ☐ Local government stormwater department
- ☐ Other local government department (please specify)
- ☐ Local or State Highway Agency
- ☐ Soil and Water Conservation District or other regional authority
- ☐ State department of environment/natural resources or similar
- ☐ Consultant
- ☐ No one has the responsibility
- ☐ Don't know

Please specify if another entity has this authority or a local government department other than the stormwater department has this authority.

7. What is the total number of staff that design, review, inspect, or maintain stormwater management practices?

8. Are design criteria for stormwater management facilities tied to any water quality parameter such as nitrogen, phosphorus, bacteria, dissolved oxygen, or sediment?

9. What elements are addressed by the stormwater management program? Please select all that apply.

- [ ] Sediment removal
- [ ] Contaminant/pollution reduction
- [ ] Floatable trash separation
- [ ] Volume and rate control to adjacent water bodies to reduce stream bank erosion
- [ ] Volume and rate control to adjacent water bodies to protect habitat
- [ ] Volume and rate control to adjacent water bodies to reduce thermal impacts
- [ ] Volume and rate control to adjacent water bodies for flood control
- [ ] Groundwater recharge
- [ ] Don't know
- [ ] Not applicable, there is no stormwater management in the jurisdiction

10. What best approximates the total annual stormwater management budget?

11. What are the funding sources that support your stormwater program? Please estimate the proportion secured by each source. The total must equal 100% unless there is no funding support, in which case the total would equal 0%.

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
State funding (please specify)	○	○	○	○	○	○	○	○	○	○	○
Development impact fees	○	○	○	○	○	○	○	○	○	○	○
Stormwater utility fees	○	○	○	○	○	○	○	○	○	○	○
Residential taxes	○	○	○	○	○	○	○	○	○	○	○
Other	○	○	○	○	○	○	○	○	○	○	○
None	○	○	○	○	○	○	○	○	○	○	○

Please specify the source of any state funding.

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12. How is funding for the stormwater program distributed amongst the following practices? Please estimate the proportion of the annual budget dedicated to each of these practices. The total must equal 100%.

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Plan review	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Inspectors	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Development or update of stormwater plan, regulations, or codes	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Stormwater practice maintenance (not including ditches)	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Ditch maintenance	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Training	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Stormwater practice retrofit	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Cost-share programs to pipe ditches from front yards	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Education and outreach	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

13. What elements are part of the stormwater management program? Please select all that apply.

- ☐ Current database of practices
- ☐ Any GIS mapping for outfalls, pipes, and/or practices
- ☐ Use of maintenance agreements as part of plan approval
- ☐ Maintenance tracking program or database for stormwater practices (e.g., BMPs)
- ☐ Local government maintains all practices public and private
- ☐ Individual property owners (public or private) are responsible for maintenance
- ☐ As-built plans of stormwater practice submitted to approval authority
- ☐ Training for staff for developing stormwater technologies or practices

14. What are the THREE most common stormwater practices in the community on public or private land?

- ☐ Dry Ponds (e.g. quality control pond, dry extended detention pond)
- ☐ Wet ponds (e.g. wet extended detention pond, multiple wet pond system)
- ☐ Wetlands (e.g. shallow marsh, extended detention wetland, pond/wetland system, submerged gravel wetland)
- ☐ Filtering (e.g. organic filter, sand filter)
- ☐ Bioretention (including rain gardens, green roofs)
- ☐ Infiltration (e.g. infiltration trench, porous pavement)
- ☐ Open channels (e.g. grass channel, dry swale, wet swale)
- ☐ Proprietary devices (e.g. Stormceptor, Filterra)
- ☐ Multi-chamber treatment train

15. Please indicate the reasons why the above stormwater practices are the three most common stormwater practices in the community. Please select all that apply.

- [ ] Practices specified in stormwater manual
- [ ] Unfamiliar with other practices to provide review
- [ ] Designers like dugout ponds to acquire fill for use elsewhere at the site
- [ ] High water table/poor soils frequently inhibit the use of infiltration practices
- [ ] Flat terrain and lack of head constrain use of many stormwater practices
- [ ] Mosquito or pest (i.e. snakes) concerns are an issue with practice design
- [ ] Lack of good design specifications for practice function in the coastal plains
- [ ] Nutrient reduction is an explicit actor in the design of stormwater practices

16. Please select the THREE most common features of stormwater practices in your community.

- [ ] Submerged inlets
- [ ] Riser structure
- [ ] Aquatic bench
- [ ] Sediment forebay
- [ ] Single cell
- [ ] Vegetation in pond (as part of the practice)
- [ ] Vegetation around perimeter
- [ ] Aerated ponds
- [ ] Right of entry or easements
- [ ] Ditch spraying to control vegetation growth
- [ ] Mosquito spraying

17. On average, how many times a year are streets cleaned using street sweepers?

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18. What type of street sweeping equipment is used? Please select all that apply.

- [ ] Mechanical brush
- [ ] Mechanical brush with vacuum assist
- [ ] Regenerative air
- [ ] Vacuum
- [ ] N/A (There is no street sweeping.)
- [ ] Other (please specify)

19. Does the community have a storm drain or inlet cleanout program?

20. What percentage of storm drains or inlets are cleaned out each year?

21. Based on the storm drains and/or inlets that are cleaned out, how frequently are they cleaned out, on average?

Other (please specify)

22. Is stormwater allowed to be discharged directly into tidal or non-tidal wetlands?

23. What are the MAJOR challenges or obstacles to implementing stormwater management measures to effectively protect watersheds?

- [ ] Lack of support from elected officials
- [ ] Lack of interest from residents and business owners
- [ ] Lack of education for our elected official, business owners, residents, etc.
- [ ] Lack of funding
- [ ] Limited technical expertise of staff
- [ ] Limited number of staff
- [ ] Competing interests
- [ ] Our state or local regulations don't allow us to do this
- [ ] Too much in-fighting/local politics to get anything done
- [ ] We don't have any real champions for environmental issues
- [ ] Watershed protection is not required by EPA or the State so we can't get any support for it
- [ ] Other (please specify)

Coastal Communities Needs Survey

Section 3.8 - Non-stormwater Discharges

Non-stormwater discharges includes any discharge to the drainage system that is not composed entirely of stormwater such as wastewater from residences and business, chlorinated pool water, oil and grease from automotive shops and restaurants. These non-stormwater discharges may or may not be intentional but many are illegal and do impact water resources.

If you are familiar with how your community handles septic systems, illicit discharges, spill prevention, etc. we ask that you complete this set of questions. This subsection has 16 questions.

1. Who has the authority to review and approve plans to ensure the adequate treatment of wastewater for development applications (e.g. residential, commercial/retail)?

	Authority to review	Authority to approve	Authority to review and approve	No authority to review or approve
Local government stormwater department	◯	◯	◯	◯
Other local government department	◯	◯	◯	◯
Local or State Highway Agency	◯	◯	◯	◯
Soil Conservation District or regional authority	◯	◯	◯	◯
State department of environment/natural resources or similar	◯	◯	◯	◯
Consultant	◯	◯	◯	◯

Please specify if a local government department other than the stormwater department has this authority.

2. Who has the authority to investigate and/or remediate illicit discharges?

	Authority to investigate	Authority to investigate	Authority to investigate and remediate	No authority to investigate or remediate
Local government stormwater department	◯	◯	◯	◯
Other local government department	◯	◯	◯	◯
Local or State Highway Agency	◯	◯	◯	◯
Soil and Water Conservation District or other regional authority	◯	◯	◯	◯
State department of environment/natural resources or similar	◯	◯	◯	◯
Consultant	◯	◯	◯	◯

Please specify if a local government department other than the stormwater department has this authority.

3. What is the total number of staff involved in development review, approval or programs to ensure the proper treatment of wastewater or other non-stormwater discharges?

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4. Please rank each type of municipal or private non-stormwater discharge in terms of its severity in your community.

	Confirmed occurrences, consistently a problem	Confirmed occurrences, but not consistently a problem	Some reported occurrences	Likely a problem, but no documented occurrences	Not a problem	Don't know
Sewage from the sanitary or combined sewer system	◯	◯	◯	◯	◯	◯
Washwater from commercial/industrial/institutional/municipal sources	◯	◯	◯	◯	◯	◯
Tap water (e.g. leaks from water distribution, non-target irrigation)	◯	◯	◯	◯	◯	◯
Commercial/industrial/institutional/municipal hazardous wastes	◯	◯	◯	◯	◯	◯
Discharges from boats	◯	◯	◯	◯	◯	◯
Discharges from construction sites (e.g. sediment, concrete)	◯	◯	◯	◯	◯	◯
Discharges from confined animal feeding operations	◯	◯	◯	◯	◯	◯

5. Please rank each type of municipal or private non-stormwater discharge in terms of its severity in your community.

	Confirmed occurrences, consistently a problem	Confirmed occurrences, but not consistently a problem	Some reported occurrences	Likely a problem, but no documented occurrences	Not a problem	Don't know
Household hazardous wastes (e.g. motor oils, paints, pesticides)	◯	◯	◯	◯	◯	◯
Septage from septic systems	◯	◯	◯	◯	◯	◯
Washwater from residential sources (e.g. car washing, laundry)	◯	◯	◯	◯	◯	◯
Chlorinated swimming pool discharges	◯	◯	◯	◯	◯	◯

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6. What programs or activities are used to prevent or address non-stormwater discharges? Please select all that apply.

- [ ] Illicit discharge detection and elimination (IDDE) program
- [ ] Spill response program
- [ ] Stormwater hotspot outreach and education program (e.g. automotive repair facility education program, restaurant grease storage and disposal program)
- [ ] Clean Marina program
- [ ] Septic system inspection program
- [ ] Septic system maintenance program
- [ ] Stormwater hotspot inspection program
- [ ] Automotive fluid collection/recycling program
- [ ] Household hazardous waste collection program
- [ ] Storm drain stenciling program
- [ ] None
- [ ] Other (please specify)

7. Do you have a mapping inventory of suspicious discharges?

8. Do you have a discharge hotline?

9. Is there a combined (sanitary and storm) sewer system?

10. What proportion of existing development is served by on-site wastewater treatment and disposal systems (e.g. septic systems)?

11. Who is responsible for approving and inspecting the installation of on-site wastewater treatment and disposal systems?

Please specify the specific agency, department, or other authority responsible.

12. What criteria are used to determine the size of an on-site wastewater treatment and disposal system? Please select all that apply.

Other (please specify)

13. How would you rate the problem of failing septic systems in your community?

14. How are failing septic systems detected? Please select all that apply.

- [ ] Citizen reporting
- [ ] Septic system inspection program
- [ ] Septic system maintenance program and tracking system
- [ ] Special techniques such as aerial imagery, infrared technology, dye testing
- [ ] No formal methods used to detect failing septic systems
- [ ] Don't know

15. Is the maintenance of on-site wastewater systems for residential properties voluntary or required through local ordinance?

If required, please provide an brief example of the type of maintenance required.

16. What are the THREE greatest challenges or obstacles to effectively protecting watersheds through the management of non-stormwater discharges?

- [ ] Unaware of failing systems
- [ ] Low separation distance (e.g. high water table)
- [ ] Insufficient sizing of systems (e.g. redevelopment for vacation homes)
- [ ] Lack of information on maintenance requirements
- [ ] State program, lack of local resources to address local problems
- [ ] Limited technical expertise of staff
- [ ] This is not seen as a problem

Coastal Communities Needs Survey

Section 3.9 - Erosion and Sediment Control (ESC)

Please answer this set of questions if you are familiar with the rules and regulations related to construction site management, inspections, etc. This subsection has 12 questions.

1. Is there a state or local erosion and sediment control (ESC) manual that is used by the jurisdiction?

2. Are there state or local ESC regulations adopted by your community?

	Yes	No	Don't know
State	◯	◯	◯
Local	◯	◯	◯

3. Who has the delegated authority to enforce (e.g. review plans or inspect sites) ESC regulations?

Other (please specify)

4. What is the total number of inspectors for ESC?

5. What sites require ESC? Please select all that apply.

- ☐ All sites
- ☐ Sites greater than 5,000 square ft disturbed area
- ☐ Sites greater than 1 acre
- ☐ Sites greater than 5 acres
- ☐ Don't Know
- ☐ Other (please specify)

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6. Which ESC program practices do you use? Please select all that apply.

- [ ] Inspector and contractor certification program
- [ ] Phased clearing restrictions (e.g. 20 acres at a time)
- [ ] Require tree conservation practices
- [ ] Preservation of natural areas is enforced
- [ ] Site fingerprinting or clearing limits
- [ ] Require temporary seeding practices
- [ ] Sediment basins often converted into permanent practices
- [ ] Sufficient fees to support the program
- [ ] Third party inspectors
- [ ] Developers pay for inspectors

7. Please rank the significance of each statement as a problem encountered in the ESC program at construction sites in your community.

	Very significant	Moderately significant	Somewhat significant	Not very significant	Not significant	Don't know
Ineffective ESC practices	◯	◯	◯	◯	◯	◯
Lack of guidance or training on how to implement ESC practices	◯	◯	◯	◯	◯	◯
Clearing/grubbing/grading allowed before site plan submitted/approved	◯	◯	◯	◯	◯	◯
Construction phasing requirements do not exist or are too generous	◯	◯	◯	◯	◯	◯
Perception by community that sediment is not a problem	◯	◯	◯	◯	◯	◯
Not enough staff for review or inspections	◯	◯	◯	◯	◯	◯
Lack of enforcement authority	◯	◯	◯	◯	◯	◯
Difficulty getting rapid vegetative stabilization	◯	◯	◯	◯	◯	◯
Discharge of sediments occurs to wetlands or other water bodies	◯	◯	◯	◯	◯	◯
Small sites (less than one acre) are not regulated effectively	◯	◯	◯	◯	◯	◯

8. On average over the past five years, how often are construction sites inspected on an annual basis?

Other (please specify)

9. On average over the past five years, approximately how many stop work orders or violations are logged each year?

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10. How would you rate the effectiveness of your ESC programs in reducing sediment loading leaving the site?

11. Please provide up to three examples of ways the ESC program is effective.

12. Please provide up to three examples of ways to improve the effectiveness of the ESC program.

Coastal Communities Needs Survey

Thank you again for your participation in our survey. As mentioned at the beginning of the survey, the information you provide will help us determine which watershed techniques are most commonly applied, the major gaps in watershed management, and examples of innovative programs and practices. The results will then be incorporated into guidance materials for coastal communities, such as your own.

In appreciation for the work you put into this survey you will be acknowledged in subsequent reports and guidance materials. If you are amoung the first 25 respondants, you will be mailed a free CD of the Center for Watershed Protection's comprehensive text, The Practice of Watershed Protection. All participants completing the survey will be entered in a random drawing to receive up to 8 hours of Center for Watershed Protection consultation services.