

# **Watershed Education: Watershed Awareness**

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## **ABSTRACT**

Stormwater education will play a major role in reducing pollution. Public education is an efficient and economical way to provide residents and businesses the information they need to reduce their pollution impacts. In addition, through understanding of the problems, the public may be more supportive of government efforts to reduce stormwater pollution. The desired result to this process is behavior change. Finding out what encourages or discourages the public from making behavior changes is important when designing education programs. Based on research, an effective public outreach effort can provide residents the awareness and the motivation to reduce their impacts on stormwater pollution. Local governments are facing new requirements to meet pollution reduction goals set by the federal and state governments. To meet these standards, non-point pollution will need to be addressed. Watershed-based education offers a geographic boundary and an ownership opportunity. Everyone lives in a watershed. Everyone contributes impacts to the watershed. And everyone can help protect his or her watershed. The health of the watershed has an impact on their quality of life. Understanding the importance of watersheds encourages behavior changes necessary to protect the environment. There is support for watershed education at the national, regional and local levels including existing programs and funding sources. Whether adopting an existing watershed education program or designing your own, the effort can be an effective way to provide the public with the tools they need to take action.

## **INTRODUCTION**

In 2005, the Charlotte Harbor Environmental Center launched an extensive watershed education program in the Peace River watershed of central Florida. The first phase of the program was to conduct research to determine the issues, concerns, knowledge and state of the watershed. Based on this information, a watershed education program was developed. The first year of the program has been completed. As part of program, an effort was made to receive feedback from the participants. Based on the feedback, awareness of what watershed is and how individual actions can affect pollution is needed before residents will be open to change their water use related habits.

## **Peace River Watershed**

The Peace River watershed includes portions of Charlotte, DeSoto, Hardee and Polk counties. It is a diverse region with three distinct areas. The areas include the north (Polk) where mining and agriculture have dominated, however, new residential housing is rapidly moving in, the central (DeSoto, Hardee) where agriculture is the primary economic engine with mining activities increasing and the south (Charlotte) that is primarily residential and includes coastal activities.

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The watershed is diverse in economies and populations. The size of the Peace River watershed makes it difficult for residents to understand their impacts on its health. Some find it hard to believe that what they do in their yard can affect the health of a harbor 100 miles away. And even those who live on a water body find it hard to understand how their actions may be detrimental to water quality. The River has been impacted by man-made activities and most of the impacts have been in the upper part of the watershed. From its meager start in northern Polk County, the Peace River winds and curves past more than 100 miles of citrus and pastureland, curling through four counties on its journey to the Gulf of Mexico...eventually flowing into Charlotte Harbor.

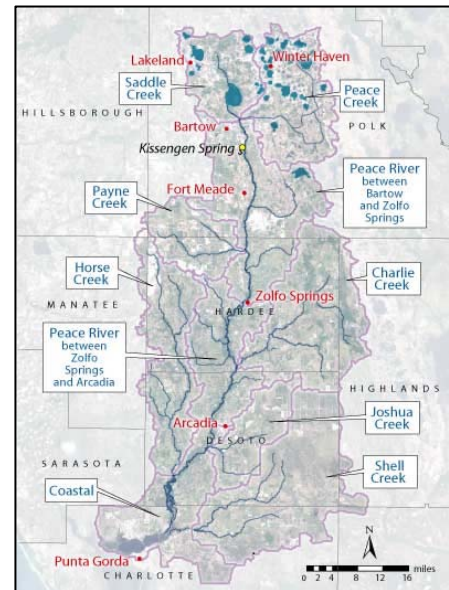
Fresh water from the Peace River mixes in the harbor with salt water from the Gulf forming an estuary, a nursery for marine life...providing food and shelter for young fish. Charlotte Harbor is critically important as the second largest open water estuary in Florida. The harbor is extremely productive economically and recreationally important for fish and shell fish populations.

The Peace River watershed is largely agricultural, but it is punctuated with vibrant and growing communities from Polk County to Port Charlotte. Pine flatwoods, palmetto prairies and improved pastures are among the diverse landforms of the basin. Wetlands are a key feature of the landscape. As natural water storage, aquifer recharge and water filtering systems, the wetlands provide a vital function.

According to a watershed study<sup>1</sup> prepared for the Charlotte Harbor National Estuary Program, tourism and recreation in the Peace River watershed contribute \$4.5 billion to the economy. More than one million people are employed in the fishing, tourism and recreation and agriculture industries.

Water quality has been a major concern within the watershed. Many of the activities that have contributed to the economy and lifestyle of the region unfortunately have also impacted the health of the watershed.

For the past 35 years, water pollution has been the target of many environmental programs. The passage of the Clean Water Act in 1972 started regulation of discharges into water bodies. The first part of the effort was to address the point sources - those specific pipes and outfalls that could be traced to a definitive source. Most of the point source pollution contributors have been regulated and managed. We have seen significant improvements in water quality and the rebirth of many a polluted water body. The next frontier of pollution was non-point sources - those sources that are not easily definable or traceable. And the primary conveyance of this type of pollution is stormwater runoff. Stormwater runoff tends to pickup pollution as it makes its way across the landscape to a local water body. Through interconnections and the length of rivers and streams, stormwater pollution can reach 100 miles away or more! While those living adjacent to water bodies may realize the connection between their yards and the water body, those living



further away are not aware of their impacts. As shown through the extensive pre-program research and the input from those participating in the many public forums, there is a significant lack of knowledge as to the causes of water pollution. Overcoming this lack of awareness is a key to encouraging people to reduce their contributions to water pollution.

To reduce storm water impacts, some communities have established rules regulating the amount of impervious surfaces allowed. As a homeowner, you can do your part too. Reducing the amount of impervious surfaces in your yard by using mulch and groundcover helps the soil to retain rainwater. Remember soil is pervious. Other storm water hints include planting drought tolerant plants, terracing the landscapes and directing gutters off of impervious surfaces.

In central Florida, the Peace River is also a major source of drinking water. On days of adequate flow, the Peace River supplies about 6 million gallons of drinking water. If water source becomes contaminated, the cost of making it safe to drink will escalate. A healthy watershed has the ability to absorb pollutants before they reach the river. We all have a stake in protecting and insuring the health of our watershed.

### *Diversity of Population*

The median age of the Peace River watershed is 36.7 years old, only slightly above the national average of 33.1. The population profile changes from region to region. In Polk County, there has been a shift from rural areas and an industrial and agriculture job base to more retirement and suburban residents. The growth of subdivisions is increasing with some newcomers commuting to the Tampa Bay area for work. The two primary industries in Polk County have faced significant challenges in the past 15 – 20 years. Agriculture, led by citrus, has drifted south driven by weather and cost of land. The phosphate mining industry has also been challenged by international competition, aging mines and a search for new mining regions. Phosphate is also moving south. The former citrus groves and mined areas are now being developed into communities. Hardee and DeSoto counties remain rural, Ranching and row crops rein here. However, as agriculture and mining have moved south out of Polk County, the landscape is changing. There is now an influx of new subdivisions and shopping centers. There is also a trend throughout the watershed to develop small ranches and farms from large agricultural tracts. These 5–20 acre properties are becoming popular and offer their own pollution challenges to the watershed. Charlotte County is a coastal area. It has drawn many retirees from the northern United States over the years. Additional growth is now spreading subdivisions inland. This region's population profile has changed in recent years due to impacts from Hurricane Charlie and the influx of wealthier northerners seeking water front property. With these three distinct regions, watershed education must utilize various approaches to reach these diverse audiences.

## **RESEARCH**

The Peace River watershed education efforts are based on research conducted by the Charlotte Harbor Environmental Center (CHEC), the Southwest Florida Water Management District (SWFWMD) and the Charlotte Harbor National Estuary Program (CHNEP).

*Charlotte Harbor Environmental Center Focus Groups<sup>2</sup>*

The CHEC contacted community leaders, elected officials and representatives from various organizations to participate in a series of focus groups. Six focus groups were conducted, with each targeting a specific audience of interest. The focus group design was based on stratified purposeful sampling in order to illustrate characteristics such as barriers of particular subgroups of interest.

The findings are organized into four areas that are aligned with the questions of interest to the project: (1) level of knowledge regarding the Peace River watershed, (2) most appropriate audiences to reach and through what method, (3) agencies, non-profits, businesses and individuals that have a stake in the health of the PR watershed and (4) barriers and benefits to change.

Participants of focus groups felt that schoolchildren would be interested and were deemed important as they can change family behaviors as well as gaining a lifelong commitment to the environment. Stakeholders, by majority, first indicated that the homeowners/civic associations needed to be targeted; second, lawn care providers; and third, government officials/decision makers. They felt these three groups have the most impact on the watershed.

Methods of receiving information varied through the surveys; however, media, i.e. TV, radio, local newspapers, Internet, brochures, etc. and word of mouth were the most common suggestions.

The CHEC was able to determine that there are many agencies, non-profits, businesses and individuals that have a stake in the health of the PR watershed. WRC targeted and surveyed many of these groups. There was a 33 percent response rate amongst stakeholders.

Barriers cited the workshop discussions were broad; however, many indicated that the animosity between up river and coastal communities will be a major barrier. Also, the “old-school” mentality is prevalent in many communities. The reference to “old-school” appears to represent a segment of the community that feel change is not necessary because things should remain as they always have been. Apathy is a major issue when trying to convince the public there is a water conservation issue.

Finally, incentives to change included education, creating a sense of ownership, linking individual behavior to impact, monetary incentives and disincentives such as fines and fees. Here is what some of the focus group participants had to say:

The main barriers to change are apathy, “old-school” mentality, a lack of ownership and a lack of immediacy. There is also some level of animosity between the counties, especially up river versus coastal communities. This comment best exemplifies the apathy:

“There is a feeling of apathy running rampant. People don't realize the magnitude of the problem or the consequences of wasting water.” Nancy Daley Mayor: City of Lake Alfred

Comment regarding a difference of opinion between communities:

“People in Hardee County see hypocrisy in political motives from Charlotte County - feel they are looking out for their own good for their benefit - Hardee County's conservation efforts lending to Charlotte's prosperity.” Bill Lambert, PAST Hardee Co. Commissioner, owns Torrey Oaks Golf Course

Here is another comment regarding factual and economical barriers:

“Lack of a clear understanding of the impact of their actions or lack of actions. Costs. Inconsistent behavior by government agencies on proper treatment of the resource. Lack of clear economic benefit.” Ron Tomlin, Boat Captain, Natural High Adventures and Executive Services.

The main benefits to change were increased awareness, increased conservation activity and increase sense of ownership and passionate participation in the maintenance of the health of the watershed.

### *Southwest Florida Water Management District Public Survey<sup>3</sup>*

The SWFWMD conducted a public opinion survey in the Peace River watershed in 2005. The survey reached some 600 respondents across the four-county region. Here is a quick look at key findings:

#### Key findings

- 29 percent of all respondents stated they lived in a watershed.
- About one-half of all respondents (51%) reported they were “Very Concerned” about the water resources in central Florida.
- One-half of the all the respondents felt that their environment had become less desirable.
- “Industry” and “storm water runoff” were identified by about a third of all respondents (32%) as the main source of Peace River pollution.
- 85 percent of respondents consider turf or grass as very important.
- 41 percent of all respondents said that they never fertilized their lawns.
- 45 percent of all respondents reported that they never used pesticides.
- About a third of all respondents (30%) said they were familiar with Florida-friendly landscaping.
- 44 percent of all respondents saying they would be willing reduce turf areas.
- 39 percent of septic tank owners have their systems inspected every 2-3 years.
- Cost or don't think there is a need were the primary reasons for not having the septic system inspected.
- Cost of supplies, lower maintenance and lower water use were equally significant in terms of motivation to use less fertilizer.
- Respondents appear to rely most frequently on “newspapers or print media” or “television” as information sources for water resources.

Some survey details include:

One-half of the all the respondents felt that their environment had become less desirable; 25 percent felt that their local environment had become more desirable while 23 percent reported no change. This pattern was about the same for all three areas. Respondents from the Charlotte area were somewhat more positive about their local environment, with only 46 percent reporting that their environment had become less desirable, compared to Polk (50%) and Hardee/DeSoto (53% percent).

Over 70 percent of the respondents in Charlotte thought that activities in Polk, Hardee and DeSoto counties can impact Charlotte Harbor. Respondents (71%) felt that other counties either impacted Charlotte Harbor or stated they did not know (26%).

Respondents were asked to rate the importance of turf or grass for landscaping their home. A large majority of respondents (85%) consider turf or grass as very important. Seventy-six percent think that at least half of their landscape should be turf or grass to be attractive. Opinions about the importance of turf or grass varied somewhat by area. Charlotte respondents were less likely to consider turf or grass important than Polk and Hardee/DeSoto respondents. Seventy-nine percent of respondents from Charlotte rated turf or grass as important when landscaping around their home, compared to 88 percent of both Polk and Hardee/DeSoto respondents. A large majority of respondents (85%) consider turf or grass as very important.

Respondents were asked about their willingness to take various steps to protect their watershed. At least 90 percent of respondents in all areas are already or willing to protect their watershed by avoiding littering and reducing their use of water; 80 percent or more already are willing to protect their watershed by inspecting their septic tanks and reducing the use of pesticides and fertilizers. Respondents are less willing to protect their watershed by reducing their turf areas.

Resist reducing turf area. The least popular of activities geared towards protecting watersheds was the reduction of turf areas with only 17 percent of respondents in each of the three areas saying they had taken this step. Respondents appear to be split regarding their willingness to take this step with 44 percent of all respondents saying they would be willing to and 40 percent saying they would not.

Respondents were asked what factors would motivate them to protect their watershed by irrigating less, using less fertilizer and using less pesticide. Overall, aesthetics was least identified as a motivating factor, cited by 12-13 percent of all respondents for each of the three practices. Cost was identified as a motivating factor by 20-31 percent of all respondents for all three activities and lower maintenance by 22-24 percent. A higher percentage of Polk respondents considered cost as a motivating factor for each of the activities. For example, 36 percent of Polk respondents said that “cost of supplies” would motivate them to use less fertilizer, compared to 19 percent of both Charlotte and Hardee/DeSoto respondents. Similarly, cost of water would motivate 40 percent of Polk respondents to irrigate less, compared 32 percent of Charlotte and 22 percent of Hardee/DeSoto respondents.

About a fifth of the respondents consider cost, lower maintenance and lower water use as a motivating factor for using less pesticide. Twenty percent cited cost, 22 percent “lower maintenance” and 19 percent “lower water use.” Only 12 percent said “aesthetics.” Cost of supplies is more of a motivating factor in Polk than for other areas. A smaller proportion of respondents in Hardee/DeSoto viewed lower maintenance an incentive to use fewer pesticides for their landscape and turf grass areas than in other areas.

For all three areas, respondents reported use of television most frequently, followed by newspapers or print media to obtain information about current events. Respondents appear to be somewhat more reliant on “friends and family” as a source of current events information than radio or the Internet. Finally, use of “brochures or pamphlets” often or sometimes was cited by the smallest percentage of respondents.

Overall, respondents across the three areas appear to rely most frequently on “newspapers or print media” or “television” as information sources, followed by “friends and family” and “radio”, then the “internet” and “brochures/pamphlets.” Polk respondents are somewhat less likely to use “newspapers/print media” as a source of water resources information than Charlotte or Hardee/DeSoto respondents. Thirty-seven percent of Polk respondents said they use newspapers/print media “Often” compared to Charlotte respondents (53%) and Hardee/DeSoto respondents (44%). Use of the Internet as an information source did not vary much by area with 21 percent of Charlotte and Polk respondents reporting that they used the Internet “Often” and 17 percent of Hardee/DeSoto respondents reporting use of the Internet “Often.”

### *The Peace River Watershed Education Program*

Based on the pre-program survey, the Charlotte Harbor Environmental Center (CHEC) planned and implemented an educational effort within the Peace River watershed. The program consisted of workshops, speaking engagements, distribution of educational materials and other outreach efforts. From the research, the following audiences were targeted:

- Community leaders
- Landscape educators
- Business
- Homeowners

The CHEC worked with many agencies in conducting the education program. Partners included the Southwest Florida Water Management District, the Polk County Natural Resources Department, the Peace River Environmental Education Network (PREEN), the Lakes Education/Action Drive (LE/AD), the Charlotte, DeSoto and Polk County Extension Services, the cities of Bartow, Lakeland and Winter Haven, the DeSoto and Hardee County Health Departments, the Charlotte Harbor National Estuary Program, the Peace River/Manasota Regional Water Supply Authority and others.

Funding for the educational effort was provided by CF Industries, TECO Energy, Mosaic Phosphate and the Southwest Florida Water Management District. Additional support was provided by the Charlotte, DeSoto and Polk County Extension Service offices, the DeSoto and Hardee County Health Departments and the Lakes Education/Action Drive organization.

Program Goals

- Provide community leaders with information they can use in helping to protect the watershed
- Help residents understand the watershed and the related issues
- Encourage behavior change to improve and protect water resources
- Work other agencies and organizations through support of their watershed education efforts.

Watershed Workshops

The Charlotte Harbor Environmental Center (CHEC) conducted three watershed workshops in 2006. The purpose of the workshops was to inform community leaders of the need to protect the watershed, provide information on how to protect the watershed and to receive feedback from participants on barriers and benefits to encouraging watershed residents to take action.

*Polk County Peace River Workshop*

The CHEC conducted a Peace River Watershed Workshop on April 13, 2006, at the Polk County Extension Service office in Bartow. The agenda included presentations by Robert Kollinger of the Polk County Environmental Services on the hydrologic profile of the watershed, Rand Baldwin of the Southwest Florida Water Management District on watershed issues, Ann Yasalonis of the Polk County Extension Service discussed Florida-Friendly landscaping and a group discussion of the issues and challenges facing the watershed.

*Polk County Watershed Workshop Discussion Session*  
*Moderator: Mike Britt, City of Winter Haven*

<b>Comments</b>	
Confusion	Number of government agencies involved in watershed protection is confusing. There is no simple way for the average person to understand who does what and who is responsible for what. Too many layers: federal, state, regional and local.
Awareness	The public needs to learn more about the impacts of their activities on the watershed. Many residents are unaware of their impacts. People are misled by all the water that is around and don't realize how much water is needed for a healthy environment. People need to take ownership of the watershed. New generations of people do not realize what they have lost. They are not aware of the way things used to be here.



More outreach	There is a need for more outreach to communities. There are many local issues that are not understood by residents. They do not know whom to turn to.
More resources	Government agencies need to devote more resources to working with local groups and organizations.
Education	Education is the most important component of efforts to reduce impacts to stormwater runoff. With non-point sources, it is difficult to deal with each individual source. Regulators cannot go door-to-door talking with residents. Workshops like this provide the best opportunity for the public to learn more and be able go into their communities and talk with others.
Incentives	There is a need for more incentives for people to properly maintain their landscapes. Rebates, discounts and tax credits were all mentioned.
Best Management Practices (BMP)	Local governments need to work more with homeowner associations and civic groups to encourage best management practices for residential areas.
Regulation	Need to encourage the officials to pass additional laws and enforce existing laws. Regulations need to be enforced by government.

*Charlotte County Peace River Workshop*

The CHEC conducted a Peace River Watershed Workshop on June 2, 2006, at the Charlotte County Extension Service office in Port Charlotte. The agenda included presentations by Catherine Corbett of the Charlotte Harbor National Estuary Program on the hydrologic profile of the watershed, Ed Hobin of the Southwest Florida Water Management District on watershed issues, Audrey Durr of the Charlotte County Extension Service on Florida-Friendly landscaping and a group discussion of the issues and challenges facing the watershed.

*Charlotte County Watershed Workshop Discussion Session  
Moderator - Ralph Mitchell, Charlotte County Extension Service*

<b>Comments</b>	
Perceived value of water	Water is not respected because there is no significant value placed on it. People take it for granted each time they turn on the tap. Water suppliers do not take the resource seriously. They just want to sell more. There

	needs to be a higher cost for water. And additional fees for those who choose to use too much water.
Awareness	Residents do not understand their habitat. They choose poorly when buying plants. They have too much grass. People moving to Florida have a misconception of the environment. They do not want to learn that Florida is different from the environment in the north.
Landscape	Turf is a waste of the environmental resources. Peer pressure can help change people. Right now, everyone wants a green lawn to keep up with the neighbors. If Florida-friendly landscapes became the norm, everyone would want that type of landscaping.
Personal involvement	Workshop participants must go back to their neighbors and friends and share the information about the watershed. Word of mouth can be a key to encouraging people to change their habits. People need to get more involved in educational activities. Need more use of the mass media in promoting environmental responsibility.

*DeSoto County Peace River Workshop*

The CHEC conducted a Peace River Watershed Workshop on October 20, 2006, at the DeSoto County Extension Service office in Arcadia. The agenda included presentations by Jim Selph of the DeSoto County Extension Service on local pollution issues, Jason Hale of the Watershed Resource Center at the Charlotte Harbor Environmental Center on the hydrologic profile of the watershed, David Rathke of the Southwest Florida Water Management District on watershed issues, Jim Selph of the DeSoto County Extension Service on landscapes, Junior Archer of the Hardee County Health Department on septic systems and a group discussion of the issues and challenges facing the watershed.

*DeSoto County Watershed Workshop Discussion Session*

*Moderator – Al Cheatham, Charlotte Harbor Environmental Center*

<b>Comments</b>	
Change	Growth is coming to DeSoto and Hardee counties. The environment is not what it used to be. Children do not have the same opportunities as their parents in enjoying the river and natural areas.
Awareness	There is a need to get people out from TVs and into the environment in order for them to understand nature and

	possible problems/impacts to the watershed. There is a need for more children education on the environment. There needs to be ongoing awareness to the public of the state of the watershed.
Landscape	People want green lawns and will do anything to have them.
Septic Systems	There is a growing problem of aging septic systems that are contributing to pollution
Regulation	People do not want more regulation of their lives.

### *Watershed Outreach*

The CHEC conducted 20 speaking presentations in 2006 to various groups in the watershed. The groups were given a presentation on the watershed which provided an overview of the watershed and included actions that participants could take to protect the environment. Each presentation session included feedback from the audience. Based on participant response, the following conclusions were reached:

- There is a significant lack of awareness of the watershed and how each person can impact its health.
- Only those participants that had awareness of the watershed and its problems appeared ready to take personal action.
- There is a lack of ownership among residents in regards to the environment.
- Those participants that have been impacted by a specific issue related to the watershed, have taken a greater interest in what they can do.
- Watershed residents are beginning to see negative impacts to the environmental and say it has reduced their quality of life.

<b>Questions &amp; Comments</b>	
Growth	<ul style="list-style-type: none"> <li>• What can we do about growth?</li> <li>• There needs to be more regulation of growth</li> <li>• Growth needs to stay along the coast</li> <li>• There are too many people moving into Polk County</li> <li>• Government should regulate the growth</li> <li>• The water management district should stop issuing permits for more water</li> <li>• New building must be stopped to protect the watershed</li> <li>• Government is doing nothing to protect us</li> <li>• We need to restrict new building in the area</li> <li>• Building should be restricted in low-lying areas</li> <li>• Stop building in low regions</li> </ul>

	<ul style="list-style-type: none"> <li>• Control growth</li> <li>• Stop growth</li> <li>• Let the new people pay for protection for the watershed</li> <li>• Stop the Babcock Ranch development (Charlotte County)</li> <li>• Development is out of control</li> <li>• Family farms are disappearing</li> <li>• Too much traffic which pollutes our roads</li> <li>• Developers need to pay more to protect the environment they are damaging</li> <li>• We need to limit the number of people moving here</li> <li>• Stop building in low regions</li> <li>• We have too many people</li> <li>• The government is not doing its job to protect water</li> </ul>
Education	<ul style="list-style-type: none"> <li>• We need to provide more education</li> <li>• People need to learn more about pollution</li> <li>• It is hard to believe what we do in Polk County has an impact on Charlotte Harbor</li> <li>• People need to stop littering</li> <li>• We need to provide more environmental education</li> <li>• Those moving from the north should be educated in how to maintain their yards here in Florida</li> <li>• We need more education about the environment</li> <li>• There should be more water conservation</li> <li>• We need more education on water use and landscaping</li> <li>• We need to teach our children about protecting the environment</li> <li>• Need more education efforts like this</li> <li>• Need more education efforts</li> <li>• More efforts, less talk by government</li> <li>• We need to provide more environmental education</li> </ul>
Landscape	<ul style="list-style-type: none"> <li>• More people should use Florida-Friendly landscaping</li> <li>• The county (Polk) should mandate Florida-Friendly landscaping in all new development</li> <li>• The county (Charlotte) should implement landscaping rules</li> <li>• Make Florida-Friendly landscaping the law</li> </ul>
Environment	<ul style="list-style-type: none"> <li>• Natural areas need to be protected</li> <li>• We need to keep our lake system functioning</li> <li>• The county (Polk) should provide more recreational opportunities along the river</li> <li>• The county (Polk) needs to improve their drainage systems</li> <li>• We need to fix the flooding</li> </ul>

	<ul style="list-style-type: none"> <li>• We need to conserve our water (Charlotte)</li> <li>• Agriculture needs to reduce its water use</li> <li>• We need to preserve more lands</li> <li>• The county (Charlotte) should do more to protect the natural areas</li> <li>• We need to conserve our water (Polk)</li> <li>• The County Commissioners (DeSoto) need to protect the environment</li> <li>• Need an alliance of all those working on environmental issues within the watershed</li> </ul>
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### *Watershed Awareness*

Watersheds provide a definable region to highlight the action of water as it passes across the landscape. Everyone lives in a watershed. And most live in more than one watershed. Watershed education has taken hold in this country and internationally to highlight stormwater pollution. As the public becomes aware of their watershed and how water moves through the system, the more they understand their position. The concept of a watershed also provides an opportunity for ownership. Residents can understand why they need to take action and protect their place in the landscape.

From the watershed workshops and speaking presentations, it appears that residents are slowly realizing that something is not right with their environment. Most people identify the problem as a result from too much growth. However, not all people associate pollution with their own actions. We have heard comments about pollution originating from industry, from agriculture, and from local business. But pollution from many of these sources have been reduced significantly or eliminated.

### *Conservation and Pollution*

While we are seeing an increased interest in finding helpful information, much of this is related to water conservation. Local extension service offices are seeing a keen interest in landscape-related workshops. This increased interest in landscape has come after 15 years of extensive public awareness efforts by various governments and organizations to promote water conservation and drought-tolerant planting. There have been other influences such as lawn watering rules, increased costs of water, droughts and such. All of this has made an impression on residents and have opened them to seek out the information that can help them change their behavior.

When it comes to water pollution, the story has been different. The focus has been on point pollution and the media tends to focus on specific events such as mining spills and superfund sites. Regulation has focused on business. Little is said about everyday activities that contribute to pollution. Non-point pollution sources are the challenge for the future.

## *Conclusion*

The bottom line: It is difficult to encourage people to change behavior when they do not see a need to make the change.

According to Doug McKenzie-Mohr in his book “Fostering Sustainable Behavior”<sup>4</sup>, there are three explanations for people not engaging in an activity:

- People do not know the activity or benefit
- People who know about the activity may perceive difficulties or barriers associated it
- People even knowing the benefits to a specific behavior change may feel it is easier to continue their present actions

To get people to be interested in change, they must understand and accept there is a problem. Some experts call this buy-in. Other experts say that there must be a personal impact before action occurs. There have been many social issues over the years that have led to behavior changes. Smoking was not deemed a problem until people learned of the negative health impacts. Seat belt use increased as people became aware that they save lives. This was accomplished through awareness of the issue followed by information on what people can do. And these issues were also impacted by regulation.

What does this mean for watershed education? Survey results from several Florida locations show that there is a low recognition of watersheds. In some cases, less than 20 percent of respondents knew they lived in a watershed. Watersheds can provide a sense of place, a sense of ownership and definable borders for residents. As with water conservation, once the public is aware of their watershed and their place in it, the more likely they are to make the changes necessary to protect their environment.

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Peace River Environmental Education Network (PREEN)  
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CF Industries

## **REFERENCES**

<sup>1</sup>Estimated Economic Value of Resources Report (1998)  
Charlotte Harbor National Estuary Program  
Hazen & Sawyer Engineering

<sup>2</sup>Peace River Watershed Education Report (2005)  
Watershed Resource Center  
Charlotte Harbor Environmental Center

<sup>3</sup>Survey of the Peace River Watershed (2005)

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<sup>4</sup>Fostering Sustainable Behavior (1999)

Doug McKensie-Mohr, St. Thomas University

William Smith, Academy for Educational Development

New Society Publishers, Gabrioloa Island, BC, Canada