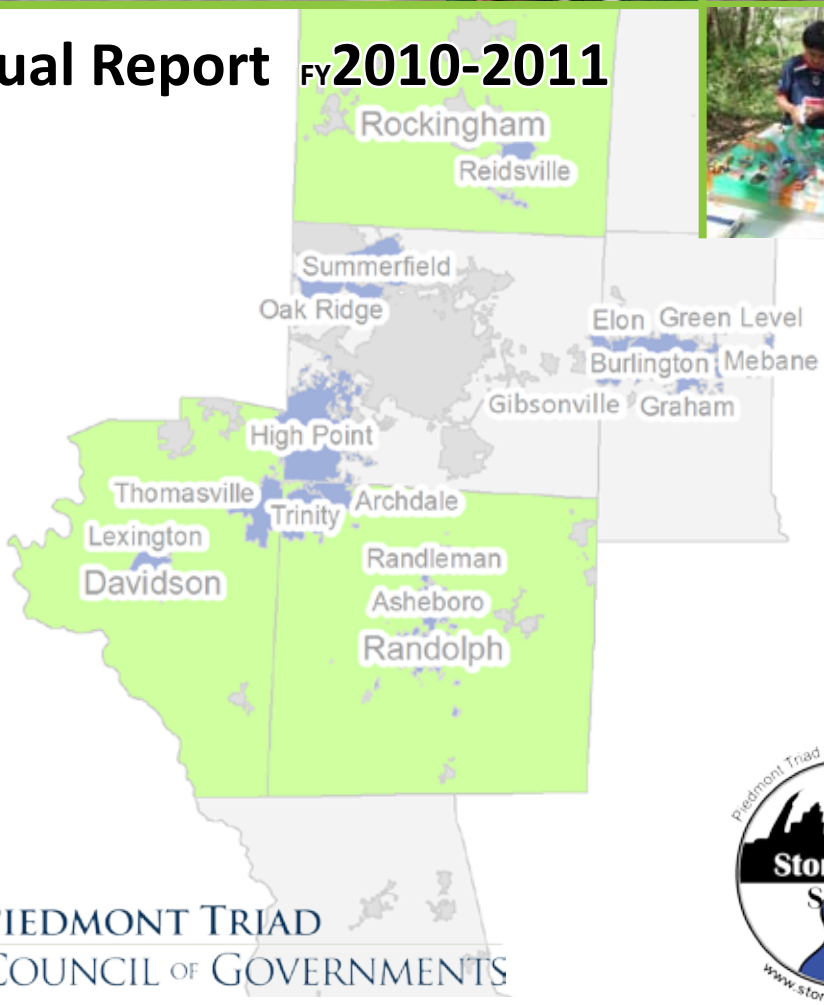
Stormwater SMART

Stormwater Management and Recovery of the Triad

Annual Report FY2010-2011



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Water is the driving force of all nature. -Leonardo da Vinci

Clean water begins with education. Stormwater SMART works with various community groups, schools, and government offices to inform the public about stormwater pollution and prevention. Because watersheds don't abide by municipal boundaries, working at a regional level is essential to ensure downstream communities are safe and livable. By working together, we can help protect the streams, rivers, and lakes of the growing Piedmont Triad.

A MESSAGE FROM THE PROGRAM COORDINATOR

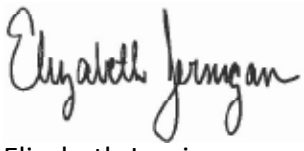
Stormwater SMART is the only program in the Piedmont Triad that conducts stormwater outreach campaigns based solely on social marketing. Stormwater SMART grew tremendously in the last year. We expanded our program to include Reidsville and Rockingham County. Both jurisdictions were very supportive of our programming and provided us with lots of new opportunities to increase our programming across the Triad.

With the adoption of the Jordan Lake Rules in July, 2009 and other rules requiring stormwater education and participation coming down the pipeline, Stormwater SMART is poised to play an even stronger role in the Piedmont Triad in the upcoming years. Although mass media continues to be a component of stormwater education, decision makers are placing a much stronger emphasis on social marketing. A growing body of research indicates citizens are more likely to change their behaviors if targeted through social marketing techniques. What is social marketing? Social Marketing is based on the idea that behavior change is most effective when carried out at the community level and involves direct contact with people.

Our participation numbers have increased over the last year. I attribute this to the exemplary job part-time employee Joy Fields is putting forth. We expanded our outreach to include working with local pet stores and animal hospitals, visiting lawn and garden centers, and expanding our ongoing programming to include more under served communities. As water quality becomes a more pressing issue in the Triad and across North Carolina, Stormwater SMART welcomed opportunities from local newspapers, radio and television stations to share our knowledge of what citizens can do to improve water quality.

Every program we develop and every presentation we conduct makes Stormwater SMART an even stronger program. We are lucky to have such a tremendously supportive board, dedicated to providing the most effective outreach services to our communities. Thank you for your participation and I look forward to continuing the exceptional services provided by our program.

Sincerely,



Elizabeth Jernigan
Stormwater Outreach and Education Coordinator

PROGRAM SUMMARY

In the Classroom

Stormwater SMART visits classrooms around the Triad, offering teachers a variety of programs based on the Project WET curriculum. We offer Elementary, Middle and High School students a variety of programs to choose from. All programs are aligned with the NC Standard Course of Study.

NC StreamWatch

Stormwater SMART provides a much needed connection between the North Carolina Department of Natural Resources and local citizen groups who want to adopt-a-stream. We provide three levels of training to ensure you're getting the most out of your StreamWatch experience.

Presentations

Stormwater SMART speaks to Rotary Clubs, garden clubs, homeowners associations, local nonprofits and other groups interested in learning more about what they can do to improve water quality.

Stormdrain Marking

Stormwater SMART works with individuals and groups interested in installing stormdrain markers in communities around the Triad.

Scouts

Stormwater SMART works with Girl and Boy Scout troops to provide programming that meets patch requirements. We also offer a Girl Scout Stormwater SMART patch program. This comprehensive program combines stormwater education and participation to ensure our girls take their water quality expertise well into the future.

NC Big Sweep

Stormwater SMART organizes the annual Big Sweep in Davidson County. NC Big Sweep is part of an international effort to clean the litter from our watersheds and educate citizens on stormwater runoff.

Library Programs

Stormwater SMART works with libraries across the Piedmont Triad to provide programming for citizens of all ages. From summer reading programs to public information sessions, we ensure our material is relevant to all.

Fairs and Festivals

Fairs and Festivals continue to be one of the most effective ways to reach citizens from all backgrounds. Most participants are engaged through a stormwater presentation using the Enviroscape ®. We also hand out rain gauges, give out prizes and encourage folks to sign up for the Stormwater Steward.

Landscape Contractors

Stormwater SMART provides public and private landscaping crews with the tools they need to reduce nutrients flowing into our waters.

Rain Garden Design

Stormwater SMART now offers rain garden design for homeowners, small businesses, and municipalities. Rain gardens provide numerous water quality benefits and the potential for education is tremendous. That's why we also offer custom rain garden sign design to accompany your rain garden if it's in a public location.

Stormwater Steward

The Stormwater Steward is a quarterly publication covering current events, best practices, and Stormwater SMART programs. The newsletter is distributed to local officials, libraries, at fairs and festivals, and other events. The newsletter is available as a hard copy or electronically.

WWW.STORMWATERSMART.ORG

The Stormwater SMART website has come a long way in the last couple years. The website features up to date program and event information as well as access to the Stormwater Steward, Annual Reports, presentations and other outreach materials.

Brochures / Handouts

Stormwater SMART designs and distributes brochures addressing a number of topics, from program areas to actions individuals can take to improve water quality. Many of our publications are available in English and Spanish.

Monitoring

We offer participants the option to get as dirty as they want on our watch. Stormwater SMART provides water quality monitoring and training addressing both physical and chemical parameters.

Prizes

Stormwater SMART distributes prizes to help participants spread the word about Stormwater Runoff. We choose to give out prizes that help reduce our impact on water quality. Reusable grocery bags and water bottles help prevent litter from ending up in our waters.

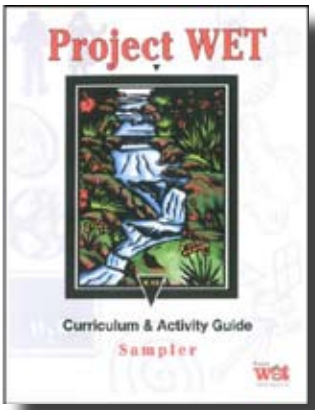
Enviroscape

The Enviroscape® is a well known tool in the stormwater education world. If you come to a Stormwater SMART function, you're likely to see us using the model to help kids adults alike understand how we all contribute to stormwater pollution.

Project WET

Project WET is the leading resource when it comes to water quality education.

The curriculum provides educators with a number of tools to help students understand the role water plays in the environment and in society and what we can do to ensure healthy water for future generations!



BACKGROUND

Piedmont Triad Council of Governments

In response to the needs of member governments, the Piedmont Triad Council of Governments (PTCOG) created a regional stormwater education program for NPDES Phase II jurisdictions in 2004. The Piedmont Triad Council of Governments is a voluntary association of municipal and county governments, enabled by state law to promote regional issues and cooperation among members. PTCOG serves 43 member governments in the following seven counties: Alamance, Caswell, Davidson, Guilford, Montgomery, Randolph, and Rockingham.

Goals and Objectives

The overall goal of the stormwater outreach and education partnership of local governments is to meet the needs of NPDES Phase II jurisdictions that otherwise would not have the resources to plan for and implement a strong outreach initiative. In 2009, Governor Beverly Purdue signed the Jordan Lake Rules into law. These Rules require additional communities in the PTCOG region to address stormwater pollution through public outreach and education. Although not regulated by the NPDES Phase II program, Rockingham County, Reidsville, Summerfield and Oak Ridge utilize Stormwater SMART to meet Jordan Lake Rules outreach requirements. Additional communities in the Yadkin River Basin opt to participate in Stormwater SMART, even though they are not required to do so by any governing body. These communities include Davidson County, Rockingham County, Randleman, Asheboro and Lexington. These communities see a strong value in using water quality education to protect valuable resources including High Rock and Randleman Lakes.

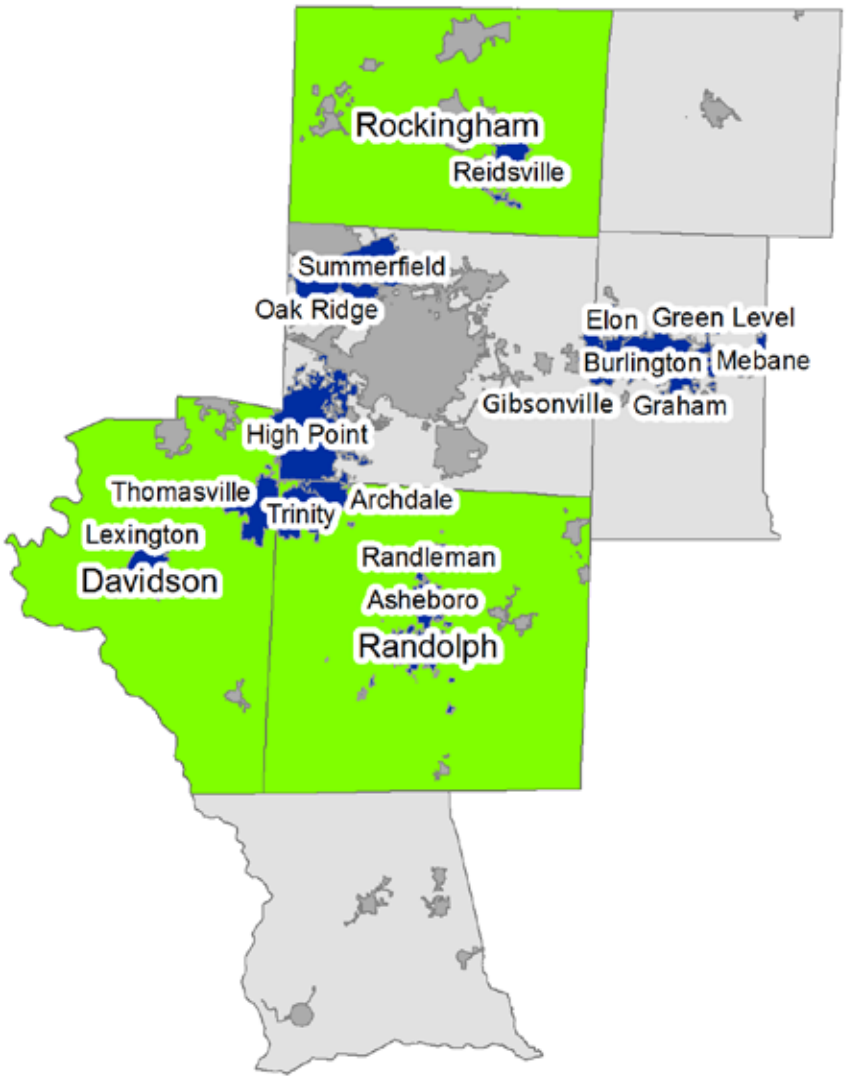
Stormwater SMART Today

During fiscal year 2004-2005, through a 205j grant from the NC Division of Water Quality, PTCOG organized a group of 24 local government representatives from Phase II cities and towns as part of the stormwater outreach program team with no upfront costs to local governments. Local government representatives originally directed the program coordinator to focus on educating the region's elected officials and the PTCOG board of delegates. This was achieved through the development and presentation of a PowerPoint slideshow entitled "Stormwater in a Changing Landscape." PTCOG created a unique, versatile animated PowerPoint presentation to demonstrate the stormwater problem. With the support of elected officials, the Stormwater SMART program was solidified through a second outreach and education effort targeting middle school students throughout the region.

Today Stormwater SMART works with citizens from all walks of life. From toddlers to senior citizens, teachers to elected officials and everyone in between, Stormwater SMART is known throughout the Piedmont Triad as the premiere hands on Stormwater Education Partnership. Our constantly changing website, brochures and other materials reflect the nature of an organization dedicated to providing our constituents with the most up-to-date, relevant stormwater information and participation opportunities

The following Counties and Municipalities participated in Stormwater SMART in 2010-2011:
Davidson County, Randolph County, Rockingham County, Archdale, Asheboro, Burlington, Elon, Gibsonville, Graham, Green Level, Haw River, High Point, Lexington, Mebane, Oak Ridge, Randleman, Reidsville, Summerfield, Thomasville and Trinity.

STORMWATER SMART MEMBER GOVERNMENTS



N

Legend

- Non-Stormwater SMART Municipalities
- Stormwater SMART Municipalities
- Non-Stormwater SMART Counties
- Stormwater SMART Counties

Piedmont Triad Council of Governments
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PTCOG

STORMWATER SMART MEMBER GOVERNMENTS

Membership in Stormwater SMART is limited to PTCOG member local governments within the PTCOG seven county region. Representatives from organizations and local governments from other regions, or non-PTCOG member governments are welcome to attend meetings and access resources and information generated by Stormwater SMART.

Based on the 2008 Certified Population Estimates, almost 550,000 residents live within these cities and counties. Our programming reflects the diverse needs of our urbanized and rural communities. Through a letter of understanding with each participating local governments, the PTCOG has provided the following services beginning in July 2005:

- Facilitation of meetings with participating local governments when necessary to plan for and gain consensus on program direction, scope, and budget.
- Development and implementation of the regional outreach and education programs based on common NPDES Phase II permit requirements for participating local governments.
- Establishment of a Middle and High School outreach program.
- Continued relationships to schools, civic organizations, media and non profits.
- Attendance of local area festivals.
- Advancement of "Earth Day, Everyday", library programming.
- Advancement of the Girl Scout Patch Program
- Establishment of Partnerships with Cooperative Extensions and other Environmental Organizations
- Maintenance and further development of the stormwater website www.stormwatersmart.org.
- Creation of Spanish-language versions of the educational components of the website and materials.
- Development and distribution of all outreach materials.
- Development of water quality volunteer opportunities.

FUNDING

FUNDING:

The cost to each local government is based on municipal populations. County population totals do not include municipalities. Total program costs for services, including materials, printing, distribution, staff time and travel is $67,259 for FY 2010-2011. The following chart identifies member dues based on a combination of staff time and materials. Staff time is distributed equally throughout the members while expenditures (materials, travel, etc.) are population based. Additional information is included in Appendix A.

2008 Certified Population Estimates		Time (2PT)	Expenditures (population x $0.015)	Time (2PT) + Expenditures ($0.015)
Archdale	9,788	2947	147	3094.07
Asheboro	24,827	2947	372	3319.66
Burlington	50,927	2947	764	3711.16
Davidson County	97,503	2947	1463	4409.80
Elon	7,319	2947	110	3057.04
Gibsonville	5,775	2947	87	3033.88
Graham	14,865	2947	223	3170.23
Green Level	2,467	2947	37	2984.26
Haw River	2,052	2947	31	2978.03
High Point	100,645	2947	1510	4456.93
Lexington	21,378	2947	321	3267.92
Mebane	9,848	2947	148	3094.97
Oak Ridge	4,849	2947	73	3019.99
Reidsville	14,613	2947	219	3166.45
Randleman	4,447	2947	67	3013.96
Randolph County	88,363	2947	1325	4272.70
Rockingham County	52,690	2947	790	3737.60
Summerfield	7,906	2947	119	3065.84
Thomasville	27,036	2947	406	3352.79
Trinity	6,978	2947	105	3051.92
Total:	554,276	**$58,945**	**$8,314**	**$67,259**

North Carolina and the Environmental Protection Agency (EPA) have determined that Jordan Lake is impaired from high nutrient levels. The State conducted a TMDL assessment in 2007 that recommended a strategy to improve Lake conditions. The NC General Assembly created the Jordan Lake Rules from these recommendations. The Jordan Lake Rules require every municipality and county within the Haw River watershed to reduce their nitrogen and phosphorous contributions by 8% and 5%, respectively by 2017. This requires action by 19 Piedmont Triad counties and municipalities. The following 11 communities are required to participate in the Jordan Lake Rules: Burlington, Elon, Gibsonville, Graham, Green Level, Haw River, Mebane, Oak Ridge, Reidsville, Rockingham County and Summerfield.

In response to the Jordan Lake rules, Stormwater SMART stepped up our focus on nutrient management, including a program targeting landscape contractors and outreach to lawn and garden centers, pet stores and animal hospitals. We work hard to help citizens understand how their everyday actions have an impact on a lake 60 miles away.

Jordan Lake Rules Outreach Requirements and Stormwater SMART Compliance

Outreach Strategy:

- ☑ Newspaper articles and/or inserts
- ☑ Kiosks and signage
- ❑ Direct mail
- ☑ Displays at the point-of-purchase in retail centers
- ❑ Utility bill inserts

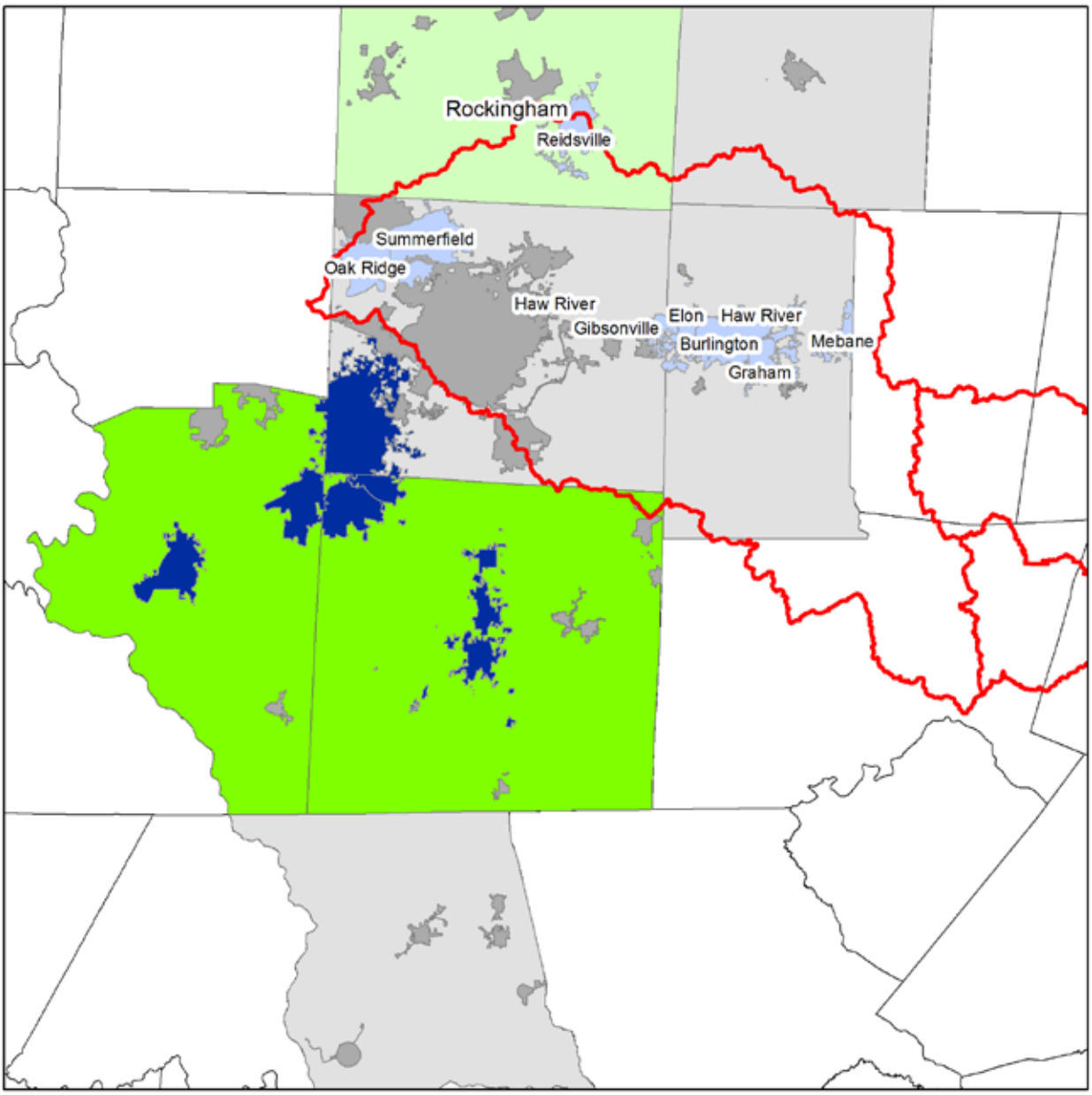
Outreach Program (1)

- ☑ Public meetings
- ☑ Community events
- ☑ Contests
- ☑ Storm drain marking
- ☑ Stream and Litter cleanups
- ☑ Group presentation and/or speeches

Outreach Program (2)

- ☑ News coverage
- ☑ Workshops and classroom outreach
- ☑ Distributing promotional giveaways and specialty items
- ☑ Brochures, displays, signs, welcome packets and pamphlets
- ❑ Local cable access
- ☑ Newsletters

JORDAN LAKE RULES JURISDICTIONS



Legend

- Jordan Lake Watershed Boundary
- Non-Stormwater SMART Municipalities
- Jordan Lake Watershed SMART Members
- Non-Jordan Lake Watershed SMART Members
- Non-Stormwater SMART Counties
- Jordan Lake SMART Members
- Non-Jordan Lake Watershed SMART Members

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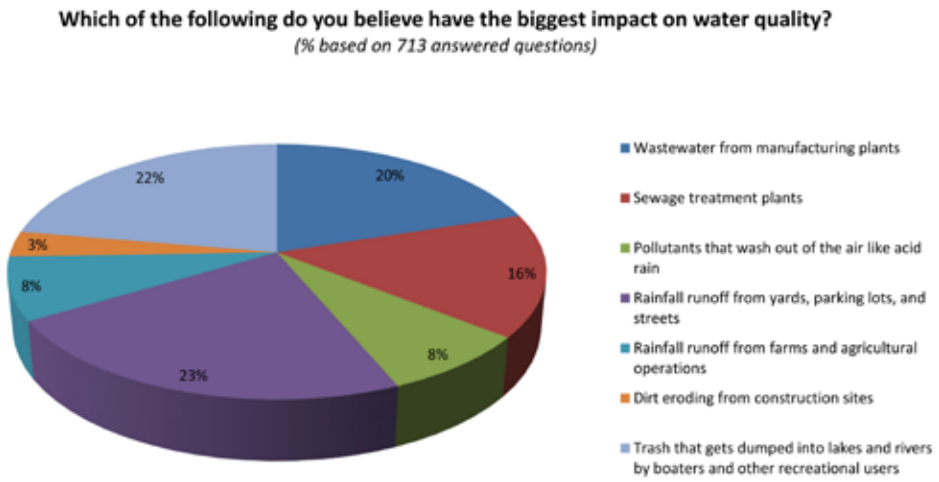
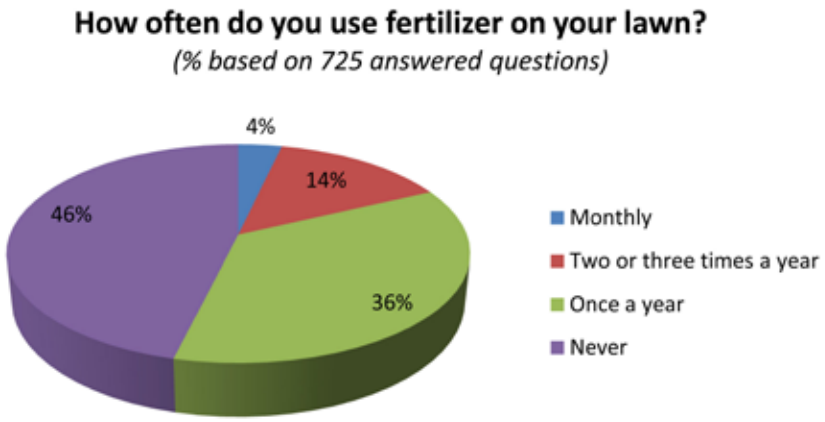
Survey Data

Stormwater SMART staff conducts surveys at most of the fairs and festivals we attend. We also have a link to the survey on our website. This year, we collected over 700 responses.



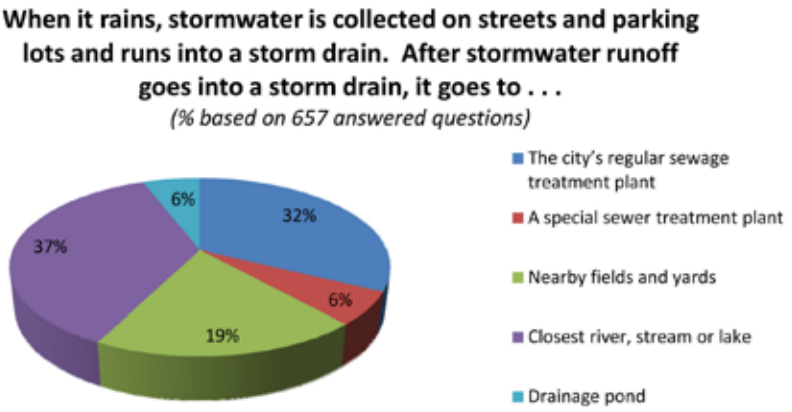
Area fairs and festivals are attended by a diverse group of individuals. Surveying these individuals provides Stormwater SMART with a strong sense of how aware a community is. The pie chart to the right indicates over 50% of our citizens believe the greatest impact to water quality is something other than stormwater runoff.



While this is common across North Carolina and the Nation, other survey results indicate citizens' are paying more attention to their daily behaviors. For example, over 50% of citizens with pets "Always" or "Often" pick up after their pets. Likewise, less than 20% of participants surveyed fertilize their lawn more than once a year. These results are encouraging and as we move forward, we hope our citizens not only continue improving their daily behaviors, but deepen their understanding of how those behaviors can positively impact our waters. For complete survey results, please see Appendix D.

The short survey covers the following areas:

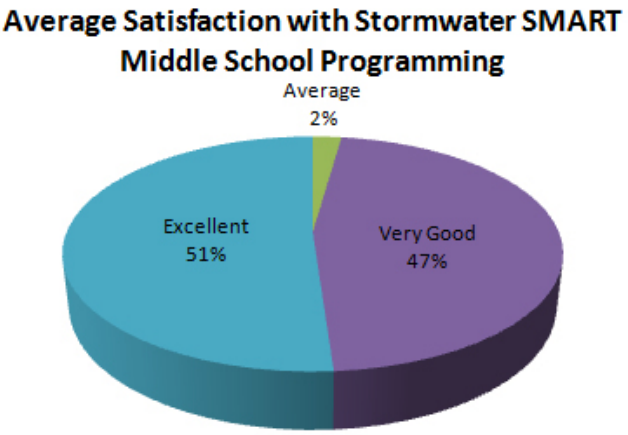
- Residential landscape (urban, suburban or rural)
- Overall water quality
- Biggest impact on water quality
- Fertilizer use
- Soil testing
- Car washing
- Pet waste
- Stormwater runoff



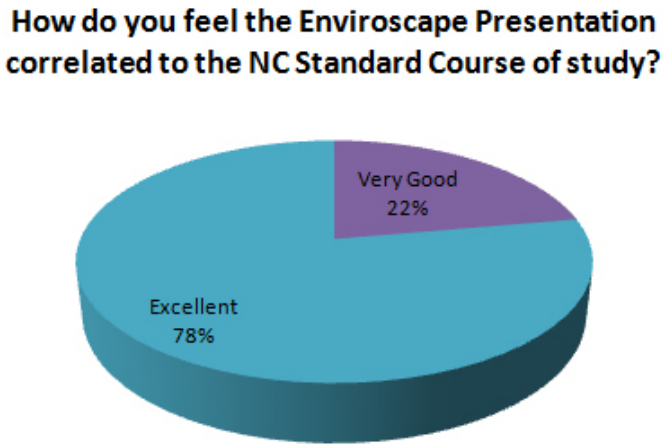
In The Classroom

Stormwater SMART has established a widely respected presence in the Piedmont Traid. We were thrilled to work with teachers in Elementary, Middle and High Schools across our region. The following schools participated in our program:

- Harvey R. Newlin Elementary School
- Southmont Elementary School
- Archdale Elementary School
- Summerfield Elementary School
- Western Rockingham Middle
- Northeastern Randolph Middle School
- South Asheboro Middle
- E. Lawson Brown Middle School
- North Davidson Middle School
- Welborn Academy of Science and Technology
- Southwest Guilford Middle



Almost 2,000 students participated in Stormwater SMART school presentations this year. Our presentations are customized to meet the needs of teachers. Teachers gave our program high marks for corresponding with the NC Standard Course of Study. Teachers have found our programs useful as a primer to their lesson plans, a follow-up lesson to reiterate knowledge, and an end of the year program designed to prep students for End of Grade testing.



The Enviroscape® is a portable model used to help people of all ages better understand point and nonpoint source pollution through hands-on demonstrations. Stormwater SMART uses the Enviroscape® to help students understand the concept of a watershed and how pollution flows downstream. Hydrology is a lesson many teachers find difficult to teach effectively. While the Enviroscape ® is a perfect tool for teaching hydrology, the model is too expensive for most public schools. Stormwater SMART uses the enviroscape to connect students to pollution sources in their own backyard, including parking lots, construction sites, dog waste and agricultural impacts. Students draw cards identifying them as certain pollutants ensuring lots of participation. The presentation is wrapped up by discussing how students and their families can limit the number of pollutants they are unknowingly contributing to our waters.

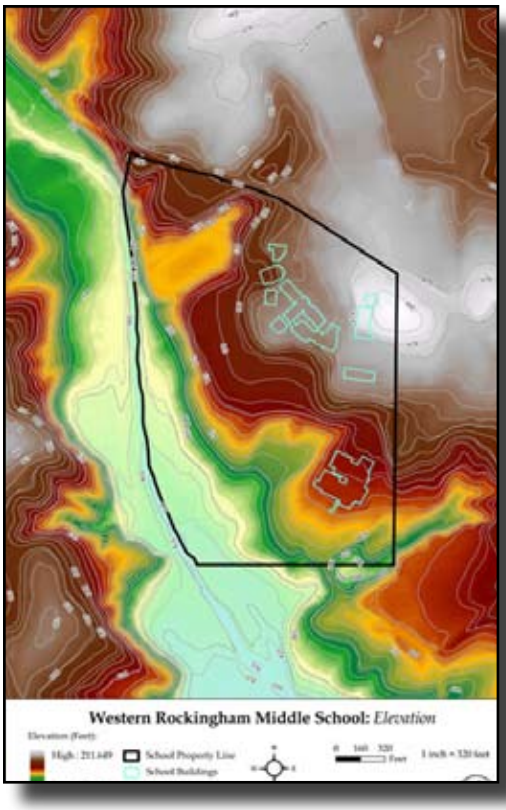
KEY ACCOMPLISHMENTS

While the 8th Grade Enviroscape® program is our most popular, Stormwater SMART offers a number of other progams to meet the needs of teachers in the Piedmont Triad. Additional programs include:

- **What's Your Watershed?** Learn about watersheds and landforms using local data.
- **The Wonderful Water Cycle.** All the water that will ever be is right now. How much water is there, and what happens when it's polluted?
- **Water Quality:** Learn about many types of water pollution and the techniques scientists use to determine watershed health. Participate in our StreamWatch program, and put your knowledge to the test.
- **Water Quality Legislation:** Use role-playing to understand how decision makers affect water quality.
- **What is your Basin Facin' ?** Learn about your river basin and the problems it is facing.
- **The Solution to Stormwater Pollution.** Understand what Best Management Practices (BMPs) are, and how your community is using them.
- **Water Quality in the News:** What's all the hubbub about?
- **Soil Types:** Understand how different types of soil affect water quality.
- **Economics of Water Quality:** What does poor water quality means for the economy?

Our programs are completely adaptable to any age group and apply across curriculums. We even fit some physical fitness in during Project WET activities including "Macroinvertebrate Mayhem," "The Incredible Journey," and "Just Passing Through."

We make every effort to help students understand the connection between their local environment and water quality downstream. One method to accomplish this is by customizing maps for each school we visit. Printed out on poster-sized paper, our maps helps students assess how much of their school's footprint is impermeable and where the water that runs off those surfaces ends up. If teachers are willing, we work with students to track the flow of water to a local stream where we teach students about stream health by testing the chemical and biological parameters of that waterbody.



For more information on our school programs, please see the "Teacher Services Brochure" in Appendix C.

KEY ACCOMPLISHMENTS

NC StreamWatch

Members in Stormwater SMART communities are eligible to participate in a StreamWatch program. StreamWatch or Adopt-a-Stream programs are one of the most effective tools for engaging the public in watershed issues. Participating in water quality monitoring increases awareness and helps citizens connect their everyday actions to the health of their watershed.

Our program is designed to accommodate a variety of groups, including schools, civic groups, homeowner associations and scouts. Depending on how active the group is, we can provide equipment for chemical and/or biological monitoring, trash bags for cleaning litter and assist groups with arranging for trash pickups and other services. In return, groups provide all data to Stormwater SMART. All participants receive recognition through signage placed at their adoptive stream in our newsletter, the *Stormwater Steward* and our website. Stormwater SMART.

Presentations

Stormwater SMART offers a variety of presentations to meet the needs of a diverse audience. We customize each presentation to the age, size of the group and length of the presentation. Our presentations range in length from 15 minutes to two or more hours. We always provide plenty of handouts so our audience never leaves empty-handed. In a single day, you might catch up at a summer camp in the morning, a rotary meeting in the afternoon and a garden club in the evening. Many groups opt for a PowerPoint presentation, while others prefer a questions and answer format. A few of the topics covered in FY 20010-2011 were:

- General Stormwater Education
- Enviroscape Presentation
- Rain Gardens
- Soils
- Macroinvertebrates
- Jordan Lake Rules Requirements
- Local Water Quality Updates

Many citizens do not understand the many ways they are impacted by water. Our presenters strive to connect people to their local water resources, as well as provide connections between water resources in the Piedmont Triad as well as the rest of the nation, and the world. With children, we work use Project WET activities to help make these connections. With adults, we have real conversations about water in our communities and how privileged we are to have clean and safe water to drink, irrigate our crops and splash in during the summer, and the importance of maintaining those waters for future generations.

Stormdrain Marking

Many citizens believe water flowing into storm drains is treated before draining back into our waterways. Stormwater SMART works to dispel this myth through storm drain marking.

Storm Drain Marker Kits are available at no cost to organizations interested in installing them in member communities. The kits contain flexible full-color storm drain markers that are easily applied to storm drains or adjacent sidewalks. The markers alert passers-by that a storm drains send rainwater directly into nearby creeks, rivers, and lakes.

The kits also contain an educational brochure about stormwater that provides helpful tips about how residents can prevent nonpoint source pollution. The brochure is intended to be distributed to residents in the neighborhoods where storm drain markers are installed.

Scouts

Stormwater SMART works with scout programs around the Triad. Whether scouts are trying to fulfill badge requirements, or work with the community to improve water quality project, our staff is always available to arrange for stream cleanups, assist with designing a rain garden, or conduct a water quality presentation.

We also offer a Girl Scout Patch Program. Not only are they fun to work with, they're great stewards of the environment. Girl Scouts are not afraid to take what they learn out into the world. The patch program includes an activity book and additional resources to help students earn their patch.

The varied experiences offered reinforce important concepts in nonpoint source pollution. Stormwater SMART hopes these girls take their newfound knowledge home and encourage parents, friends, and neighbors to take action!

KEY ACCOMPLISHMENTS

NC Big Sweep

Across the State, groups gather every fall to clean our waters. The Piedmont Triad Council of Governments organizes events in Davidson County and assists citizens in other jurisdictions connect with their local Big Sweep Coordinator. On October 9th, school groups and citizens gathered at the Buddle Creek Access on High Rock Lake. Thirty volunteer walked five and a half miles, collecting over 800 pounds of trash in just a few hours. In addition to trash, volunteers collected hula hoops and other unique items.

A second "Spring Sweep" was held in Thomasville on May 15th, 2011. The City of Thomasville, the Thomasville Police Department, Stormwater SMART, and the Emanuel Baptist Church collected 23 bags of trash in Thomasville. Volunteers also collected a metal bed frame, metal chair and car parts from the creek.

National Trails Day and National Rivers Cleanup Week

The Piedmont Triad Council of Governments worked with the City of Lexington to host a combined National Trails Day and National Rivers Cleanup Week event on June 4th at Finch Park in Lexington. A total of 25 volunteers participated in a trail hike/trash pickup along Abbotts Creek or a paddle cleanup along the Creek. Stormwater provided environmental education to participants at a shelter located on a waterbody in Finch Park.

National Rivers Cleanup Week

Stormwater SMART partnered with the City of Burlington to celebrate National Rivers Cleanup Week on City Lake in Burlington. Ten volunteers filled approximately three boatloads of trash including glass and plastic bottles, aluminum cans, tires, a tractor tire, a headlight and a couple broken fishing rods.

Libraries

What better place to reach a diverse crowd than at the library? Our programs are flexible to meet the needs of libraries in our region. In 2010-2011, we've worked with librarians on summer reading, after school programs and public information sessions. We offer the following programs to libraries in our region.

- Enviroscape presentations (all ages)
- Public Information Sessions (concerned citizens)
- Interactive Storytime with Freddie the Fish (pre-K)
- Sum of the Parts, a Project WET curriculum (6-8th grade)
- Rolling Down the River. . . A life-size board game in which participants try not to get eaten by the algae monster.
- Stormwater BINGO

The following libraries participated in Stormwater SMART programming:

- Burlington
- Graham
- North Davidson
- High Point

Landscape Contractors

Stormwater SMART now offers training sessions for municipal and private landscape contractors. In response to the Jordan Lake Rules, many of our communities have additional requirements regarding nutrient management. This presentation helps providers understand why new regulations are in place, and assess where they might improve their practices. Interested parties can contact us to set up a program, or can download a PowerPoint presentation complete with notes from our website.

KEY ACCOMPLISHMENTS

Design Services

Stormwater SMART works with communities to promote and advertise projects designed to improve water quality. We assist communities in designing customized signs, flyers and other promotional materials to help citizens understand how Best Management Practices (BMPs) improve local water quality.

Out and About

Stormwater SMART added a new element to our program this year. We spend some time on the road visiting pet stores, animal hospitals and lawn and garden centers. We spoke with store managers and requested materials be left out. In addition to distributing information, many receptive to working with Stormwater SMART on future event and evening partnering with us in our outreach efforts.

Raingarden Design

Stormwater SMART staff have a Residential Rain Garden Certification and are willing to help homeowners, garden clubs, scouts, and other groups build rain gardens in their back yard. Stormwater SMART with the Davidson County Soil and Water Conservation District to install a rain garden in Doak Park in Thomasville. We hope more communities continue to take advantage of this great service.

Appendix A – Stormwater SMART Budget

Stormwater SMART Member Dues FY2010-2011

2008 Certified Population Estimates		Time (2PT)	Expenditures (population x $0.015)	Time (2PT) + Expenditures ($0.015)
Archdale	9,788	2947	147	3094.07
Asheboro	24,827	2947	372	3319.66
Burlington	50,927	2947	764	3711.16
Davidson County	97,503	2947	1463	4409.80
Elon	7,319	2947	110	3057.04
Gibsonville	5,775	2947	87	3033.88
Graham	14,865	2947	223	3170.23
Green Level	2,467	2947	37	2984.26
Haw River	2,052	2947	31	2978.03
High Point	100,645	2947	1510	4456.93
Lexington	21,378	2947	321	3267.92
Mebane	9,848	2947	148	3094.97
Oak Ridge	4,849	2947	73	3019.99
Reidsville	14,613	2947	219	3166.45
Randleman	4,447	2947	67	3013.96
Randolph County	88,363	2947	1325	4272.70
Rockingham County	52,690	2947	790	3737.60
Summerfield	7,906	2947	119	3065.84
Thomasville	27,036	2947	406	3352.79
Trinity	6,978	2947	105	3051.92
Total:	554,276	**$58,945**	**$8,314**	**$67,259**

PTCOG Staff Time

PTCOG Salaried Staff

Staff	Position	hourly rate	# of hours	Total
Cy Stober	Water Resources Manager	$64	3% Annual Salary	1485
Malinda	GIS Planner	$54	3% Annual Salary	1256
Elizabeth Jernigan	Stormwater SMART Outreach and Education Coordinator	$54	50% Annual Salary	20939
			Total Annual Salary	23681
	*Fringe = 27%			6394
	*Overhead = 65%			15392
Total				**$45,467**

PTCOG Part-time Staff

Staff	Position	hourly rate	# of hours	Total
Part-time Educator	Stormwater Educator	$12	20 hours per week	12480
	*FICA & Workers Comp = 8%			998.4
Total				$13,478
Total Salaried and Part-time Staff				$58,945

Stormwater SMART Expenditures

Expenditures		Expenditures (population x $0.015)
Brochures	12%	$997.68
Miscellaneous materials (Banners/Posters/Bookmarks)	5%	$415.70
Giveaways (T-shirts, water bottles, grocery bags, cinch sacks)	50%	$4,157
Translation	1%	$83.14
Training	10%	$831.40
Travel	15%	$1,247.10
Miscellaneous (Maps, inserts, etc)	3%	$249.42
Stormdrain Markers/StreamWatch Signs	4%	$332.56
Total	**100%**	$8,314
	Total Program Expenditures	**$8,314**

Appendix B – NC Standard Course of Study Program Correlation

5th Grade Programs

Goal 1, Objective 1.03:

Macroinvetebrate Mayhem – Students play a game of tag to simulate the effects of environmental stressors on macroinvertebrate populations (outdoor).

Goal 2, Objective 2.05:

Enviroscape Model ® – Students investigate how water flows through and connects watersheds using an interactive 3-D model. This activity is non-point source pollution intensive (indoor).

Just Passing Through – Students investigate how vegetation affects the movement of water over land surfaces (outdoor).

Sum of the Parts – Students demonstrate how everyone contributes to the pollution of a river as it flows through a watershed and recognize that everyone's "contribution" can be reduced (indoor).

Goal 3, Objective 3.01:

The Incredible Journey – Students simulate the movement of water within the water cycle and how the role of pollution (indoor/outdoor).

8th Grade Programming

Goal 3, Objective 3.02

A Drop In the Bucket – By estimating and calculating the percent of available fresh water on Earth, students understand that this resource is limited and must be conserved (indoor).

Just Passing Through – Students investigate how vegetation affects the movement of water over land surfaces (outdoor).

Goal 3, Objective 3.05

Macroinvetebrate Mayhem – Students play a game of tag to simulate the effects of environmental stressors on macroinvertebrate populations. We can also teach students through biological sampling at a nearby pond or stream (outdoor).

Goal 3, Objective 3.07

Enviroscape Model ® – (Our Most Popular!) Students investigate how water flows through and connects watersheds using an interactive 3-D model. This activity is non-point source pollution intensive (indoor).

Sum of the Parts – Students demonstrate how everyone contributes to the pollution of a river as it flows through a watershed and recognize that everyone's "contribution" can be reduced (indoor).

Appendix C – Stormwater SMART Brochures and Handouts

What is Stormwater Runoff?

During a rain event, stormwater creates fast moving short-lived waterways on the street where you live, in your yard and down your driveway. It flows over sidewalks, streets, lawns, fields and parking lots and directly into our streams, lakes and rivers.

So, what is the problem with that?

The most dramatic consequence of stormwater runoff is flashflooding and the damage it brings. As land is built up and developed, increasing amounts of stormwater runs off directly to streams or rivers - much more than streams and rivers can hold. The additional water overflows and floods streets, businesses and homes.

Yet flooding is not the only impact!

Stormwater runoff also carries dirt, grime, fertilizers, oil, gas and everything else we leave on the ground directly to our water bodies.

Stormwater runoff results in:

- Rivers, lakes and streams that may be too dirty to fish in, swim in, or water too dirty to drink.
- Fecal bacteria in the water.
- Excess nutrients in the water causing algae blooms, fish kills, and increased costs for water treatment

Find out more at:

www.StormwaterSMART.org

Stormwater SMART Local Governments

Davidson County
Randolph County
Rockingham County
Archdale
Asheboro
Burlington
Elon
Gibsonville
Graham
Green Level
Haw River
High Point
Lexington
Mebane
Oak Ridge
Summerfield
Reidsville
Randleman
Thomasville
Trinity

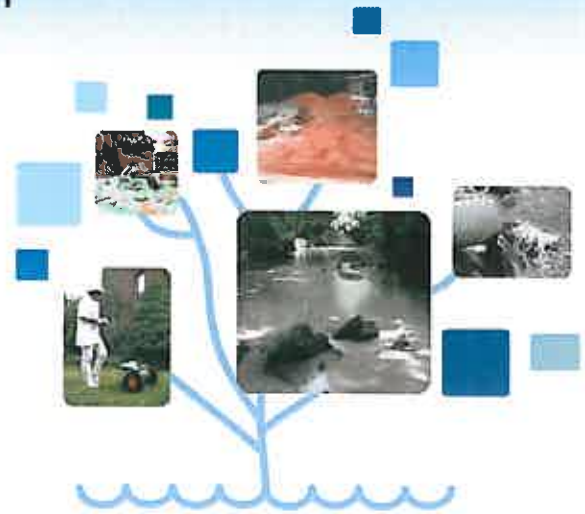
For more information on water quality and stormwater management, go to:

www.StormwaterSMART.org

or contact

Stormwater SMART
2216 W. Meadowview Road
Wilmington Building, Suite 201
Greensboro, NC 27407
Phone (336) 294-4950, Fax (336) 632-0457
email: stormwatersmart@ptcog.org

Everyone contributes to stormwater runoff pollution. . . .



Everyone must be part of the solution!

Be Stormwater SMART!

PIEDMONT TRIAD COUNCIL OF GOVERNMENTS

Improving Stormwater Quality

Efforts to reduce stormwater pollution in your area are the result of federal mandates connected to the Clean Water Act. After decades of work to control point sources of water pollution (think factory pipes discharging chemicals in a river), the federal government is now making "non point" runoff a priority. It is called "non point" because there is no one single location where the pollutants come from. Instead, the pollutants are everywhere you find people, because people and animals are the primary source of this type of water pollution.

What is NPDES Phase II?

In 1987, the Clean Water Act was amended by Congress to target non point sources of pollution – or stormwater runoff. Phase II of the National Pollution Discharge Elimination System (NPDES) affects local communities with populations of over 1,000. These communities are sometimes called "Phase II communities". Affected local governments are responsible for the quality of the stormwater that drains from property, flows into storm sewer systems and discharges to area waters. The stormwater rules recognize that stormwater from one community often becomes drinking water for a downstream community.

What are Phase II local governments required to do?

Phase II local governments are required to implement a comprehensive stormwater management program that addresses the following six elements:

- Public Education
- Public Participation
- Illicit Discharge Detection & Elimination
- Construction Site Runoff Control
- Post Construction Stormwater Management
- Good Housekeeping in Municipal & County Operations

To address these elements, your community has developed an action plan that works towards achieving the goal of clean water. These actions can be as simple as educating the public about fertilizer applications on their lawns and as complex as engineered facilities to treat stormwater.

How is the program funded?

Everyone contributes to stormwater pollution problems - everyone must be part of the solution. All property experiences stormwater runoff regardless of whether there is an existing drainage concern. Even if your property has never flooded, the stormwater that flows off your property must be managed so that it does not contribute to flooding or pollution in areas downstream. Whether you live in a condominium, a suburban home or in a city, stormwater is an issue.

What do stormwater fees pay for?

NPDES Phase II is an unfunded federal and state mandate for many of our local governments to implement a comprehensive stormwater management program. Your stormwater fee is a way to fund stormwater management in your community in order to be compliant with federal and state regulations, safeguard your community through improving drainage systems, and improve local water quality.

If you or your organization would like to:

- **Learn more about stormwater runoff and water quality**
- **Learn how to volunteer; or**
- **Schedule a speaker for your event;**

Call Stormwater SMART at (336) 294-4950; or send an email to: ejernigan@ptcog.org

Eligible Communities

Davidson County
Randolph County
Rockingham County
Archdale
Asheboro
Burlington
Elon
Gibsonville
Graham
Green Level
Haw River
High Point
Lexington
Mebane
Oak Ridge
Randleman
Reidsville
Summerfield
Thomasville

What is Stormwater Pollution?

Have you ever washed a car in the driveway, or left dog waste on the ground? Most people don't understand how their everyday actions affect water quality. Almost two-thirds of water pollution in North Carolina is caused by nonpoint source pollution, or stormwater runoff. Rainwater carries dirt, oil, fertilizer, pet waste and other pollutants directly to our streams, lakes, and rivers. Stormwater SMART was created in 2004/2005 to help local communities address these issues through educating citizens.

Contact Information:

stormwatersmart@ptcog.org

www.stormwatersmart.org

Wilmington Building, Suite 201
2216 W. Meadowview Road
Greensboro, NC 27407-3480

Voice 336.294.4950
Fax 336.632.0457

Stormwater SMART

Teacher Services K-12

PIEDMONT TRIAD COUNCIL OF GOVERNMENTS

Piedmont Triad Council of Governments
Stormwater SMART
www.stormwatersmart.org

What can Stormwater SMART do for me?

Program Topics

- **What's Your Watershed?** *Learn about watersheds and landforms using local data.*
- **The Wonderful Water Cycle.** *All the water that will ever be is right now. How much water is there, and what happens when it's polluted?*
- **Water Quality:** *Learn about many types of water pollution and the techniques scientists use to determine watershed health. Participate in our StreamWatch program, and put your knowledge to the test.*
- **Water Quality Legislation:** *Use role-playing to understand how decision makers affect water quality.*
- **What is your Basin Facin' ?** *Learn about your river basin and the problems it is facing.*
- **The Solution to Stormwater Pollution.** *Understand what Best Management Practices (BMPs) are, and how your community is using them.*
- **Water Quality in the News:** *What's all the hubbub about?*
- **Soil Types:** *Understand how different types of soil affect water quality.*
- **Economics of Water Quality:** *What does poor water quality means for the economy?*

Many *Stormwater SMART* activities are based on the *Project WET* (Water Education for Teachers) curriculum. Project WET activities are interactive, multisensory, contemporary, relevant, solution-oriented, accurate, and science based. Activities are adaptable to many age ranges, subject areas, and time limitations.

Although we believe environmental education should be conducted, well, in the environment, it isn't always possible. We'll work with you to ensure the best possible programming, whether it takes place in the classroom or out-of-doors.

Additional Services

- Senior projects
- Community Service Opportunities
- Demonstration Projects
- Environmental Clubs
- Career Guidance

Maps

Our GIS (Geographic Information Systems) Planner can provide maps for your school including topographic, impervious surface, and watershed maps. Using local maps helps students make connections between their immediate environment and the natural world.

Students learn about the importance of vegetation in the *Project WET* activity "Just Passing Through"

Stormwater SMART is a program designed to inform the public about stormwater pollution and prevention. We work with K-12 teachers in the Piedmont Triad to ensure they have the resources they need to effectively teach these concepts. If your school is located in a *Stormwater SMART* community, please let us know how we can help you!

10 Reasons for Maintaining a Buffer:

1. Slow stormwater runoff
2. Prevent erosion
3. Enhance water infiltration to soils
4. Trap sediment
5. Trap fertilizers, pesticides, bacteria, pathogens, heavy metals, and other pollutants
6. Reduce flooding
7. Improve fish habitat
8. Improve wildlife habitat
9. Add beauty and value to your land
10. Provide recreational opportunities

For more information on water quality and stormwater management go to:

www.stormwaterSMART.org

or contact

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Greensboro, NC 27407
Phone (336) 294-4950, Fax (336) 632-0457
email: stormwatersmart@ptcog.org

Vegetated Buffers Protect Water Quality

Please protect our waters by maintaining a buffer.

The Problem?

Stormwater includes pollutation like fertilizer, pesticides, animal waste, motor oil, and dirt or sediment. We depend on plants like trees, shrubs and grasses to slow down the flow of water so these pollutants are naturally filtered out through the soil. When we remove the vegetation, pollution washes straight into our streams, rivers and lakes.

Jordan Lake Rules

The Haw River begins north of Kernersville and flows through the Piedmont Triad and eventually into Jordan Lake. Jordan Lake is one of the State's biggest tourist attractions. It also serves as a municipal drinking water source for Cary, Pittsboro and other municipalities in central North Carolina.

Stormwater runoff is difficult to address because it doesn't just come from one place. This means all jurisdictions in the Jordan Lake Watershed are responsible for cleaning up the Lake. As of 2009, all communities in the Haw River Basin are required to reduce nutrient inputs to Jordan Lake. This legislation is known as the Jordan Lake Rules.

The Jordan Lake Rules require landowners to maintain a 50 foot buffer.

Please note:

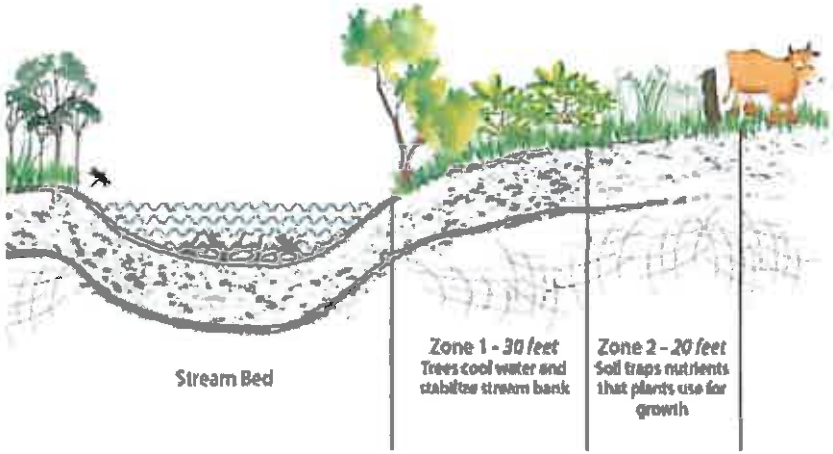
EXISTING DEVELOPMENT IS EXEMPT FROM THESE REGULATIONS!

If you're considering building on your property, please note:

You must leave a 50 foot buffer. The buffer can be split into two zones:

Zone one is 30 feet from the top of the bank. Within this zone, vegetation must not be disturbed.

Zone Two is an additional 20 feet outside the undisturbed zone. Limited disturbance (i.e. pruning) is allowed within this zone.



What Can I Do?

- Sit on the porch and watch it grow! The most effect best management practice (BMP) requires no effort and no money.
- Plant native plants. Native plants have deeper roots which secure streambanks preventing erosion. When roots die off, they leave tunnels allowing oxygen and water to infiltrate the ground. This is extra important in the clay soils of the Piedmont Triad.
- Maintain your buffer by watching for gulleys which may transport water untreated directly into the water. A couple minutes with a shovel can make a huge difference!

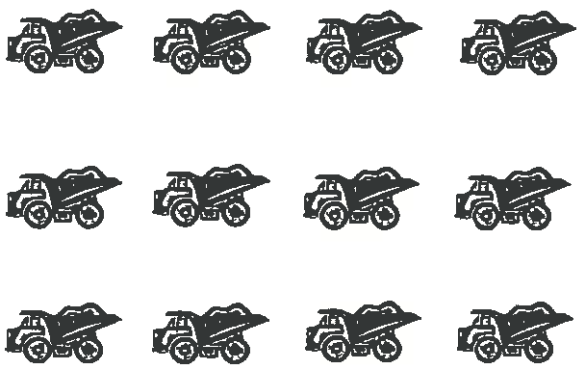
Approximately **37%** of households own dogs

= **140,121** dogs in the communities served by Stormwater SMART

That means **46,240 lbs** of dog poop daily

= **16,877,574 lbs** of raw sewage a year

That's equivalent to almost 844 dump truck loads of waste.



Please be a responsible pet owner

For more information on water quality and stormwater management, go to:

www.StormwaterSMART.org

or contact

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email: stormwatersmart@ptcog.org

Pet Waste Transmits Disease

Please protect our waters by picking up after your pet.

See Spot.

What Can You Do?

- **Don't forget to bring a bag on your walks.**
- **Frequently clean the pet waste from your yard, deck, patio, driveway and side-walk.**
- **Dispose of pet waste by tossing it in the trash or burying it in the back yard.**

What's the Problem?

Pet waste is a big source of pollution in our waterways. When it rains, dog waste runs into storm drains, and then into streams and rivers and eventually our lakes and oceans

Dog waste contains roundworms, E. coli and Giardia. When it rains, harmful bacteria is washed into our storm drains and ends where we like to play. Next time you're thinking about getting your feet wet, think about what that water might have picked up along the way.

Dog waste also contains nutrients which cause algae to over populate. As algae break down, fish and other aquatic organ-isms are deprived of much needed oxygen.

Clean water is important to our health and economy. Clean water provides recre-ation, commercial opportunities, fish habitat, drinking water, and adds beauty to our landscape. Do your part in keeping our surface and ground waters clean!

See Spot Run.

See Spot . . . uh, oh.

Fast Facts. . .

- Pet waste is a health risk to animals and people, especially children.
- It is a nuisance in our neighborhoods.
- Pet waste is full of bacteria that can make people sick.
- Nutrients found in pet waste can cause algae blooms which may lead to fish kills.
- Unless people properly dispose of pet waste, it flows untreated through storm drains into our waters. Even if you don't live near a stream, your dog's waste can pollute our waters!

What Can Be Recycled?

Computers

- Monitors (CRT, LCD)
- Desktops & Laptops
- Internal Hardware (hard drives, disc drives, motherboards. . .)
- External Hardware (printers, scanners, keyboards, speakers..)

Communication Devices

- Cell Phones
- Home Phones
- Answering Machines
- Pagers

Televisions

$10 Fee

Miscellaneous

- PDA's
- Data Cartridges
- Servers
- Routers & Hubs
- Remotes
- Cables
- Radios & Record Players
- Cameras (video & photo)

Other Equipment

- Fax Machines
- Calculators
- Typewriters
- Projectors
- Microwaves

Rigid Plastics

- Coolers
- Plastic Lawn Furniture
- Flower Pots
- Children's Toys
- Other similar items

Sponsors:

- Asheboro Recycling
- City of Asheboro
- City of Randleman
- Elite ElectronicRecycling
- JROTC-Asheboro High
- NC Zoo
- NC Big Sweep
- Randolph County Mall
- Randolph County Public Works
- Randolph County Planning
- Randolph Telephone

Stormwater Smart
www.stormwatersmart.org

NC State University A&T State University COOPERATIVE EXTENSION

North Carolina State University and North Carolina A&T University commit themselves to positive action to secure equal opportunity regardless of race, color, creed, national origin, religion, sex, age, or disability. In addition, the two Universities welcome all persons without regard to sexual orientation. North Carolina State University, North Carolina A&T University, U.S. Department of Agriculture, and local governments cooperating.

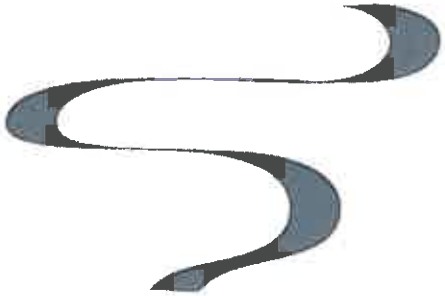
What Do I Do With It Now?

Randolph County

Electronics and Rigid Plastic Recycling Day

April 30th, 8:00-11:00AM

Randolph Mall, Asheboro NC



What is E-waste?

It's not uncommon to wake up to a clock radio, turn on the television, check your email and make a phone call before breakfast. Technology is an essential part of our lifestyle. However, these electronics are upgraded so often we end up scrapping a load of electronics in the process. This is known as electronic waste (e-waste).

Electronic waste contains "heavy metals". It takes only a small amount of these hazardous materials to contaminate an area's soil or water supply.

E-waste may be responsible for as much as 70 percent of the heavy metals in landfills, including 40 percent of all lead.

E-waste is the fastest growing municipal waste stream in the US.

Televisions

Those big, boxy televisions that proceeded flat screen televisions were approximately 20 percent lead, or 4 to 8 pounds per unit. Even a small amount of lead can seriously impact the environment.

Materials found in e-waste including glass, copper, aluminum, plastic and other components can often be reused.

Computers

Whether you're using a laptop or desktop, your computer likely contains high amounts of lead, cadmium, and mercury.

Consider donating old electronic devices. If that's not an option, RECYCLE!

Cell Phones

Not many of us hang on to our cell phones when our contract runs out. That's a lot of cell phones to dispose of! While the body of a cell phone often contains lead, it's the battery that's most dangerous. Cell phone batteries often contain nickel and cadmium. Cadmium is a human carcinogen that causes lung and liver damage.

Unlike regular waste, e-waste that ends up in a landfill can leach toxic substances into the soil and groundwater.

Tips to Reduce Water Consumption and Pollution :

- Test the soil before applying fertilizer.
- Aerate the soil to prevent compaction and increase infiltration.
- Spot spray the weeds with herbicide rather than treating the whole yard.
- Mulch flower beds to stop weeds and reduce water evaporation.
- Overseed with grass species that are adapted to your climate and pests.
- Water deeply but less frequently.

Please be a responsible landscaper

For more information on water quality and stormwater management, go to:

www.StormwaterSMART.org

or contact

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Landscape to Improve Water Quality

Stop and think how your actions are affecting our waters!

The Problem?

Lawn chemicals like pesticides and fertilizers pollute our streams and lakes. Excess nutrients from lawn fertilizers and yard waste can cause algal blooms, fish kills, and increased cost for water treatment if allowed to get into our waters!

How Can You Help?

1. Never apply fertilizer or chemicals right before a storm!
2. Avoid getting fertilizer and chemicals on concrete and asphalt surfaces.
3. Blow or sweep excess materials back into the lawn or landscape.
4. Never sweep or blow anything into the storm drain!

Dispose of Yard Waste Properly

Grass clippings, leaves, sticks and limbs should be composted or taken to a landfill or an approved disposal site.

Remember, yard waste removed by a commercial landscaper cannot be placed at the curb for pickup.

Yard waste, such as leaves, grass clippings, sticks and limbs can block underground drainage pipes and culverts, which causes dangerous flooding.

Use Pesticides and Herbicides Sparingly

- Please follow label instructions for proper application of lawn chemicals.
- Never apply lawn chemicals just before a rainstorm.
- Pesticides and fertilizers can easily be washed off of lawns and gardens, and flow untreated into creeks and lakes.

Common LID Practices

- **Rain Gardens:**
  A shallow depression collects a few inches of water and allows it to be absorbed into the ground or by native plants instead of flowing directly into nearby streams and lakes.

- **Rain Barrels and Cisterns:**
  Store rainwater from gutters and roof to use as irrigation or recycle as grey water.

- **Grassed Swale:**
  Vegetated, open channel designed specifically to treat and reduce stormwater runoff.

- **Permeable Pavers:**
  Porous concrete or grids filled with gravel, grass or mulch act as paving while allowing water to filter down into the soil beneath.

- **Soil Amendments:**
  Amend the soil with organic matter and/or sand to increase infiltration.

- **Reduction and Disconnection:**
  Reduce the number of gutters and disconnect them from underground pipes. Store the rainwater for later or direct it towards the landscaping and away from the driveway or street. Water your garden, not your driveway!

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Low Impact Development (LID)

Please protect our waters by using LID practices

Low Impact Development address stormwater pollution by replicating pre-existing hydrolic conditions.

What is LID?

LID is exactly what it sounds like - development that minimizes its impact on the environment. By working with the landscape, developers minimize the amount of pollution that leaves the site. Rain gardens, rain barrels or cisterns are popular forms of LID. Rain gardens capture and treat stormwater, preventing it from running off the property and into a storm drain. Rain barrels and cisterns store water, making it available for things like watering plants or washing your vehicle. Storing water means you don't have to pay for it! Plus, rainwater is often nutrient rich so you may not have to buy any fertilizer either!

Photo courtesy LID Center

Does LID save money for developers?

In addition to saving on water and fertilizer, developers see a 10% cost savings due by not having to rely upon gutters, piping, and underground storm sewers. Using rain gardens and grass swales instead of gutters is much more aesthetically pleasing and is considered an amenity in lots of communities! Because LID minimizes disturbance to the land, the cost of grading and soil compaction is reduced as well.

Photo courtesy LID Center

What Can You Do?

Before you build, consider using LID techniques. Although LID is relatively new, many developers are beginning to see the benefits. If you already own a home, consider constructing a rain garden to help filter runoff before it leaves your property. All Stormwater SMART staff have Residential Rain Garden Certification, so give us a call and we'll design a rain garden for you! For more information on LID please visit stormwatersmart.org or give us a call (336-294-4950).

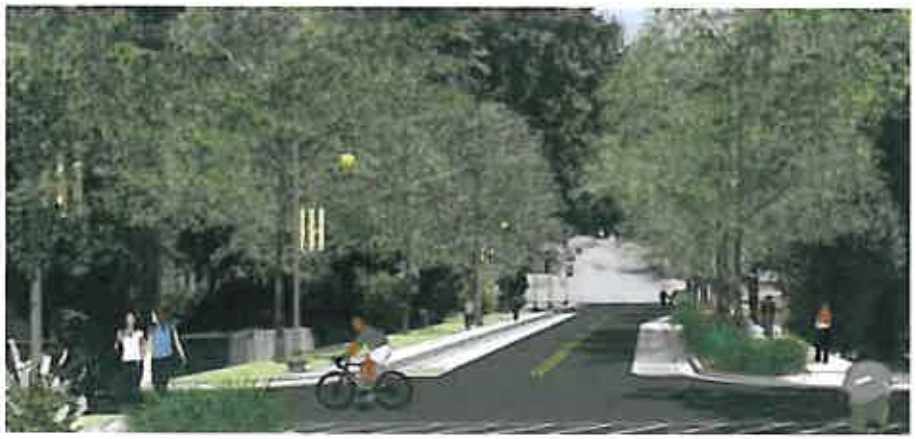
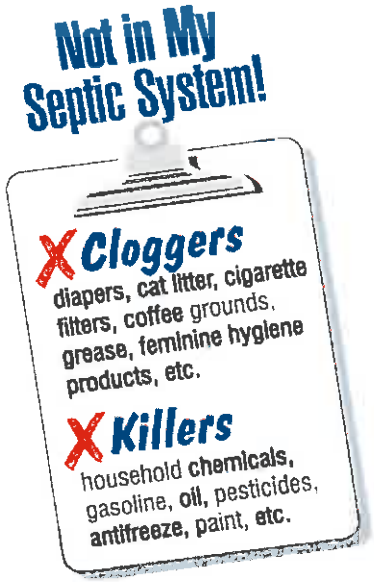


Photo courtesy LID Center

5 Reasons to Maintain Your Septic System

1. Protects investment in your home
2. Fulfills your responsibility
3. Leaks contaminate drinking water
4. Treats your household waste water
5. Costs thousands of dollars to replace



Please be a responsible home owner

Piedmont Triad Council of Governments
Stormwater SMART
www.stormwatersmart.org

For more information on water quality and stormwater management go to:

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or contact

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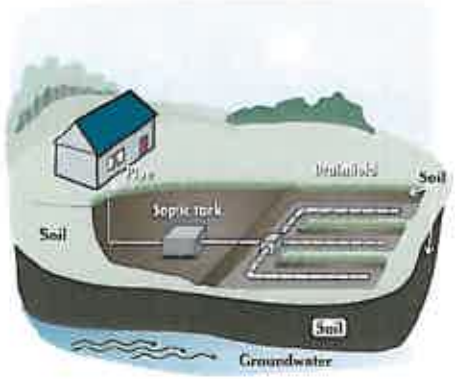
email: stormwatersmart@ptcog.org

Maintained Septic Systems = Clean Water

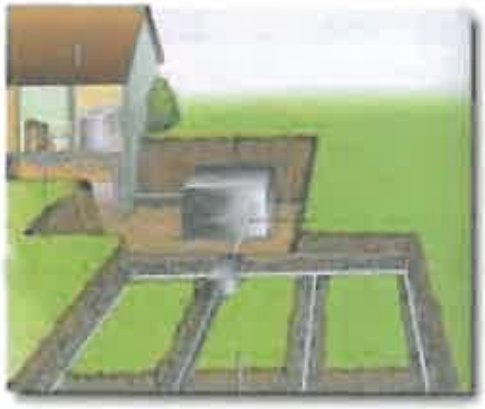


Please protect our waters by maintaining your septic system

The Problem?

A typical septic system has four main components: a pipe from the home, a septic tank, a drainfield, and the soil. If any of those parts are not maintained, pollution may get into our waters!

Septic systems depend on microorganisms in the soil to provide final treatment by removing harmful bacteria, viruses, and nutrients. Flushing household chemicals, gasoline, oil, pesticides, antifreeze, and paint can destroy this process.



Types of Pollution

Fecal Coliform:

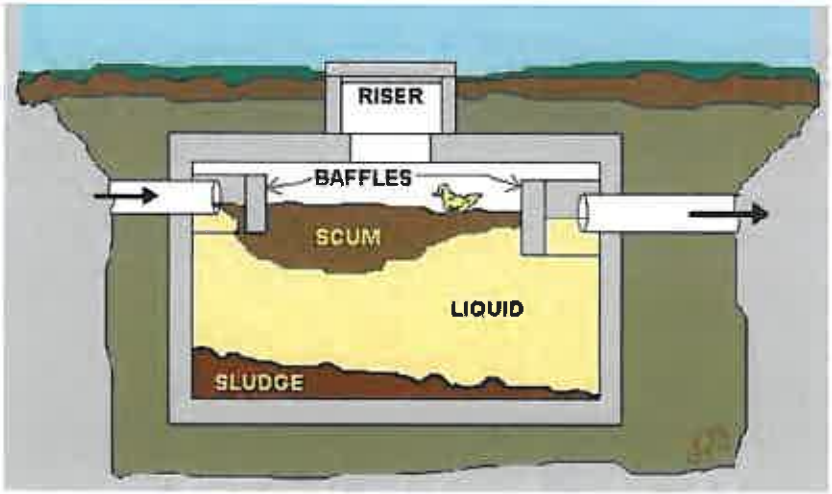
Though not necessarily dangerous, the presence of fecal coliform is a good indicator that waterborne pathogens exist. Pathogens may cause ear infections, dysentery, typhoid fever, viral and bacterial gasteroenteritis, and hepatitis A.

Nutrients:

Ever notice how much greener the grass is over a septic field? That's because human waste is nutrient rich. Excess nutrients are a huge problem in our watersheds. Nutrients lead to algal blooms which use oxygen to break down. This cause low levels of oxygen in the lake. Just like us, fish and other aquatic organisms need oxygen to survive.

How Should I Maintain My Septic System?

1. Pump Frequently! You should have your septic system inspected at least every 3 years by a professional.
2. Use Water Efficiently. The more water a household conserves, the less water enters the septic system.
3. Avoid driving over your tank or drainfield.
4. If you're putting in a swimming pool, keep it at least 15 feet from the drain field.
5. Plant only grass and flowers above the tank and drain field. Tree roots could interfere with the system.



STORMWATER
steward
A Stormwater SMART publication

Volume 3, Issue 1 Winter, 2011

at a glance

Low Impact Development: Money Saving Alternatives

Runoff Rundown: Riparian Buffers

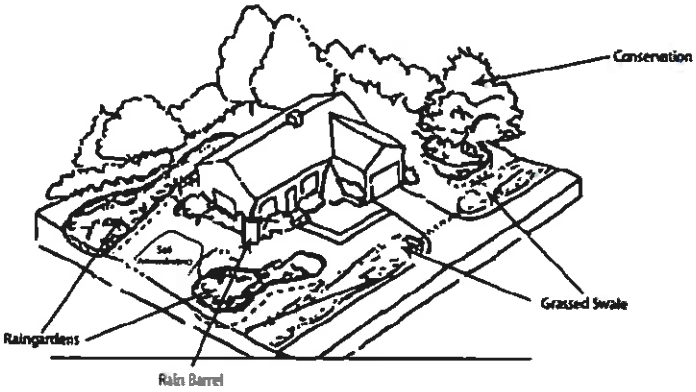
Plants for Piedmont Buffers

Focus on the Roanoke River Basin

Get Involved: Big Sweep in the School Yard

Low Impact Development: Money Saving Alternative

What is Low Impact Development (LID)?
LID is exactly what it sounds like - development that minimizes its impact on the environment. By working with the landscape, developers minimize the amount of pollution that leaves the site. Rain gardens, rain barrels or cisterns are popular forms of LID. Rain gardens capture and treat stormwater, preventing it from running off the property and into a storm drain. Rain barrels and cisterns store water, making it available for things like watering plants or washing your vehicle. Storing water means you don't have to pay for it! Plus, rainwater is often nutrient rich so you may not have to buy any fertilizer either!



Does LID save money for developers?
In addition to saving on water and fertilizer, developers see a 10% cost savings due by not having to rely upon gutters, piping, and underground storm sewers. Using rain gardens and grass swales instead of gutters is much more aesthetically pleasing and is considered an amenity in lots of communities! Because LID minimizes disturbance to the land, the cost of grading and soil compaction is reduced as well.

What Can You Do?
Before you build, consider using LID techniques. Although LID is relatively new, many developers are beginning to see the benefits. If you already own a home, consider constructing a rain garden to help filter runoff before it leaves your property. All Stormwater SMART staff have Residential Rain Garden Certification, so give us a call and we'll design a rain garden for you! For more information on LID please visit stormwatersmart.org or give us a call (336-294-4950).

LID for your Back Yard

Rain Gardens – A shallow depression collects a few inches of water and allows it to be absorbed into the ground or by native plants instead of flowing directly into nearby streams and lakes.
Rain Barrels and Cisterns – Store rainwater from gutters and roof to use as irrigation or recycle as grey water.
Grassed Swale – Vegetated, open channel designed specifically to treat and reduce stormwater runoff.
Permeable Pavers– Porous concrete or grids filled with gravel, grass or mulch act as paving while allowing water to filter down into the soil beneath.
Soil Amendments – Amend the soil with organic matter and/or sand to increase infiltration.
Reduction and Disconnection – Reduce the number of gutters and disconnect them from underground pipes. Store the rainwater for later or direct it towards the landscaping and away from the driveway or street. Water your garden, not your driveway!

PTCOG

Runoff Rundown: Riparian Buffers

Jordan Lake Rules Buffer Regulations:

- Existing Development is exempt.
- Zone 1—from edge of stream bank landward 30 feet: Vegetation in this zone must be undisturbed.
- Zone 2— an additional 20 feet starting at edge of undisturbed zone. Vegetation in this zone may undergo select disturbance such as pruning .
- For information on the activities that are allowed in zone 2 and for more information on activities that are exempt from this rule visit:

jordanlakerules.org

Why are buffers needed? Buffers are vegetated areas that begin at the stream edge and continue landward. Buffers reduce erosion by slowing the velocity of stormwater run-off. Flooding is also reduced because as water slows down it soaks into the soil, reducing the amount of water that reaches the waterways. Buffers also improve our water quality by filtering out pollutants.

How do buffers help our water quality?
As stormwater runoff flows across the surface of the ground, vegetation slows the water down, reducing stream banks erosion. Erosion prevention reduces the amount of sediment in our water ways leading to better water quality.

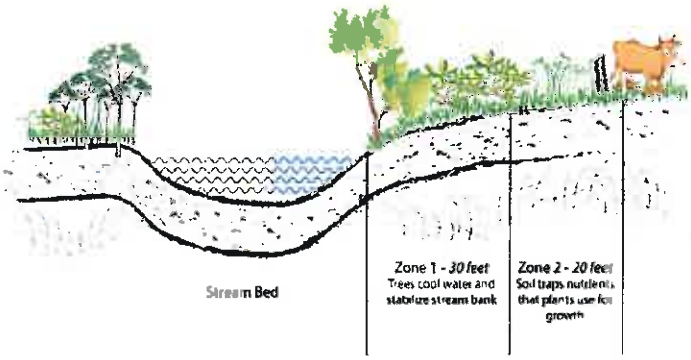
Nutrient loads are reduced as excess nutrients such as phosphorus are trapped as the water permeates soil. The vegetation growing in the buffer trap and use nutrients such as nitrogen, reducing the input of human derived nutrients. Too many nutrients lead to eutrophication and possible fish kills.
Vegetation also traps soil particles to keep soil from entering the streams and rivers. Soil entering the waterway leads to increased turbidity, which is bad for fish habitat.

Erosion due to poor riparian buffers

Other benefits of Buffers:
Buffers provide wildlife habitat in and around the streams. Vegetated buffers can provide habitat corridors for animals to move from one location to another. As limbs fall from the trees they provide habitat in the stream for aquatic wildlife. Recreation value goes up for fishing and birding as habitat is improved.

Visit stormwatersmart.org for more information.

Plants for Riparian Buffers in the Piedmont!



Benefits of having trees in the buffer zone: Tree roots stabilize the stream bank; shade keeps the water cool; limbs in the stream bed increase habitat and reduce flooding; nutrients and pollutants such as heavy metals are removed.
Tree species recommended: Beech, Black Cherry, Black Walnut, Black Willow, Blackgum, Elms (winged, American), Green Ash, Hickory, Hop-hornbeam, Oak, Persimmon.
Understory Trees (up to 35 feet): American Holly, Bladdernut, Box Elder ,Fringetree, Ironwood, Parsley Hawthorn.

Recommended Shrub species: Beautyberry, Buttonbush, Coral Berry, Elderberry, Inkberry, Maple-leaf virburnum, Possumhaw, Pussy willow,
Benefits of native warm season grasses: Strong root system reduces erosion, growth form increases habitat for birds, water is slowed even in winter due to persistent plant matter, native grass can tolerate low fertility and requires no fertilizing.
Recommended grass species: Indiangrass, Big bluestem, Little bluestem

Focus on the Roanoke River Basin

About the Roanoke River Basin
What is a river basin? A river basin is an area of land where all the creeks and streams run downhill and eventually flow into the river. A river basin and a watershed have the same function, only a river basin is larger. The Roanoke River Basin begins in the mountains of Virginia and ends in North Carolina's Albemarle Sound.

The North Carolina portion of the Roanoke River Basin consists of the Dan River in the west and the Roanoke River in the East. The Roanoke contains more water than any other river basin in North Carolina and covers 3,503 square acres with a total of 1,476 acres of estuary.

The Cascade and Indian Creeks, beginning in Hanging Rock State Park before flowing into the Dan River, have been designated as Outstanding Resource Waters signifying that they have excellent water quality and support rare aquatic species.

Many Piedmont Triad residents live in the Roanoke River Basin. Larger cities include Eden, Reidsville, and Yanceyville.

Problems facing the Roanoke River Basin
Unfortunately as you go further down the Roanoke River Basin the waters become more polluted by non-point sources such as stormwater runoff. Stormwater runoff in the basin collects pollution primarily from agriculture, forestry and construction. Leaving a vegetated buffer along the streams and rivers will help filter out nutrients and dirt carried by the stormwater runoff. For more information on how you can protect our waters, visit www.stormwatersmart.org

Would you like Stormwater SMART to present to your civic or community group? If you live in one of our member communities, Stormwater SMART programs are available at no charge. Contact Stormwater SMART at (336) 294-4950 to set up a Stormwater Education Event Today!

What's a Watershed?

To further understand watersheds, think of playing "connect the dots". If you draw a line connecting all the highest points in an area, you've figured it out! All the water falling inside that circle is carried by small streams or tributaries to our rivers and lakes, and eventually into the ocean.

It's a long way from the mountains to the beach, but it's a typical journey for a water droplet. Along the way, stormwater picks up pollutants like fertilizer, dog waste, motor oil and litter and carries it downstream. Our communities depend on this water for drinking, recreation, energy, habitat, and agriculture. This is why it's important to remember that everything we do upstream affects water quality for all communities downstream.

Davidson County
Randolph County
Rockingham County
Archdale
Asheboro
Burlington
Elon
Gibsonville
Graham
Green Level
Haw River
High Point
Lexington
Mebane
Oak Ridge
Summerfield
Randleman
Reidsville
Thomasville
Trinity

Elizabeth Jernigan
Stormwater Outreach and Education Coordinator

2216 W. Meadowview Road
Suite 201
Greensboro, NC 27407 Phone:
(336) 294-4950
Fax: (336) 632-0457
E-mail:
stormwatersmart@ptcog.org

www.stormwatersmart.org

PIEDMONT TRIAD
COUNCIL OF GOVERNMENTS

Get Involved: Spring Sweep in the School Yard!

Spring Sweep is a Big Sweep event timed to coincide with Earth Day. Big Sweep is a volunteer driven effort that helps us keep our state's water clean. Pollution in our watersheds destroys wildlife habitat and food sources, and it ruins many opportunities for recreation. Everyone suffers from harmful debris entangling boat motors, injured animals, and trashy landscapes. Volunteers including individuals, scouts, school groups, environmental groups, and local organizations can join together this Spring to help clean up debris from our watersheds.

This April 18th-22nd, we are offering teachers a mini Big Sweep on their school grounds. This will be an opportunity for students to learn more about their natural environment, and what local governments are doing to restore and protect our watersheds. If you have a stream or school yard that needs cleaning, our educators will provide you with everything you need!

Combine a school yard clean up with one of our interactive programs for a fun and educational Earth Day Event.

To schedule a presentation or schoolyard clean-up for your students:

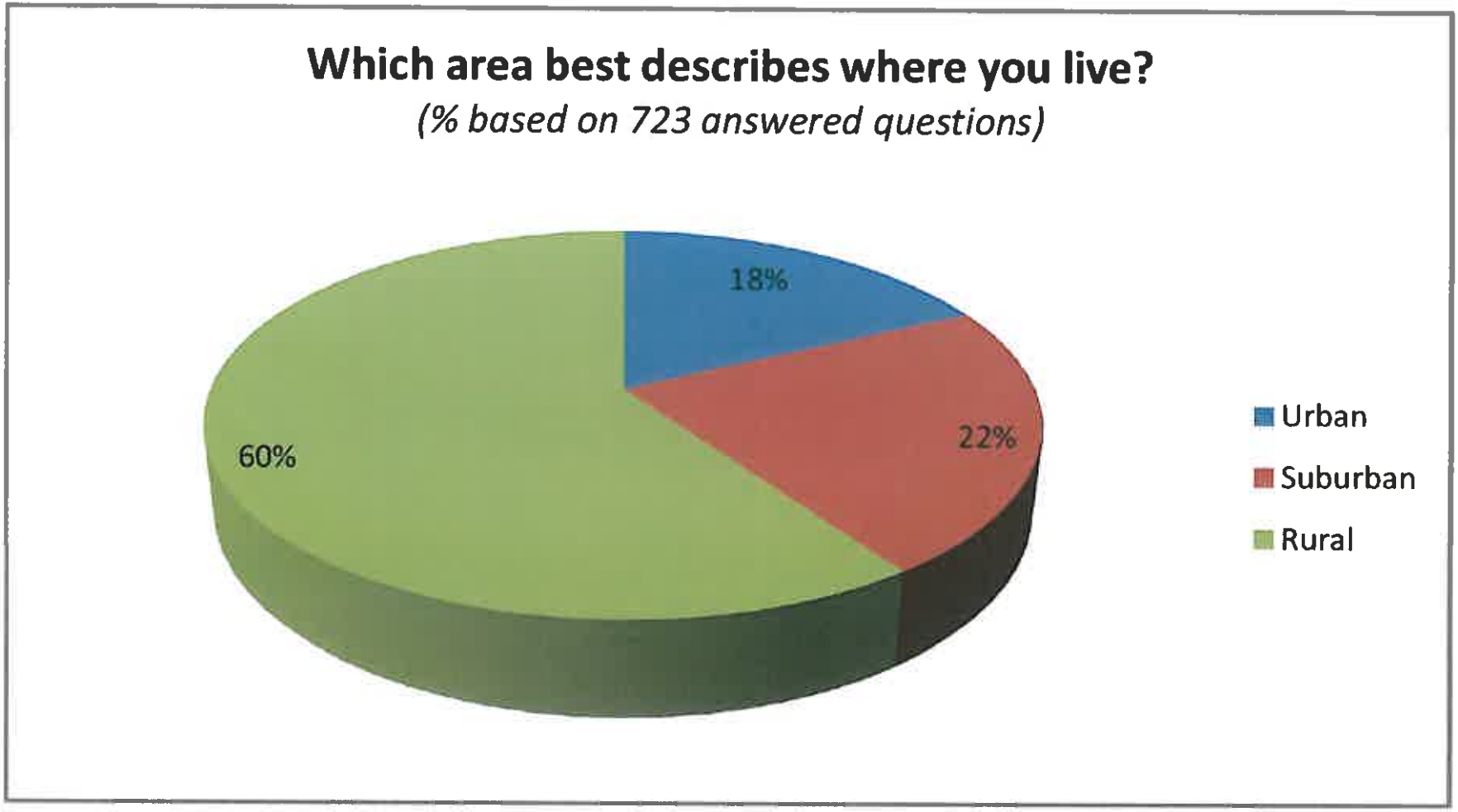
Contact Stormwater SMART
(336) 294-4950/
stormwatersmart@ptcog.org

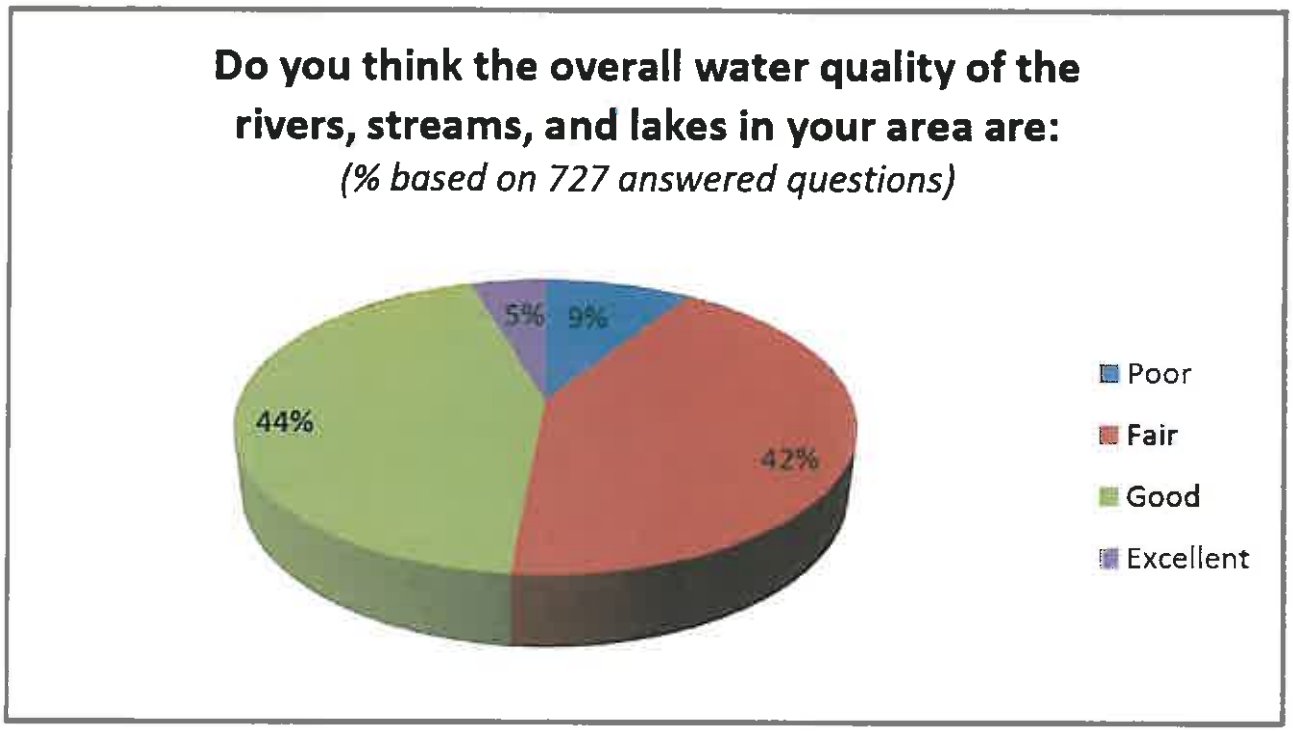
Look for Stormwater SMART at a Fairs or Festivals near you.

4/16/2011 Asheboro Zoo Earth Day Celebration
4/30/2011 Mebane Dogwood Festival
5/7/2011 Lexington Multi-Cultural Festival
5/7/2011 Thomasville Spring Daze
5/14/2011 Summerfield Founders Day

Stormwater SMART was created by the Piedmont Triad Council of Governments to help Phase II and Jordan Lake communities comply with Public Education and Outreach and Public Participation requirements. Stormwater SMART is supported through dues paid by member governments.

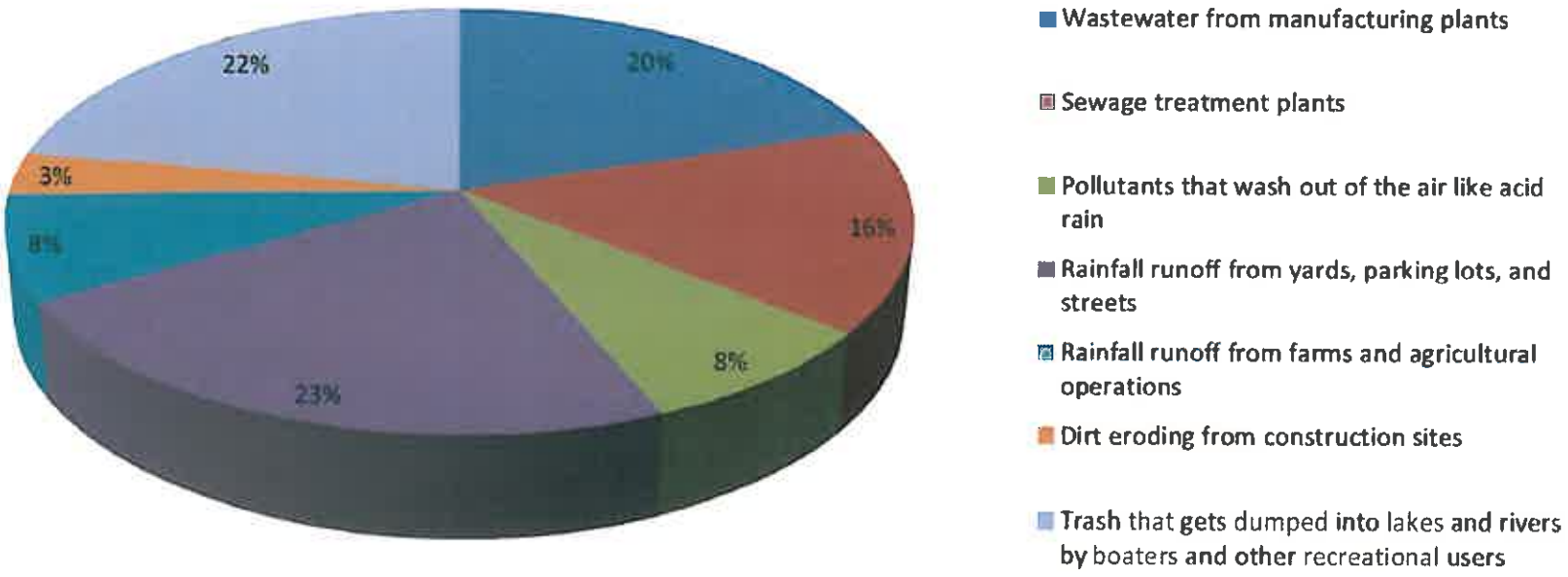
Appendix D – Fair and Festival Survey Results

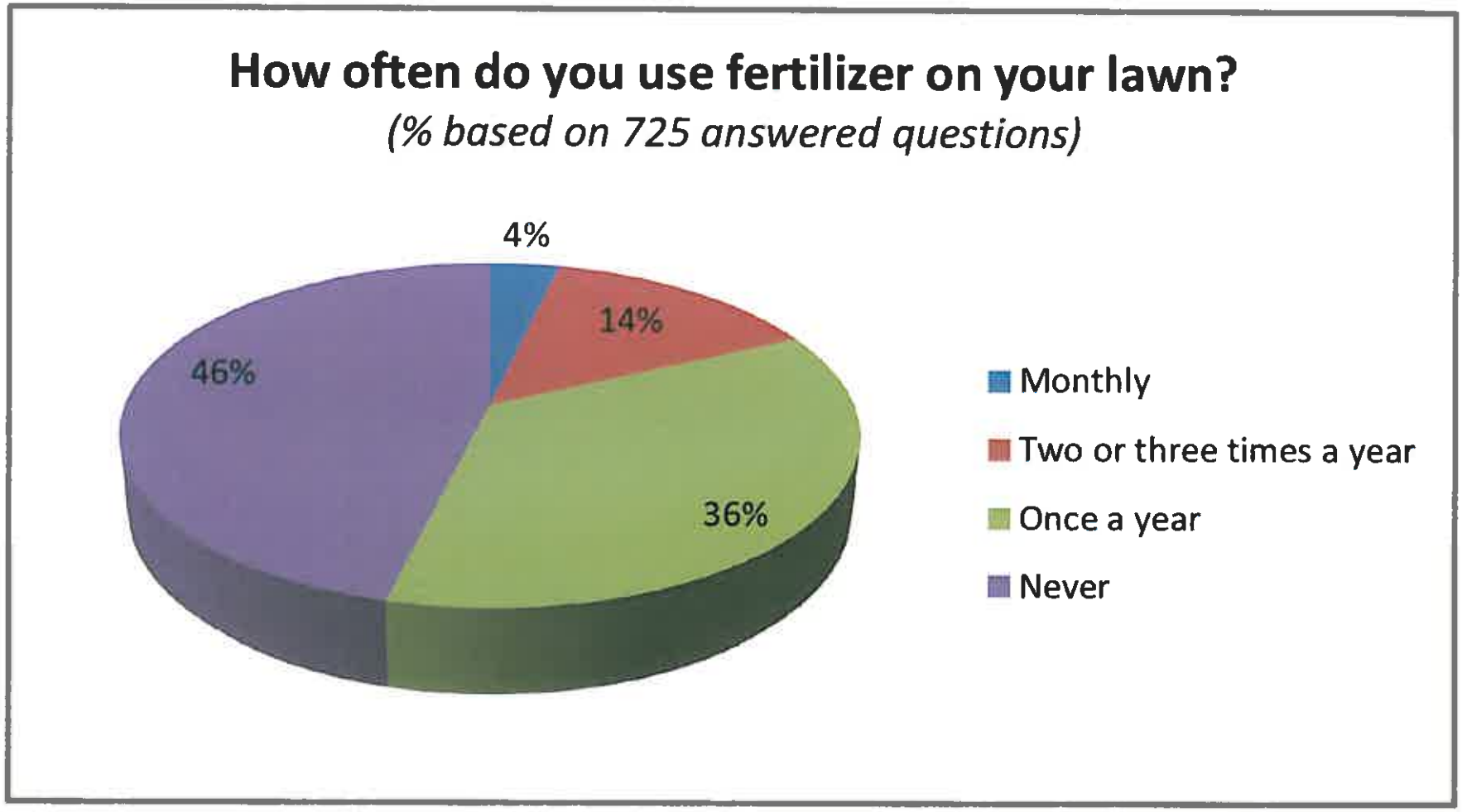

Which area best describes where you live?
(% based on 723 answered questions)
18%
22%
60%
Urban
Suburban
Rural

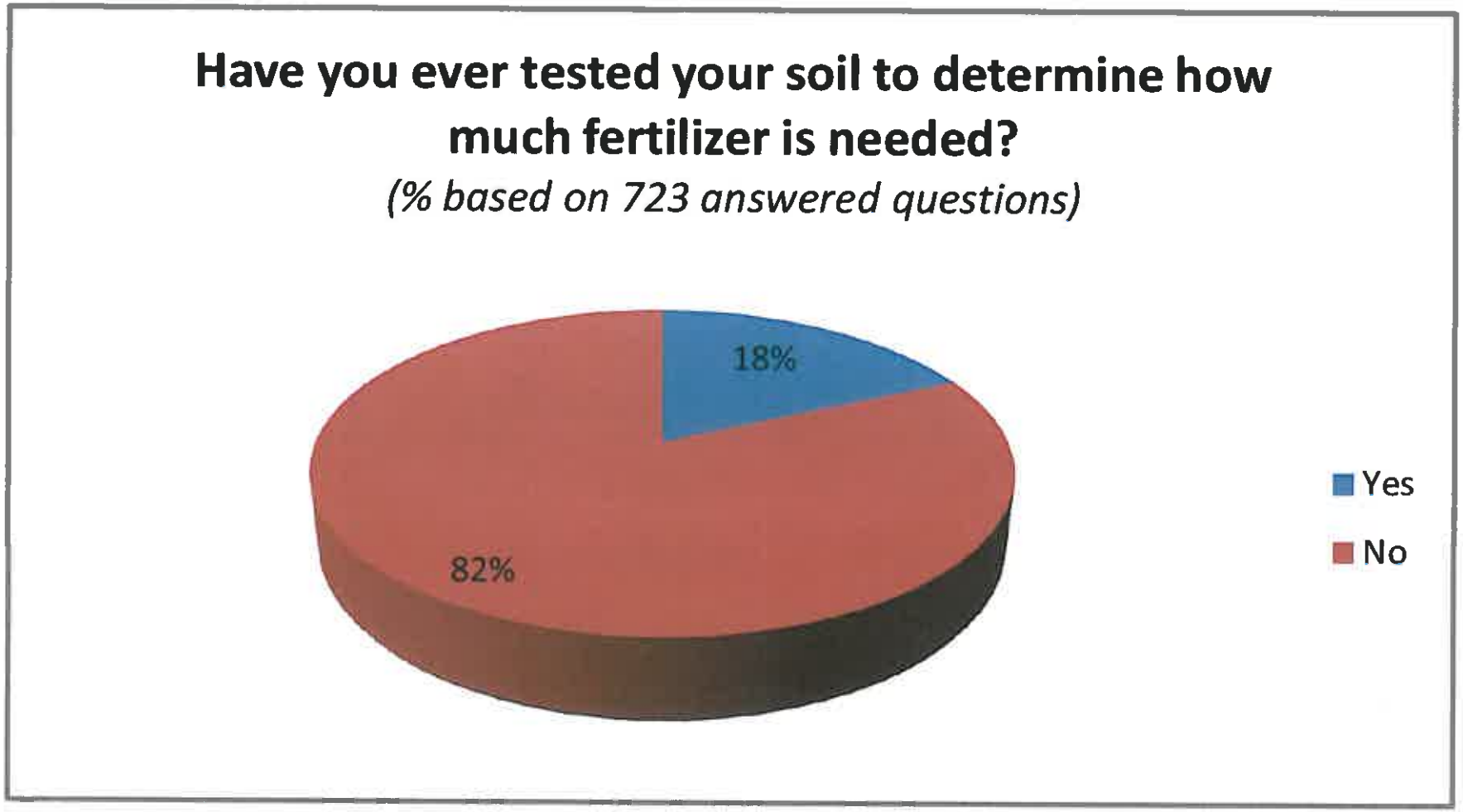

Do you think the overall water quality of the rivers, streams, and lakes in your area are:
(% based on 727 answered questions)
5%
9%
44%
42%
Poor
Fair
Good
Excellent

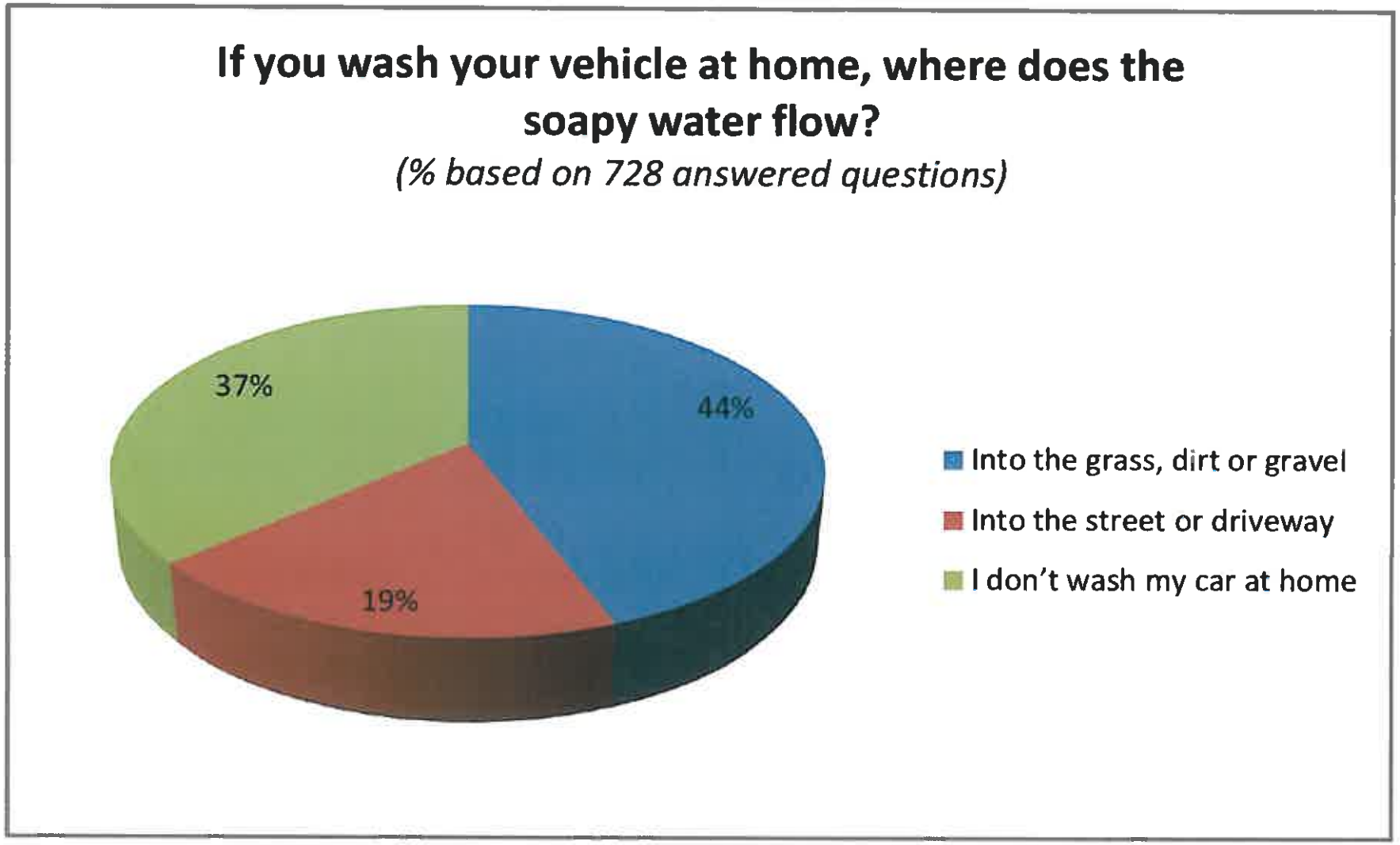
Which of the following do you believe have the biggest impact on water quality?

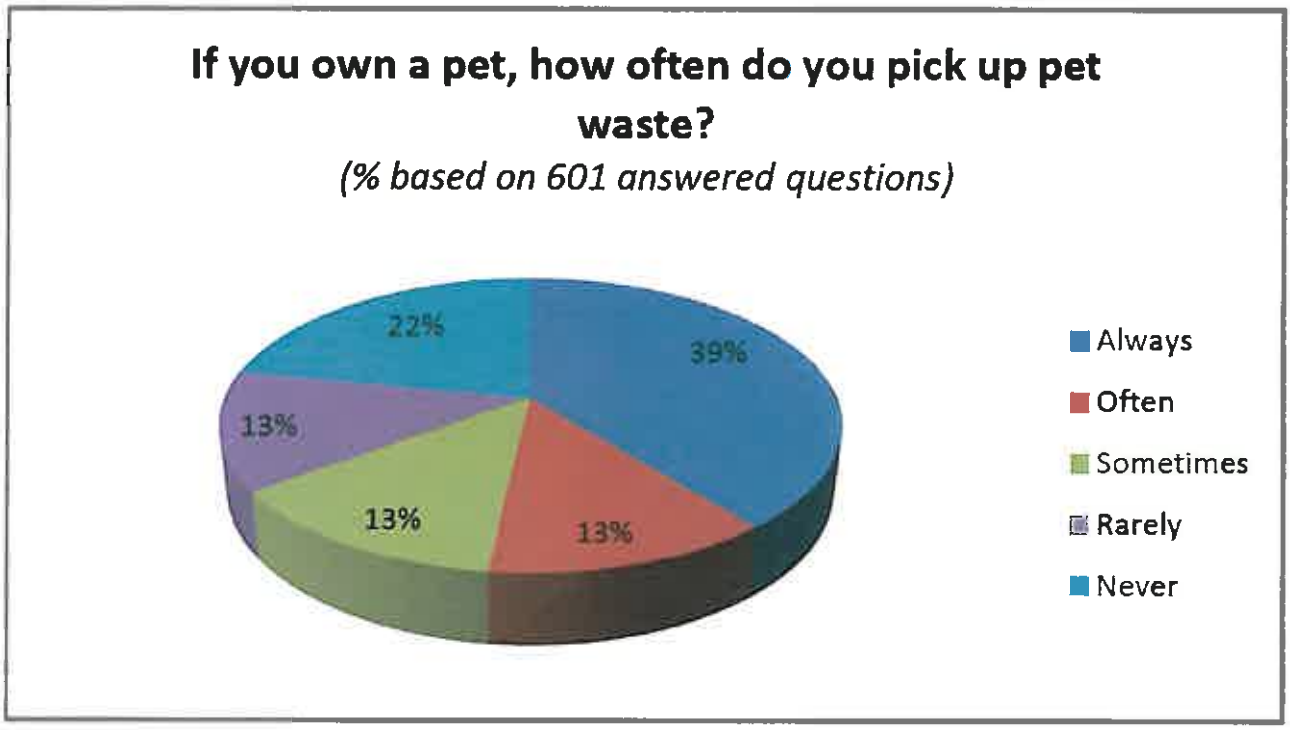
(% based on 713 answered questions)




How often do you use fertilizer on your lawn?
(% based on 725 answered questions)
4%
14%
36%
46%
Monthly
Two or three times a year
Once a year
Never

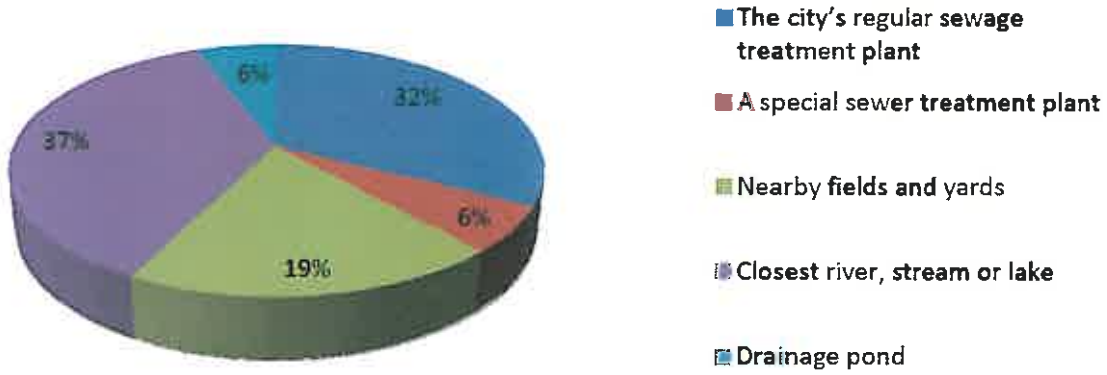

Have you ever tested your soil to determine how much fertilizer is needed?
(% based on 723 answered questions)
18%
82%
Yes
No


If you wash your vehicle at home, where does the soapy water flow?
(% based on 728 answered questions)
37%
44%
19%
Into the grass, dirt or gravel
Into the street or driveway
I don't wash my car at home


If you own a pet, how often do you pick up pet waste?
(% based on 601 answered questions)
22%
39%
13%
13%
13%
Always
Often
Sometimes
Rarely
Never

When it rains, stormwater is collected on streets and parking lots and runs into a storm drain. After stormwater runoff goes into a storm drain, it goes to . . .

(% based on 657 answered questions)



Appendix E – Community Profile

Summerfield *highlights*

Schools

Stormwater SMART contacted teachers from the fifth grade at Summerfield Elementary school, informing them of our educational programs. In March we provided an Enviroscape presentation that addressed stormwater pollution to fifth grade classes at Summerfield Elementary. In each presentation we gave out three rewards to students who answered questions about stormwater. We visited four different classrooms, reaching 88 students.

The Haw River Assembly worked with twelve Northern Guilford Middle 8th grade classsrooms and provided 300 students with classroom activities that highlighted water quality and stormwater impacts. In May the Haw River Assembly then took 80 students to the Haw River State Park to monitor stream health and learn about the aquatic ecology.

Events

Stormwater SMART attended the Summerfield Founder's Day Festival where approximately 45 people took rewards with education materials and 41 filled out our stormwater survey. Over 5,000 people attended the event.

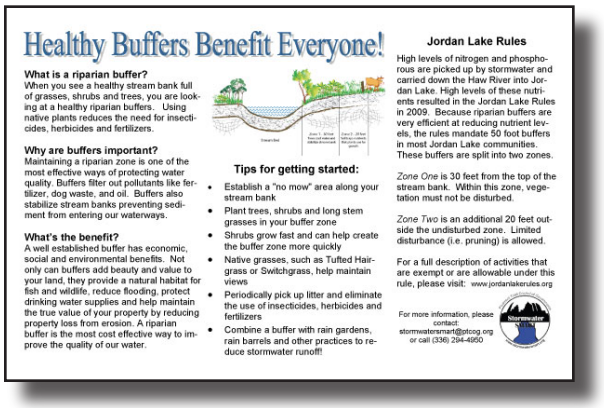
Stormwater SMART also participated in the nearby Ridge Fest in Oak Ridge which many Summerfield residents attended. Oak Ridge Parks and

Presentations

Twelve people attended a public meeting Stormwater SMART conducted addressing Jordan Lake Rules in Summerfield and Oak Ridge, including Mayor Brown and a local reporter.

Newsletter Inserts

Stormwater SMART worked with the town to write a half-page insert on buffers for their newsletter. The article describes what buffers are and how they impact citizens under the Jordan Lake Rules.



Healthy Buffers Benefit Everyone!

What is a riparian buffer?
When you see a healthy stream bank full of grasses, shrubs and trees, you are looking at a healthy riparian buffers. Using native plants reduces the need for insecticides, herbicides and fertilizers.

Why are buffers important?
Maintaining a riparian zone is one of the most effective ways of protecting water quality. Buffers filter out pollutants like fertilizer, dog waste, and oil. Buffers also stabilize stream banks preventing sediment from entering our waterways.

What's the benefit?
A well established buffer has economic, social and environmental benefits. Not only can buffers add beauty and value to your land, they provide a natural habitat for fish and wildlife, reduce flooding, protect drinking water supplies and help maintain the true value of your property by reducing property loss from erosion. A riparian buffer is the most cost effective way to improve the quality of our water.

Tips for getting started:

- Establish a "no mow" area along your stream bank
- Plant trees, shrubs and long stem grasses in your buffer zone
- Shrubs grow fast and can help create the buffer zone more quickly
- Native grasses, such as Tufted Hairgrass or Switchgrass, help maintain views
- Periodically pick up litter and eliminate the use of insecticides, herbicides and fertilizers
- Combine a buffer with rain gardens, rain barrels and other practices to reduce stormwater runoff!

Jordan Lake Rules

High levels of nitrogen and phosphorous are picked up by stormwater and carried down the Haw River into Jordan Lake. High levels of these nutrients resulted in the Jordan Lake Rules in 2009. Because riparian buffers are very efficient at reducing nutrient levels, the rules mandate 50 foot buffers in most Jordan Lake communities. These buffers are split into two zones.

Zone One is 30 feet from the top of the stream bank. Within this zone, vegetation must not be disturbed.

Zone Two is an additional 20 feet outside the undisturbed zone. Limited disturbance (i.e. pruning) is allowed.

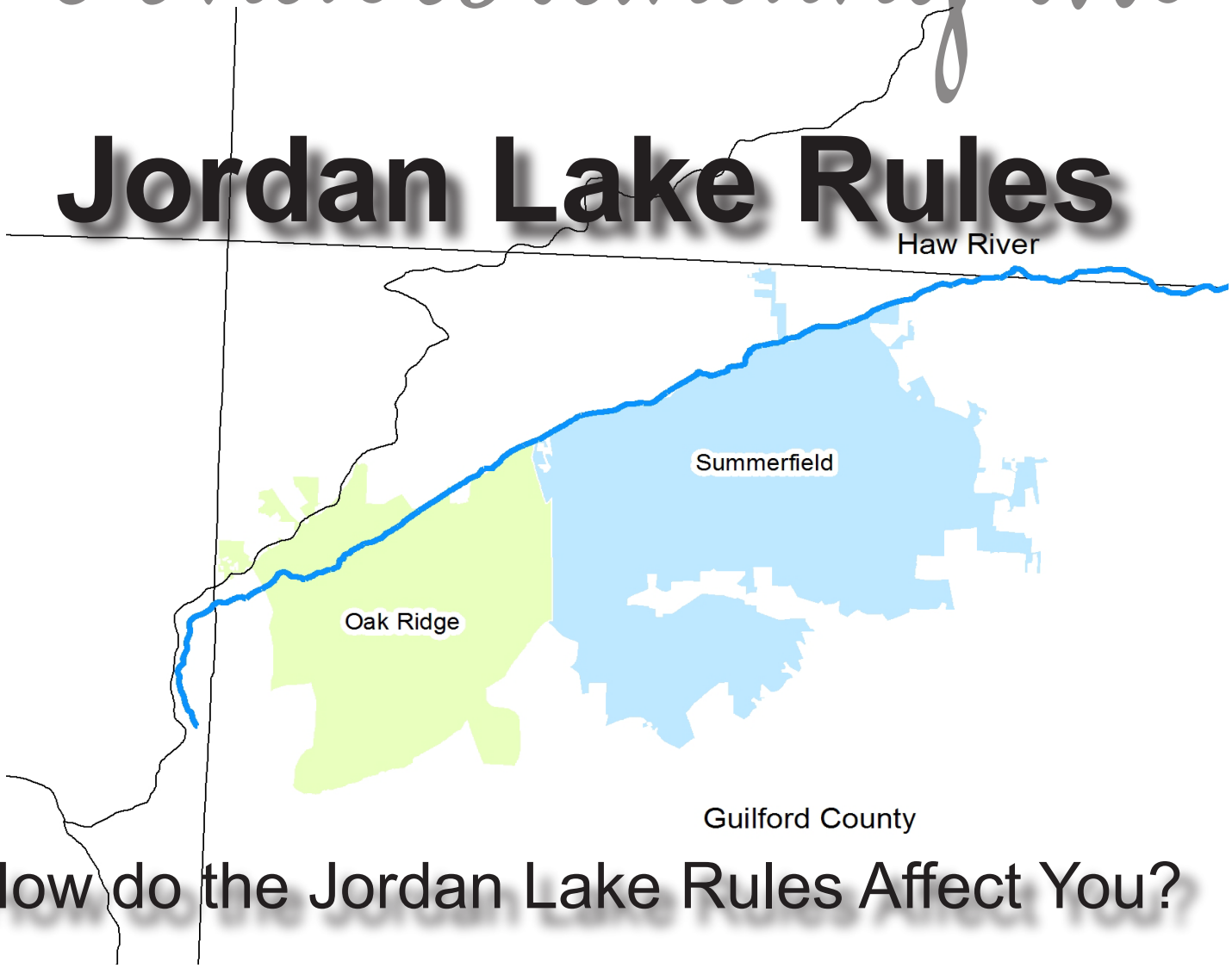
For a full description of activities that are exempt or are allowable under this rule, please visit: www.jordanlakerules.org

For more information, please contact:
stormwatersmart@ptcog.org
or call (336) 294-4950

A total of 448 people in and around Summerfield were provided with direct education and information on Stormwater and the impacts people have on our water quality.

Understanding the

Jordan Lake Rules



How do the Jordan Lake Rules Affect You?

Please join us for an information session on the recently adopted Jordan Lake Rules.

The Rules affect private citizens, local businesses, and your local government.

Wednesday, June 15th at 6:00pm
Summerfield Community Center

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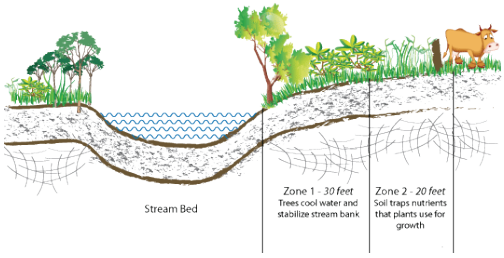

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- Periodically pick up litter and eliminate the use of insecticides, herbicides and fertilizers
- Combine a buffer with rain gardens, rain barrels and other practices to reduce stormwater runoff!

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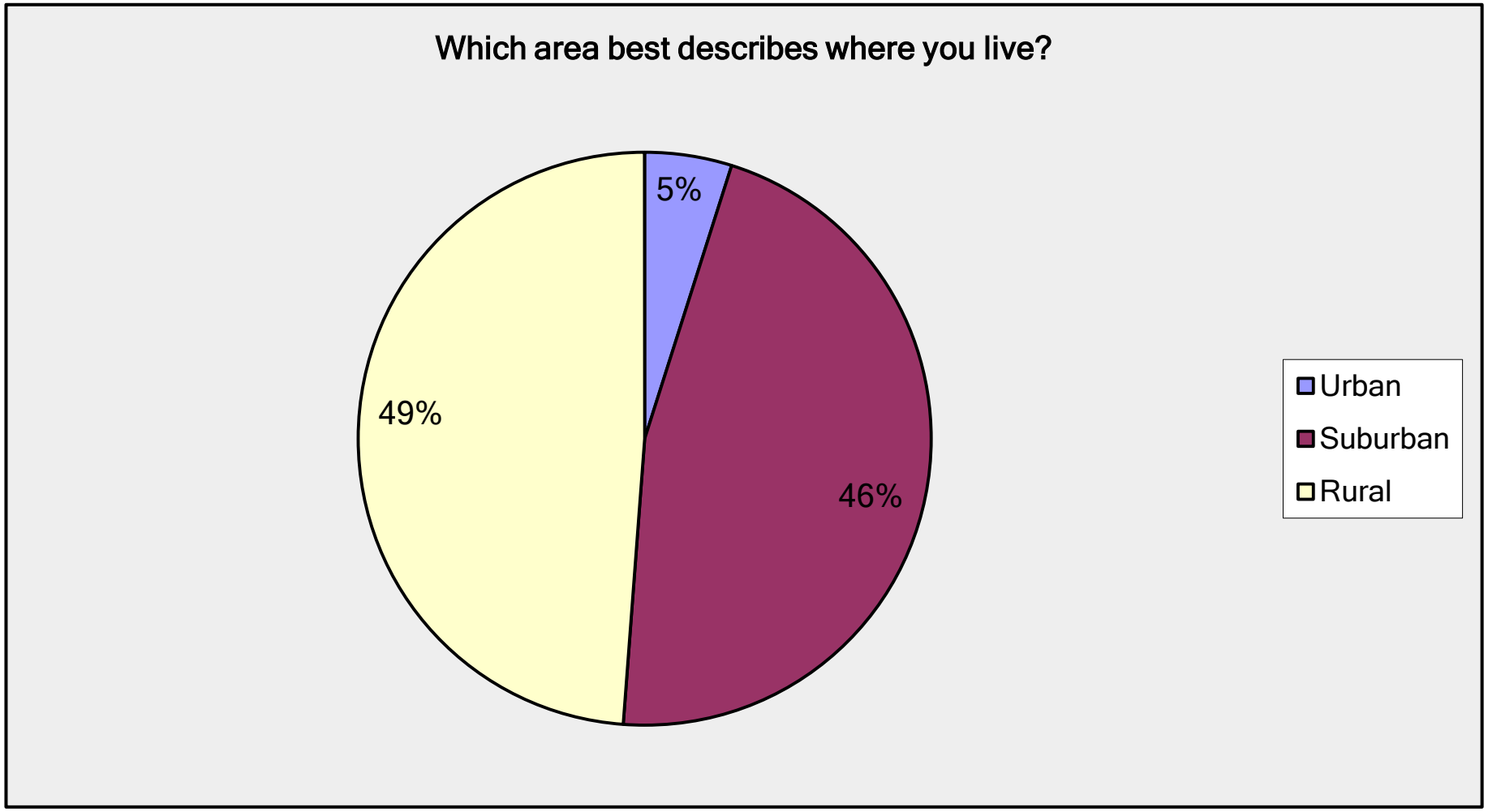
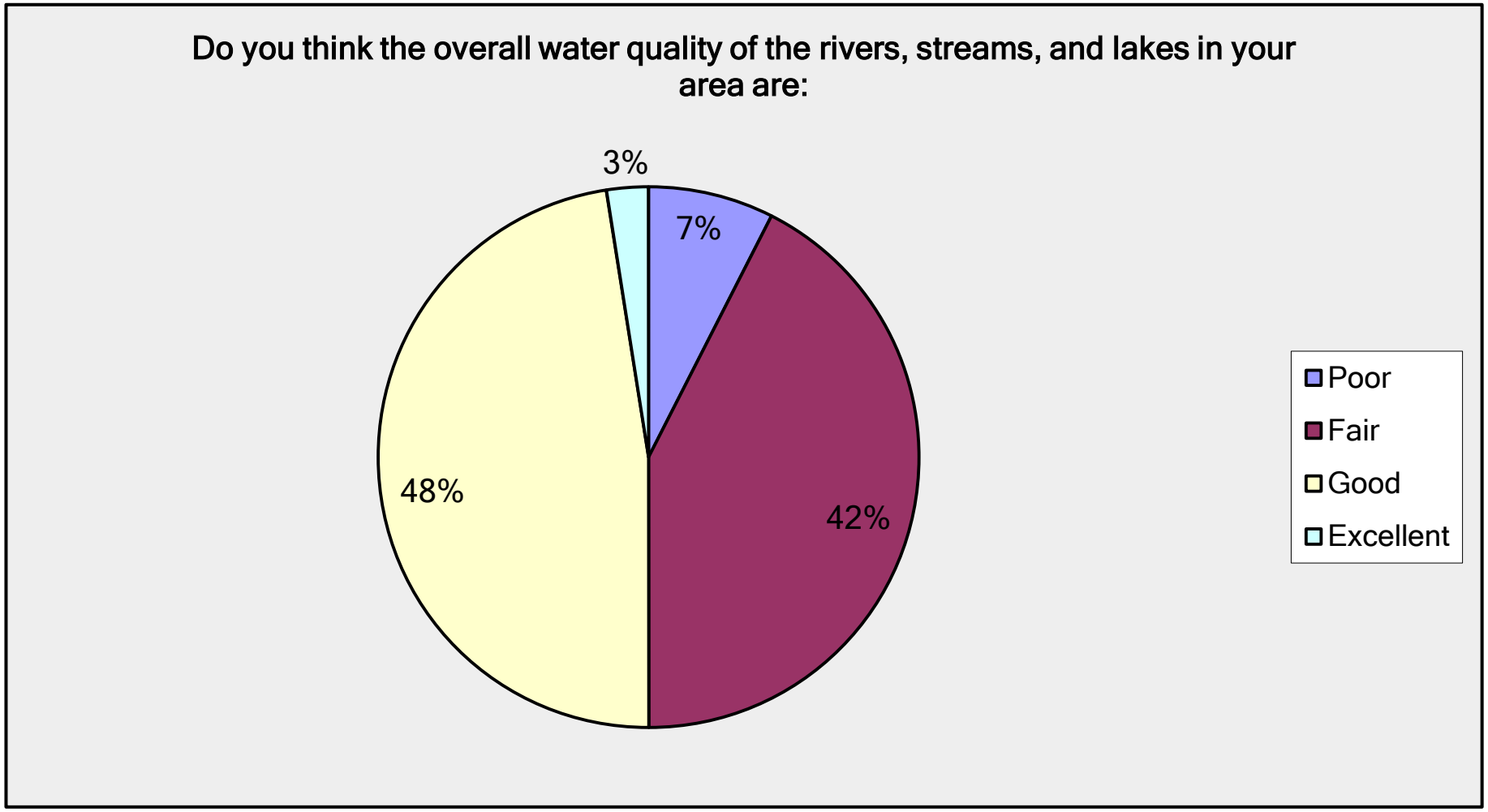
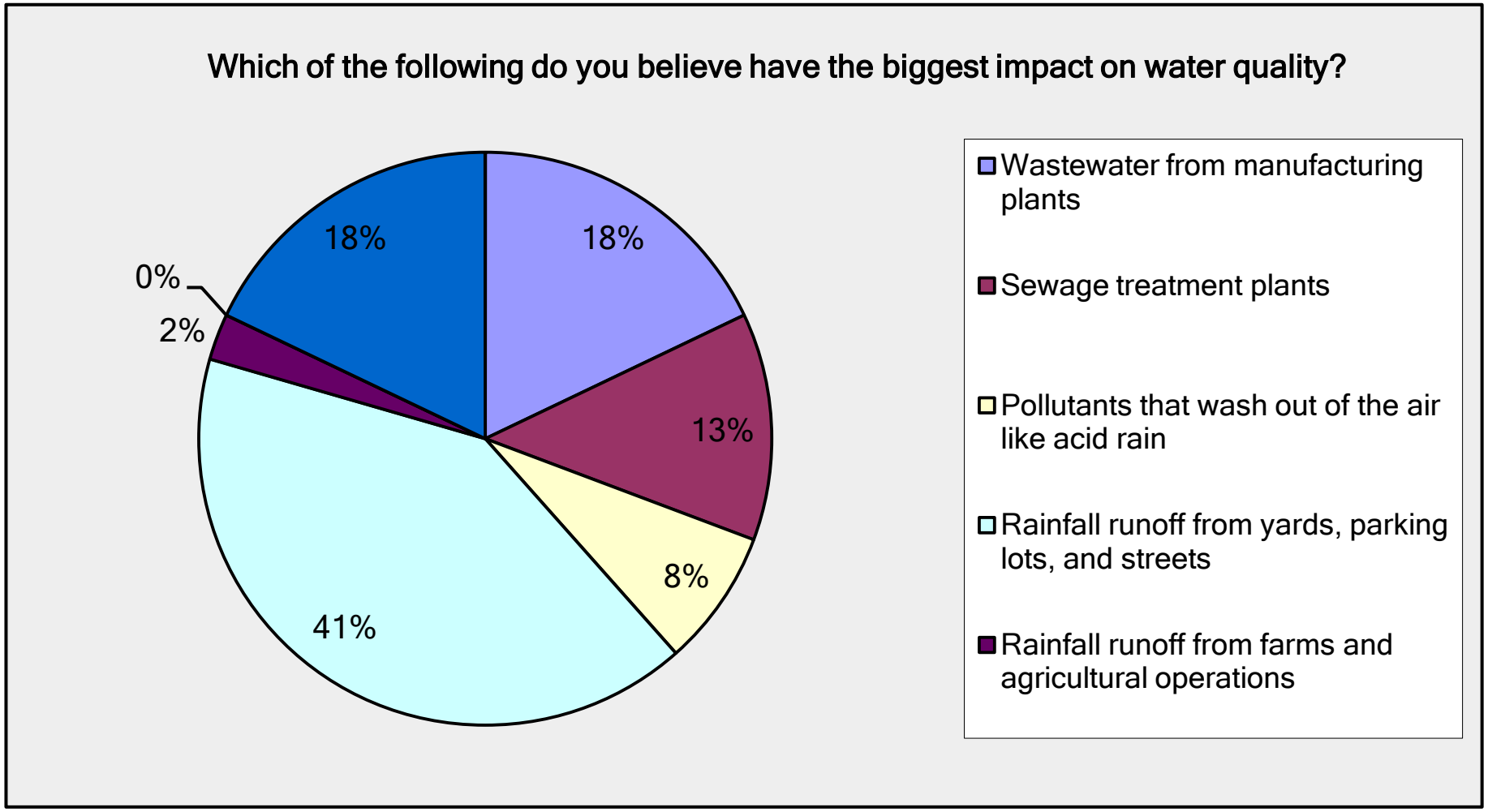
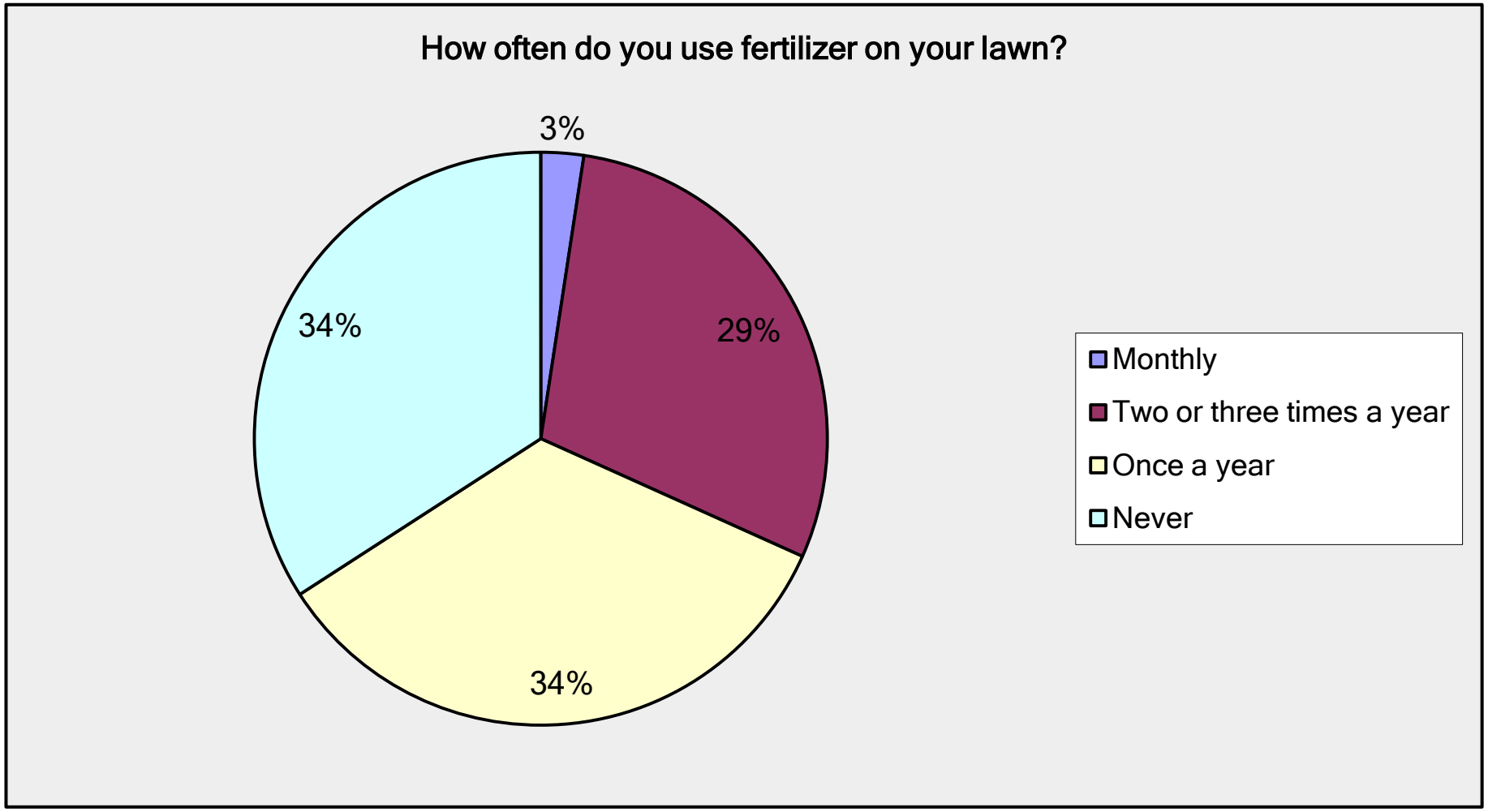
or call (336) 294-4950

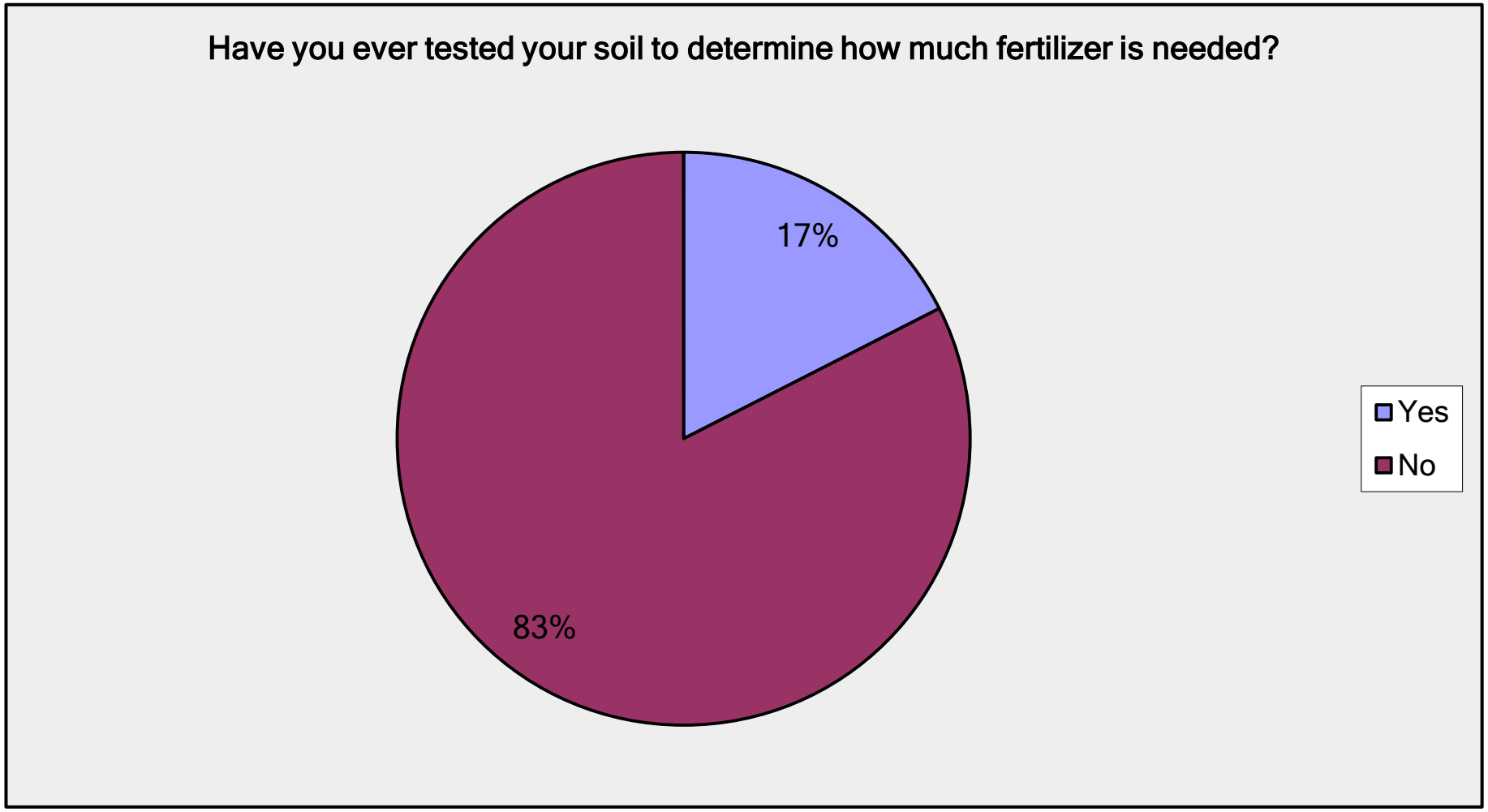
Founders Day Festival Survey Results

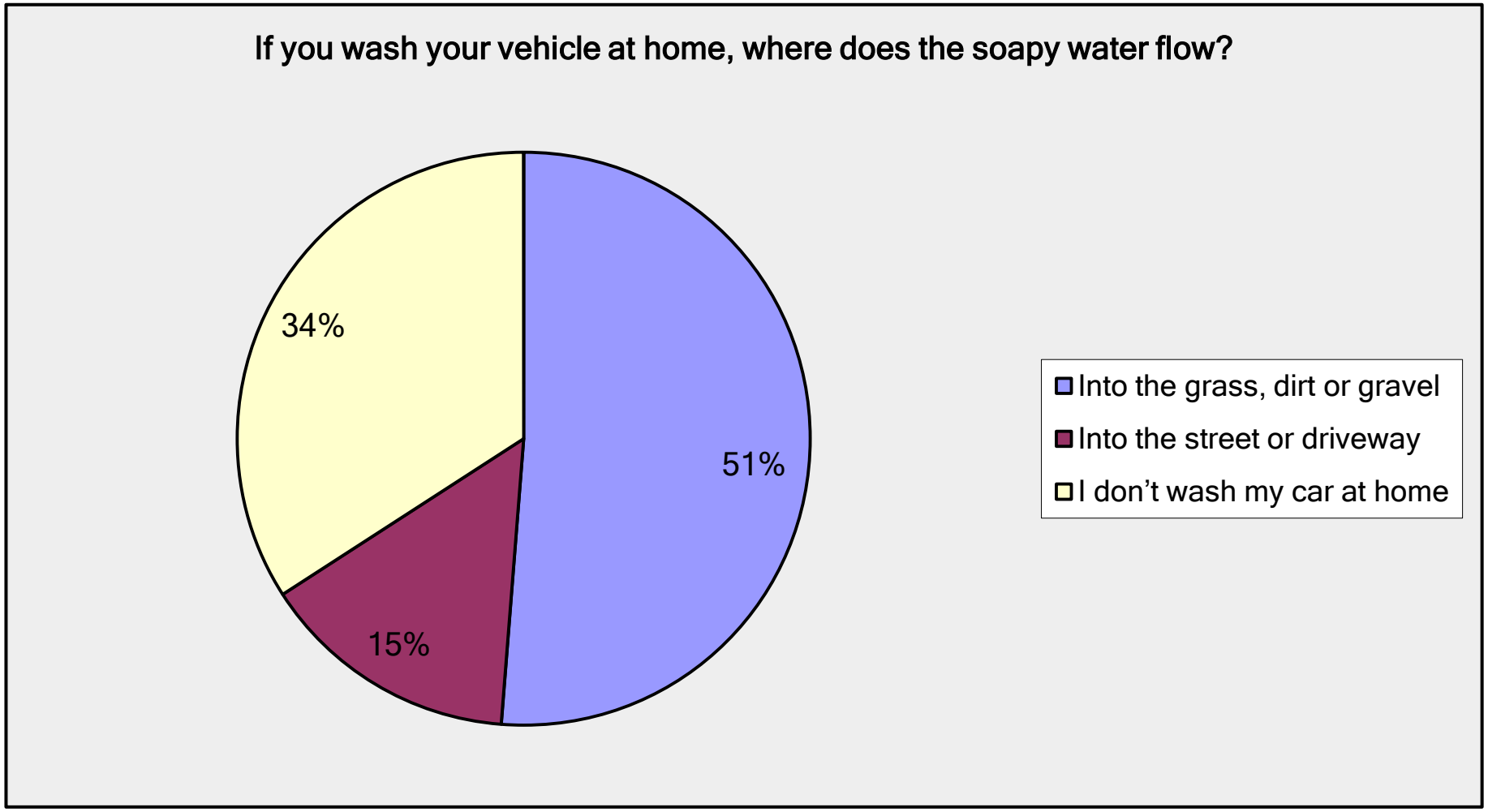

Which area best describes where you live?
5%
46%
49%
Urban
Suburban
Rural

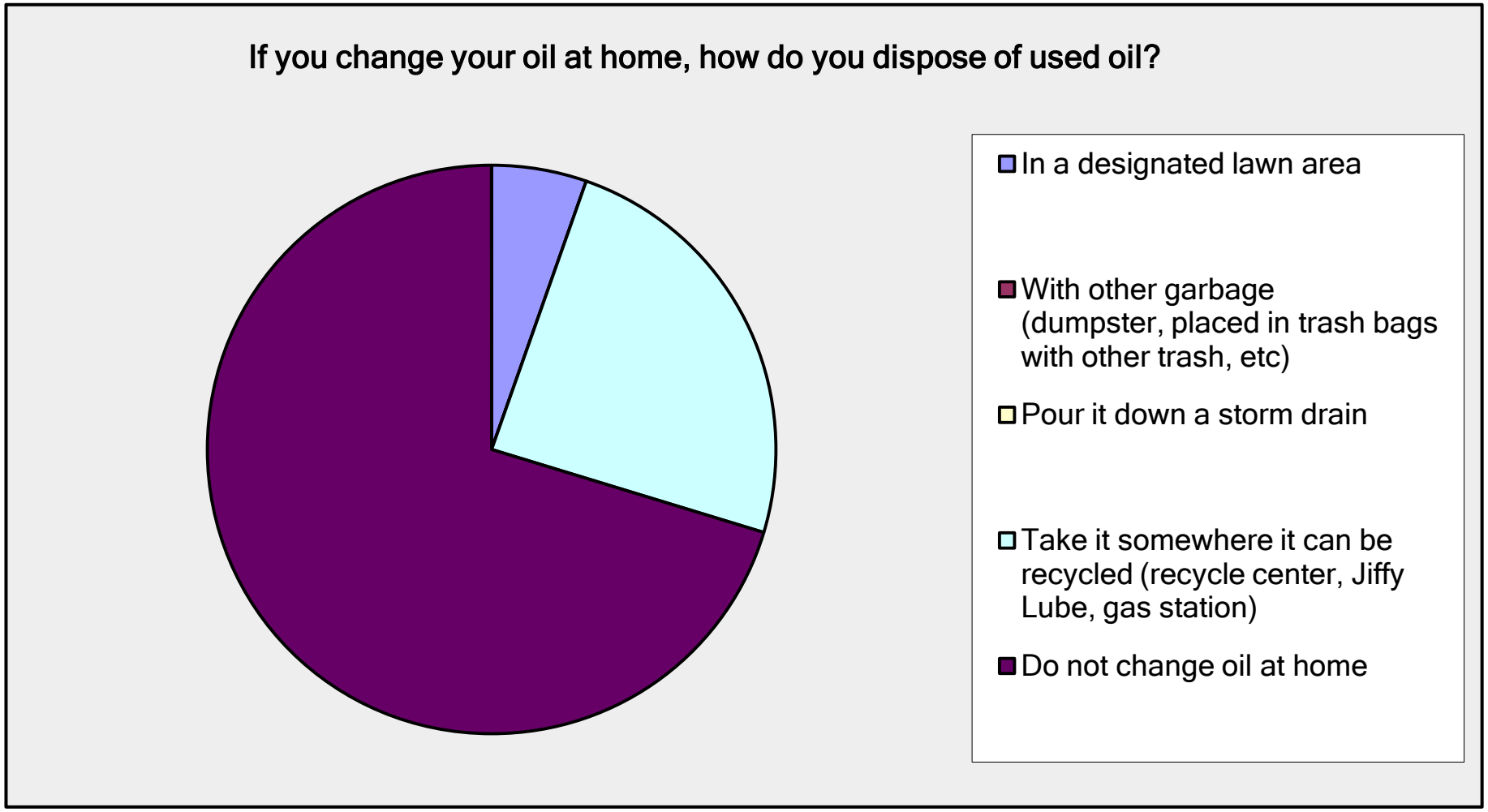

Do you think the overall water quality of the rivers, streams, and lakes in your area are:
3%
7%
48%
42%
Poor
Fair
Good
Excellent

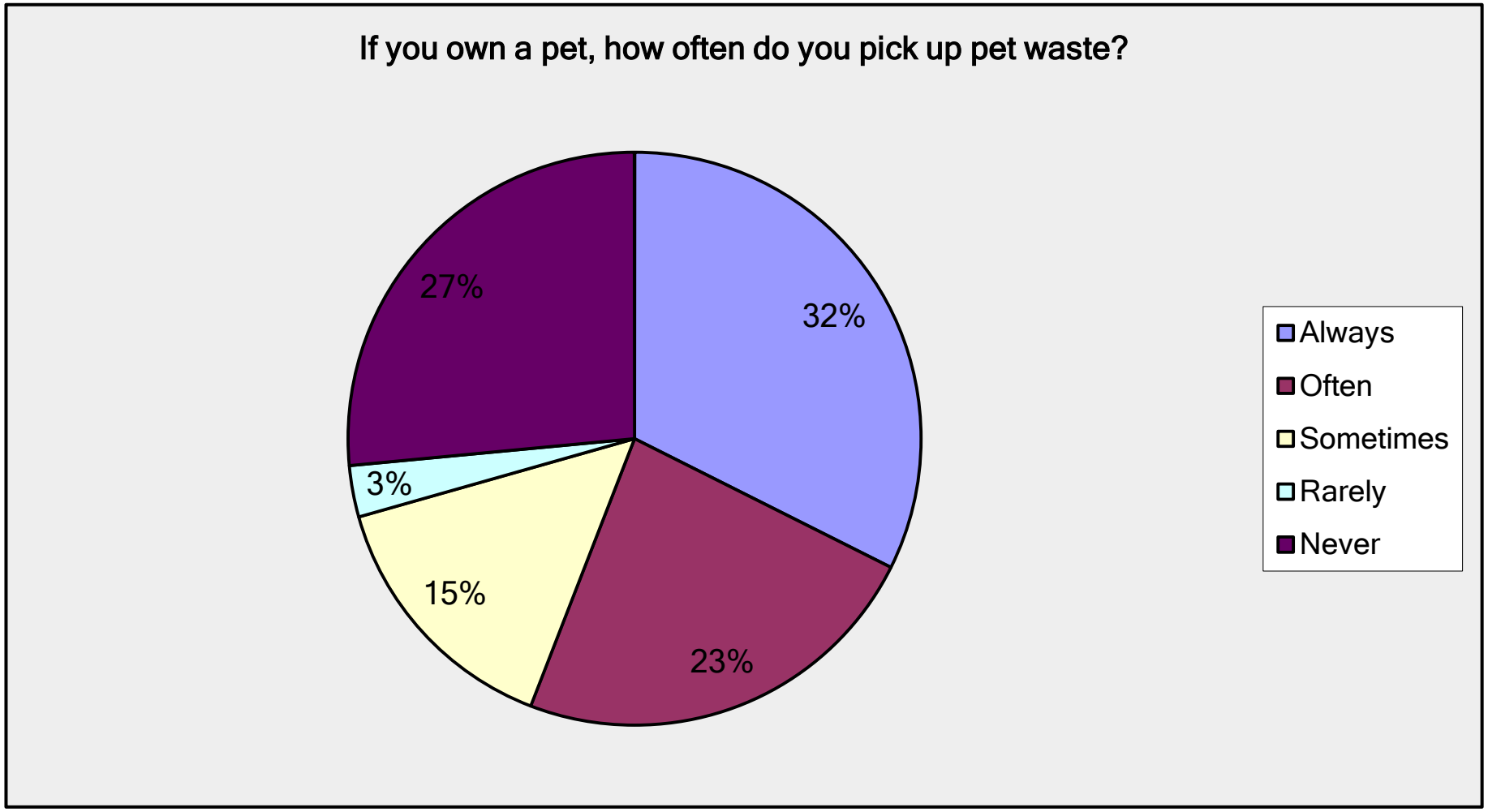
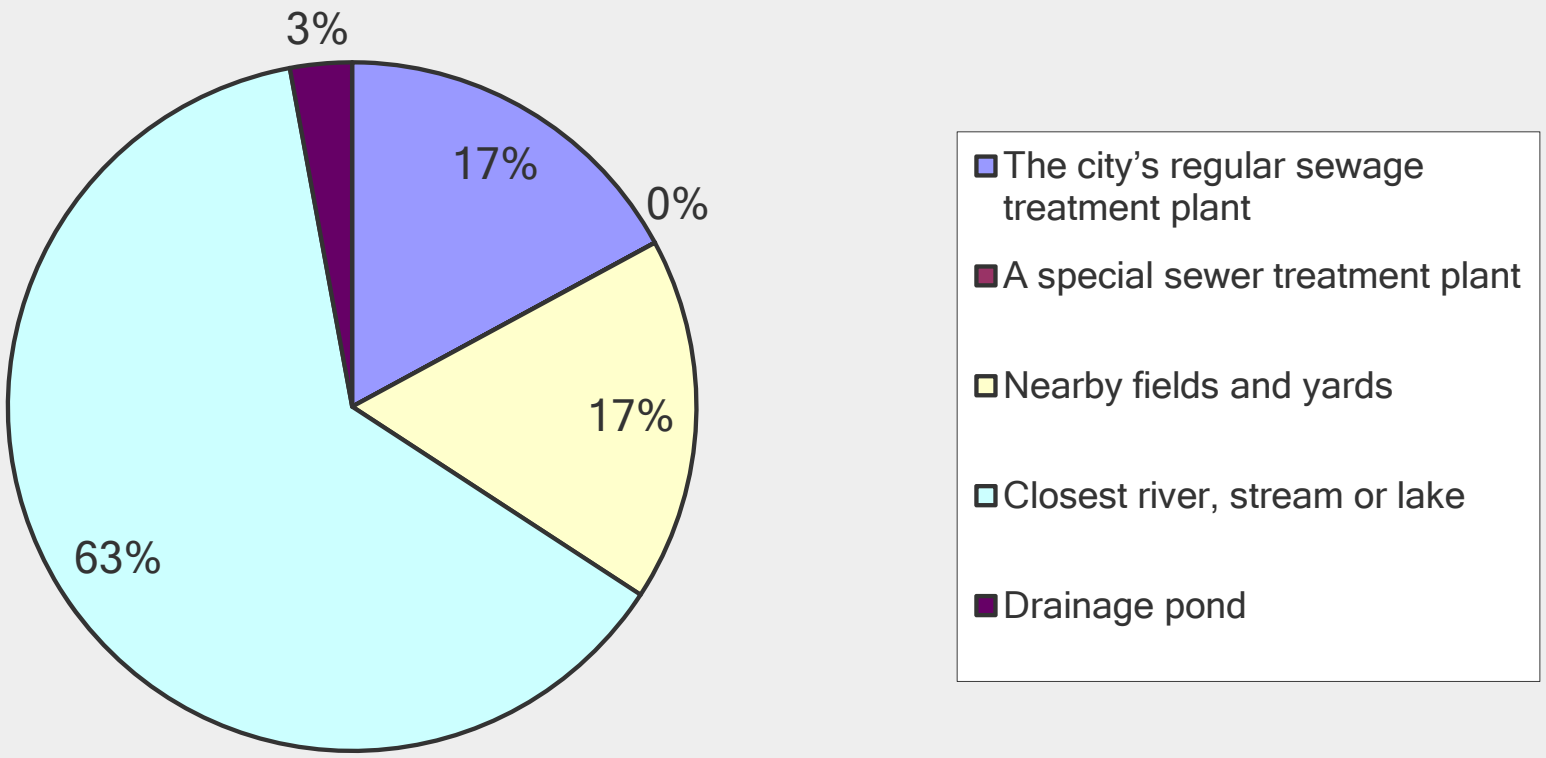

Which of the following do you believe have the biggest impact on water quality?
18%
18%
0%
2%
13%
8%
41%
Wastewater from manufacturing plants
Sewage treatment plants
Pollutants that wash out of the air like acid rain
Rainfall runoff from yards, parking lots, and streets
Rainfall runoff from farms and agricultural operations


How often do you use fertilizer on your lawn?
3%
29%
34%
34%
Monthly
Two or three times a year
Once a year
Never


Have you ever tested your soil to determine how much fertilizer is needed?
17%
83%
Yes
No


If you wash your vehicle at home, where does the soapy water flow?
34%
51%
15%
Into the grass, dirt or gravel
Into the street or driveway
I don't wash my car at home


If you change your oil at home, how do you dispose of used oil?
In a designated lawn area
With other garbage (dumpster, placed in trash bags with other trash, etc)
Pour it down a storm drain
Take it somewhere it can be recycled (recycle center, Jiffy Lube, gas station)
Do not change oil at home


If you own a pet, how often do you pick up pet waste?
32%
23%
15%
3%
27%
Always
Often
Sometimes
Rarely
Never

When it rains, stormwater is collected on streets and parking lots and runs into a storm drain. After stormwater runoff goes into a storm drain, it goes to . . .