The Resource

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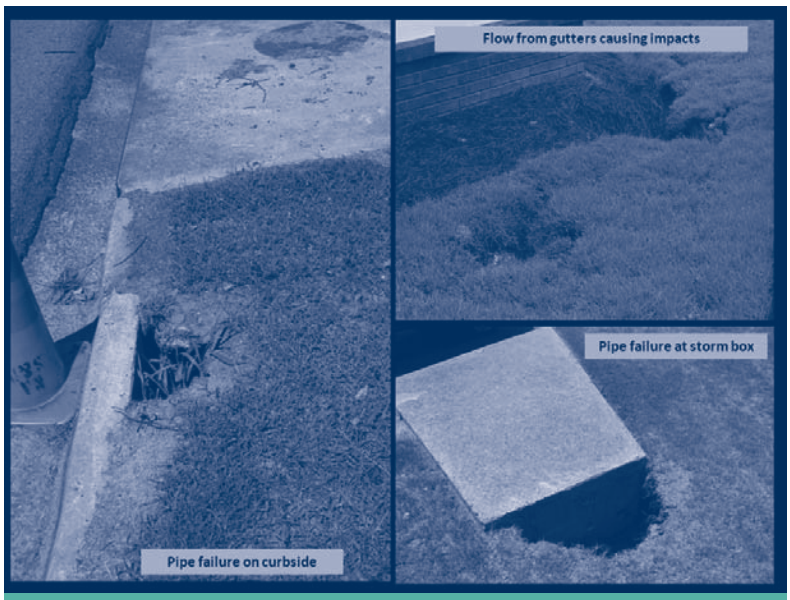
A Publication of the City of North Augusta Stormwater Management Department

When Good Pipes Go Bad – *Structural Failure Sinkholes*



Typical sinkholes found in North Augusta

Sinkhole stories have been on the news a lot lately, including dramatic photos with automobiles and in some cases entire city blocks, completely disappearing into them. Damage to personal property and loss of life can be the result. While we don't see large city-block-swallowing sinkholes in our area, we do see smaller sinkholes quite frequently. A small sinkhole, that is left unattended, can become a much bigger one.

This summer, North Augusta has had sinkholes form throughout the community due to the impressive number of storms and rainfall. It is important for all of us to understand the causes and dangers associated with them and the signs of sinkholes forming. In every case, identifying and reporting the

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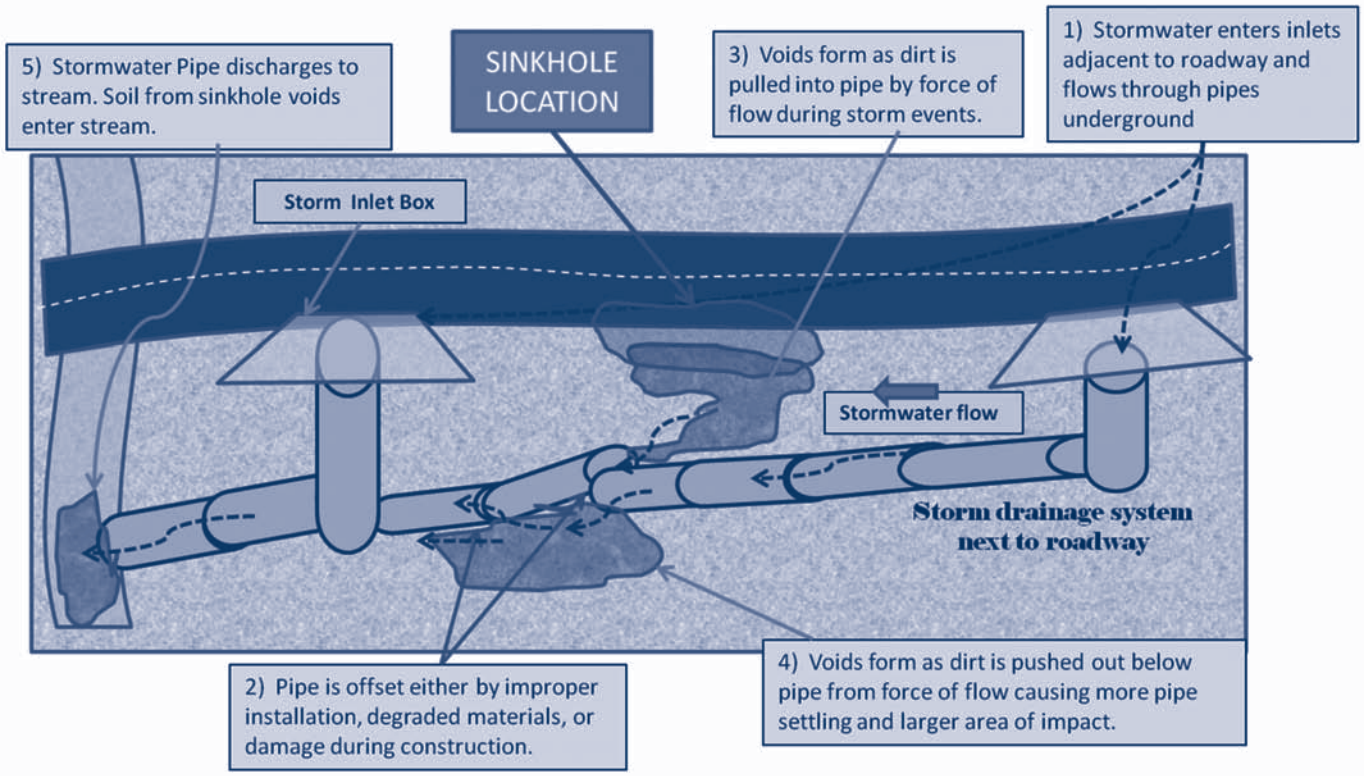
Adventure Campers visit Brick Pond Park

The City of North Augusta Parks, Recreation and Leisure Services held its third annual Adventure Camp sessions in June and July. Each week during Adventure Camp, the children came to Brick Pond Park for half of the day. They learned tree climbing with David Myers and also spent time learning about the ecology of the park. Aside from the fun and excitement of tree climbing (some making almost all the way to the top), campers came to learn more about the animals, plants, and insects that live at the park. Water quality was a big topic and students were taught about how stormwater can become polluted and how we can help to prevent it. The campers tested the water for dissolved oxygen and pH to learn if the ponds were healthy for the fish. They also learned how Brick Pond Park is a stormwater treatment system.

We all had great fun and discovered many things about Brick Pond Park. A turtle was spotted by the campers that had a radio-transmitter on its back. The turtle was part of on-going studies by the Augusta State University under the direction of Dr. Brandon Cromer. Dr. Cromer assists the city with many of the Stormwater Management Department (SWMD) activities including the education program underway with local elementary schools. For more information about the research being conducted by both the Augusta State University and the University of South Carolina-Aiken, visit *www.northaugusta.net* and under Parks visit our Brick Pond Park webpage. From there click on the link "learn more about the science at Brick Pond Park".

How Sinkholes form when Pipes Go Bad



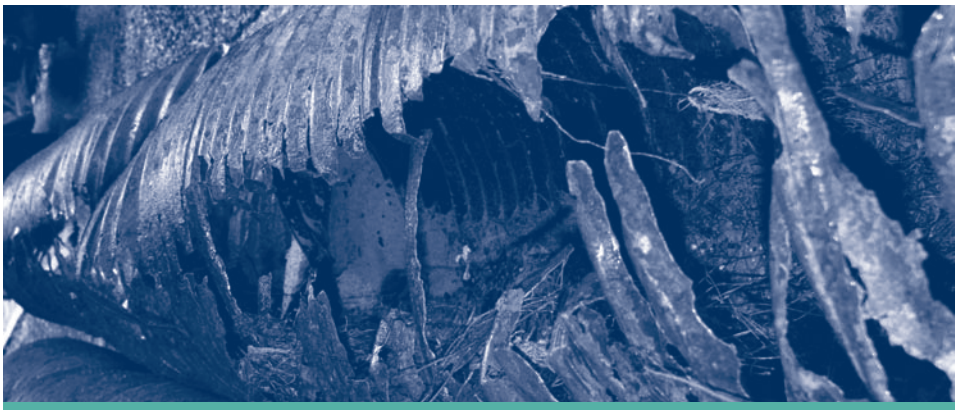
When Good Pipes Go Bad (*Continued*)

problem early is the safest thing to do. With that in mind, it pays to know what to do if you encounter a sinkhole.

What is a sinkhole? A good definition for sinkhole is; "any naturally occurring depression in the surface of the ground from which rainfall is drained internally." In other words, when water is allowed to flow underground (outside of pipes) it displaces soil and can create a sinkhole above ground. Stormwater, water, and sewer lines are buried underground throughout our community along roadways and near homes and businesses. The sinkholes that occur in our area are caused from structural defects involving piping that has become defective, improperly installed, degraded with age or has a ruptured. Sinkholes can occur in both older and newer communities. The most common structural failure in North Augusta is from old rusted out corrugated metal pipes (CMP). CMP type piping is no longer accepted for use in many areas of North Augusta.

Types of Sinkholes: Sinkholes can form in several ways including, a structural defect of piping, rotting or decayed stumps of trees underground, improper foundations where homes are built (example, homes built on top of abandoned dump sites or where trees have been buried) or from natural erosion of underground Karst features. Karst is described as underground layers of materials such as limestone, dolomite or gypsum that dissolve over time from water. We have few of these Karst type features in our area, so natural sinkholes are not common in North Augusta.

Safety near a Sinkhole! Not knowing the extent of the damage is why it is so important to stand far back from



This rusted corrugated metal pipe was the cause of a sinkhole in North Augusta.

What you should do if you suspect a sinkhole is forming:

- *If you see a newly formed hole on your property, that appears to grow larger after rainstorms, contact a professional plumber or landscaper to determine the cause.*
- ***Do not walk out to the edge of the hole** to look and see what the problem is. Stand back a safe distance to inspect the problem. Do not let children near the area.*
- *If you notice a sinkhole in a roadway or other public area, you should report it to the city by calling (803) 441-4240 or if after business hours, call public safety.*
- *Contact the Stormwater Department if you have any questions or concerns about suspected sinkholes.*

the edge of any opening in the earth until the damage is fully assessed. Many injuries have occurred from someone standing close to look down into a sinkhole, not knowing the earth below their feet was only a small thin piece that had not yet fallen.

Finding Problem Pipes. If a sinkhole is suspected, the city uses several methods to determine whether failures of pipes are the cause. Methods used include:

- Smoke testing underground pipes
- Televising the line with remote controlled cameras
- Dye testing lines with colored dyes

The city is not alone in this problem. It is reported that Hilton Head expects to spend $25 million dollars replacing thirty year old infrastructure that is failing and creating sinkholes on the island. Many communities are working to identify and repair problems that can cause sinkholes on the surface. Sometimes though, you don't know you have a problem until that little concave spot appears after a storm. That is the first clue to look for and to and investigate. To learn more visit: *www.northaugusta.net*.

North Augusta will Replace Trees

Girl Scouts talk about trees at Kids Earth Day

The City of North Augusta received a grant from the South Carolina Forestry Commission to remove hazard trees (see Resource, February 2010). Hazard trees are those that are diseased or structurally unsound and could cause injury to citizens or their property. During the tree assessment conducted in 2009, many trees were identified as having severe disease or were dead. Over the last few months, hazard trees that were identified were successfully removed. Kervin Brothers Stump and Tree Removal Service worked with the City to complete the removal of hazard trees. Sixteen trees were removed along City streets and eight were removed from the North Augusta Greeneway trail. Additional trees damaged during July rainstorms were also removed by city crews.

Twenty-four trees will be replanted to replace those removed. Tree species will be the same unless the location is unsuitable for that type of tree due to sidewalks or overhead lines nearby. The tree replanting project will begin during the fall and should be complete by December 2010.

As part of our outreach efforts, the Girl Scouts assisted the SWMD during the 2010 Kids Earth Day celebration. The girls handed out information and spoke with attendees about the importance of healthy trees within our community. Trees not only provide shade and beauty, they also provide stability and help to clean the air.

The Boy and Girl Scouts will continue to assist the city with outreach when the planting of replacement trees begins in the fall. For more information, contact Roy Kibler, Superintendent of Property Maintenance at (803) 441-4244.

Benefits of a Healthy Community Forest

- *Trees help to settle out, trap and hold particulate pollutants that can damage human lungs (dust, ash, pollen and smoke).*
- *Trees absorb carbon dioxide (CO_2) and other dangerous gases and, in turn, replenish the atmosphere with oxygen.*
- *Trees produce enough oxygen on each acre for 18 people every day.*
- *Trees absorb enough carbon monoxide (CO), on each acre, over a year's time, to equal the amount you produce when you drive your car 26,000 miles.*
- *Tree root systems reduce the chances of soil erosion and impacts to local streams during storm events.*
- *Trees reduce stormwater runoff in communities.*
- *Healthy trees provide habitat to wildlife that are necessary for healthy ecosystems.*

Species Profile:

Widow Skimmer Dragonfly

(*Libellula luctuosa*)

The Widow Skimmer dragonfly is common around North Augusta ponds and streams. This beautiful dragonfly is part of a larger group of dragonflies called the King Skimmers. They are common throughout the United States, barring a few areas in the mountains. It is an easy dragonfly to identify once it becomes a flying insect. Also, based on its coloring you can determine if it is male, female, adult or juvenile.

Skimmers are the most common and colorful of the dragonfly family. They have two pairs of large wings, the hind wings larger than the front wings. The wings are held flat and extend outward from the body when sitting on a limb or branch. They hunt mosquitoes and other insects by flying low and skimming them from the surface of water. They will often follow the same path when skimming and land on the same perch. They are considered a beneficial insect since they eat many mosquitoes during their lifetime.

Widow skimmers spend most of their life as an aquatic insect. An adult female will lay her eggs in or near the water where they hatch into larvae called nymphs. Certain species remain nymphs for up to five years, molting and growing until it is time to become a flying insect. The nymph will crawl out of the water and perch on a stem or other safe dry location to molt one last time, into a winged dragonfly (metamorphose).

The Widow skimmer is a very large dragonfly. The wings are clear and wide. When the dragonfly lands on a branch you can clearly see brown patches located on all four wings next to its' body. A male widow skimmer will have white spots located on its wings (see photo). If the body is thick and grayish to blue, it is an adult Widow skimmer; otherwise it is a juvenile with a brown body and yellow stripes. Dragonflies are masters of flight and like a helicopter, can fly up, down, forward, backward and even side to side. The adult stage of larger species of dragonflies can last as long as five or six months.

Dragonflies are moving around a lot lately and can tell us a lot more about our environment than we once thought. Studies have shown that the diversity of a dragonfly population can be a good indicator of the health of an aquatic system. Several researchers are beginning to take notice of dragonflies as indicator species and have begun detailed studies looking at their behavior and populations to learn more about the ecology of urban environments. We have a large variety of dragonflies to enjoy in North Augusta. It is important to protect our sensitive aquatic ecosystems from stormwater pollution, because of the many beautiful and beneficial aquatic insects that depend on clean water to survive.

Upcoming Events:

Electronics Recycling Collection Event	*Saturday, September 18th at Kroger on Knox Avenue from 9 a.m. – 12 p.m.*
North Augusta Jack-o-Lantern Jubilee	*Saturday, October 30th on Georgia Ave. (downtown) from 10 a.m. to 4 p.m.*

NO DUMPING DRAINS TO RIVER

For additional information contact:

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North Augusta
South Carolina's Riverfront