

# Toulmins Spring Branch Watershed Stormwater Management



DATE: 11/20/2014

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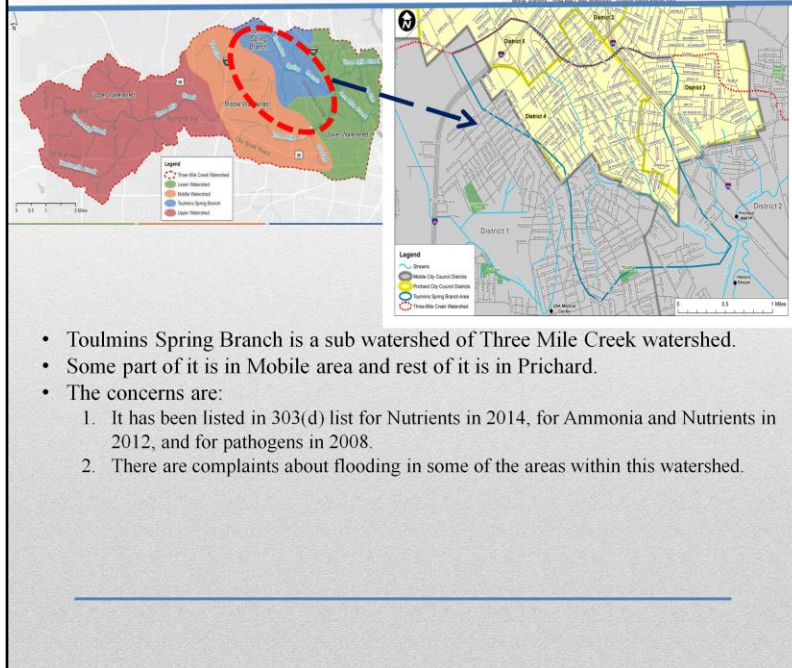
## Presentation Outline

- Introduction
- Visit with Auburn University team
- Map study
- Interview people from different areas
- Study findings

**Notes:** This presentation is about some of our findings from a study carried out over the last 3-4 months on stormwater management of Toulmins Spring Branch watershed by NEP. The objective of this study was to identify the spots that are vulnerable to chronic flooding and reasons for that in this watershed area.

In this presentation we will discuss about the Toulmins Spring Branch watershed area, a project currently running in this area, then how we planned and carried out this study, and finally some of our findings.

## Introduction



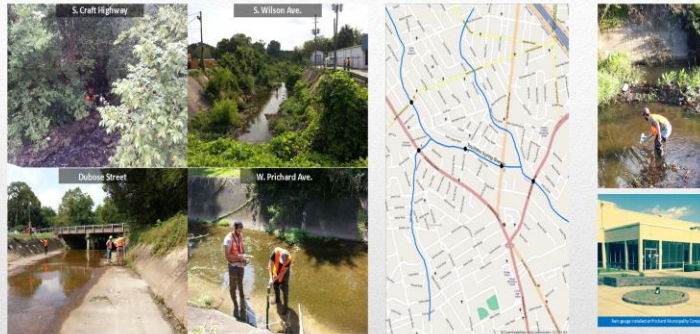
**Notes:** We all know that Toulmins Spring Branch is a sub-watershed of Three Mile Creek watershed. Some part of it is in Mobile area and rest of it is in Prichard, which you can see on the map.

The main concerns for this creek are:

It has been listed in 2014's 303(d) list for Nutrients. Before that it was listed for Ammonia and Nutrients in 2012, and for pathogens in 2008. So quality of water running through this creek is a concern.

Apart from that, there are complaints about chronic flooding in some areas within this watershed.

## Working with Auburn University Team



- Five pressure transducers to record the height of water in the creek.
- One rain gauge has been installed at the Prichard Municipality Complex.
- Checking the watershed boundary and will make necessary corrections, if necessary.
- Collecting geographic information and size of outfalls.
- Sampling water from the creek.

**Notes:** Few months ago, NEP hired a technical team from Auburn University to identify the reasons for these problems. This team has already:

Installed five pressure transducers at five locations to record the height of water in the creek.

One rain gauge has been installed at the Prichard Municipality Complex to record the rainfall events.

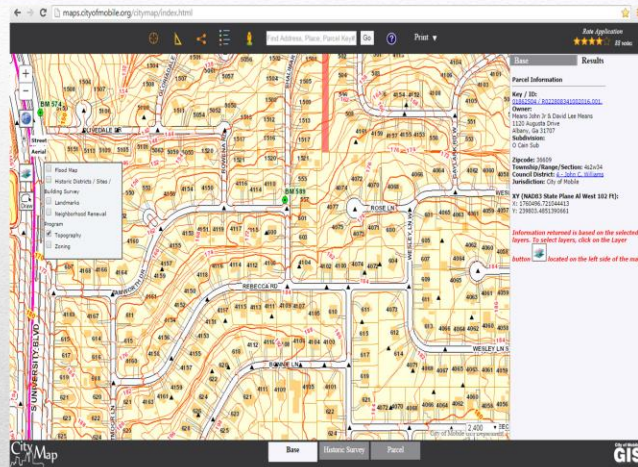
They are checking the watershed boundary and will make necessary corrections, if necessary.

They are collecting geographic information and sizes of outfalls.

And started sampling water from the creek.

So far, few rain events have been covered and collected data are currently being analyzed. They are looking to cover heavy rain events to know more about the runoff characteristic in the creek.

## Study City Map...



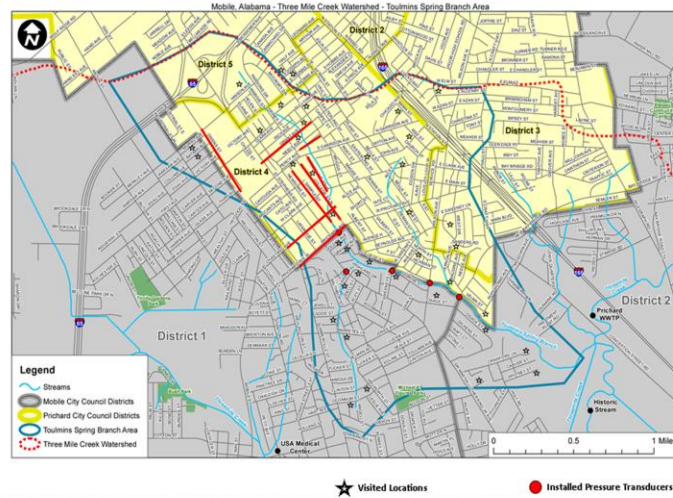
- Studied the city map to find areas that are on lower elevation, and near the tributaries.

**Notes:** In addition to that project, in order to locate the spots that are vulnerable to flooding, we studied the city map to find areas that are on lower elevation, and near the tributaries. This map shows the contour lines. This map helped us to identify areas that are on lower elevation, near the tributaries and vulnerable to flooding.



## Visited Locations in Mobile and Prichard

Locations Visited in the Toulmins Spring Branch Watershed and Installed Pressure Transducers



**Notes:** Then we started visiting the locations. The star signs in the map show the places that we have visited in last few months. You can see on the map that the locations are mostly near the creek. We interviewed people who are living in those places.

## Interview in Mobile and Prichard .....

### Questions asked:

- Experienced flooding in your neighborhood? If yes, how often?
  - What is needed to improve the drainage system in your neighborhood?
  - Who do you expect to do that? How can you help in that process?
  - Do you know people in your community who can help in this regard?
  - Do they want to join our program to solve the flooding/drainage issue of TSB watershed area?
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**Notes:** During our visits, we asked some questions to the people whom we met. We asked about their – Experience about flooding in their neighborhood? Their opinion about - What is needed to improve the drainage system? Whom do they expect to do that? How can they help? Do they know people in their community who could help? Do they want to join our program to solve the flooding/drainage issue of this area? So we tried to know about their problems, as well as their perception about the problem and willingness to contribute to solve this problem.

## Vulnerable Areas in Mobile .....



**Notes:** In Mobile, we found some areas where houses get flooded every year, 2 to 3 times, after heavy rain events. The creek where it crosses the St. Stephens Rd. was found with dense vegetation. People who work and live there were complaining that this section of the creek does not get much attention in terms of maintenance. This is where Mobile and Prichard is connected.



## Vulnerable Areas in Prichard .....



**Notes:** In Prichard, we found some places where houses get flooded every year; here you can see houses on Chastang ave, and Josephine St. In Chastang ave, we interviewed this guy, on the left of the screen. He said that water gets up to the plinth level of his house and causes damage to his properties. On our right on the screen, it shows a house on the Josephine st that gets flood from the creek. He also complained that a drainage pipe ends right in front of his house. So stormwater from other areas is discharged into his property area, and it causes damage and inconvenience for him every year.

## Vulnerable Areas in Prichard .....

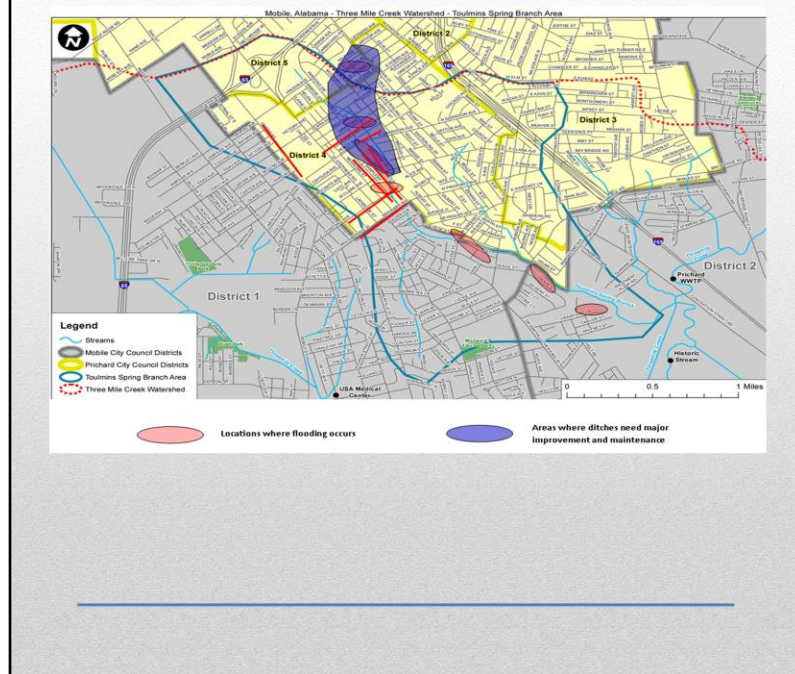


- The creek needs maintenance.
- Number of earthen ditches is high and not well maintained.
- Ditches not functioning well after storm events cause water logging in some areas.



**Notes:** The pictures here show that the creek needs maintenance. Number of earthen ditches was found high in Prichard area, and not so well maintained. It was reported by some respondents that these earthen ditches not functioning well after storm events cause water logging in some areas.

## Spots identified during field visits .....



**Notes:** In this map, we have tried to summarize our findings from the field visits. The pink spots show areas that are suffering from flooding every year after heavy storm events. And the areas colored by blue are the areas where there have been incidents of water logging, and the drainage system needs to be improved.

Also you can see some red lines on the map. These are the streets where ADEM has recorded Sanitary Sewer Overflows. You can see that the red lines coincide with the areas affected by flooding. This might be indicative of the fact that flooding in those areas are causing these sanitary sewers to overflow, and eventually affecting the water quality downstream.

## Summary .....

- Few houses affected by flooding/water logging every year.
- Creeks are not well maintained at many places. Number of natural/earthen ditches is high. Ditches often get clogged by vegetation and/or litter, causing water logging in those areas.
- Narrow channel width could be a reason, along with dense vegetation in the creek for water backing up from the creek.

### Probable reasons for flooding/water logging:

- Low elevation of the lands along with dense vegetation in the creek [Josephine St, Chastang Ave (Prichard)]
- No or inadequate infrastructure for drainage of storm water e.g. earthen ditches getting filled up, no ditches for drainage of water, vegetation in the ditches [Neely Ave, Thomas St and surrounding areas (Prichard)]
- Increased storm water volume due to impervious surface upstream

### Recommendation:

- Reducing storm water runoff/promote infiltration upstream from problem areas
- Clean and maintain ditches and tributaries

**Notes:** Finally, the major findings from the study are – there are few houses that get affected by flooding/water logging every year, creek needs better maintenance at many places. Number of natural/earthen ditches is high. Ditches often get clogged by vegetation and/or littering, causing water logging in those areas. And narrow channel width could be a reason, along with dense vegetation in the creek for water backing up from the creek.

The reasons for flooding/water logging:

Low elevation of lands along with dense vegetation in the creek [Josephine St, Chastang Ave (Prichard)]

Inadequate storm water drainage facilities, earthen ditches getting filled up, no ditches for drainage of water, vegetation in the ditches [Neely Ave, Thomas St and surrounding areas (Prichard)]

Increased storm water volume due to impervious surface upstream





**Thank You**