

# CITY OF STATESBORO STORMWATER MASTERPLAN TASK ORDER 01 FINAL REPORT



35 ABERCORN STREET, SUITE 210  
SAVANNAH, GA 31401

[HTTP://WWW.ECOLOGICALPLANNING.NET](http://www.ecologicalplanning.net)

OCTOBER 2017



## **Memo:**

### **City of Statesboro, Stormwater Masterplan Update, September 2017**

#### **RE: Completion of Task Order No. 01: Drainage System GIS Inventory, Condition Assessment, & Capital Improvement Program Update & Prioritization**

The specific tasks associated with Task Order No. 01 and the results from each task are summarized below.

##### ***Task 1. Drainage System GIS Inventory and Condition Assessment***

A drainage system GIS inventory and condition assessment was performed for all publicly-owned drainage infrastructure throughout the City. Ecological Planning Group (EPG) worked with the City to identify the specific attributes that were collected at each structure. EPG also worked with the City's GIS Department to identify the best practice for hosting the web-based database during and after the completion of the project. In total, 3,683 structures (inlets, outlets, and junctions) were identified and inventoried both by EPG staff and by City GIS staff and interns.

In 2013, EPG had previously conducted an inventory and condition assessment on about 20% of the area of the City as part of Statesboro's Stormwater Utility project. The next 20% of the City was completed by EPG. During this time, EPG trained City crews on the inventory and condition assessment procedure so that the City crews could complete the remaining 60% of the City area.

A map-grade inventory was conducted by visiting each stormwater structure in the field and identifying its spatial location on an x/y coordinate system using a GPS-enabled tablet. The following information was collected as part of the comprehensive assessment: Structure Type; Structure Material, Pipe Size; Pipe Material; Structural Damage; presence of Sediment, Debris, Dry Weather Flows, Water Quality Issues, Erosion, Vegetation; and Line Maintenance Need. This information, along with photographs and notes were included in the GIS database.

Table 1 summarizes the condition assessment results for the 3,683 structures inventoried. The table presents the percentage of each condition identified in the inventory. As a note, some structures only had one issue, while others had multiple. Some of these details are described in the summary for Task 3. A few key results are summarized below:

- 310 structures are more than half full of sediment.
- Approximately 10% of structures (362) have some type of problematic or habitual debris issues.
- 151 structures are overgrown and 23 are lacking vegetation.
- 136 structures have some type of structural damage that requires repair; this includes 29 with major damage and 8 that should be addressed immediately.

- The most common type of erosion is structural erosion; 523 structures have moderate or severe structural erosion.
- There are 228 structures with moderate or severe bank erosion, and 50 structures have moderate or severe channel erosion.
- The inspections were completed for about 95% of all structures identified. The ones not completed either had some type of obstruction or condition (e.g., submerged or buried) that did not allow the structure to be fully evaluated. In some cases, the structure could not be opened, i.e. it was welded shut. Incomplete evaluations totaled 203 structures.

**Table 1: Summary of Condition Assessment**

<b>Field Selections</b>	<b>Percentage</b>	<b>Field Selections</b>	<b>Percentage</b>
<b>Sediment</b>		<b>Bank Erosion</b>	
<i>0-25%</i>	82.7%	<i>None</i>	86.9%
<i>26-50%</i>	9.0%	<i>Minor</i>	7.0%
<i>51-75%</i>	4.3%	<i>Moderate</i>	5.0%
<i>76-100%</i>	4.2%	<i>Severe</i>	1.2%
<b>Debris</b>		<b>Channel Erosion</b>	
<i>Not Present</i>	77.9%	<i>None</i>	97.2%
<i>Non-Problematic</i>	12.3%	<i>Minor</i>	1.5%
<i>Problematic</i>	9.2%	<i>Moderate</i>	1.0%
<i>Habitual</i>	0.7%	<i>Severe</i>	0.4%
<b>Vegetation</b>		<b>Structural Erosion</b>	
<i>Natural</i>	95.4%	<i>None</i>	72.1%
<i>Lacking</i>	0.6%	<i>Minor</i>	13.7%
<i>Overgrown Access</i>	1.2%	<i>Moderate</i>	11.3%
<i>Overgrown Flow</i>	2.9%	<i>Severe</i>	3.0%
<b>Structural Damage</b>		<b>Evaluation Status</b>	
<i>No Damage</i>	91.9%	<i>Complete</i>	94.9%
<i>Low Priority, Minor Damage Monitor Condition</i>	4.5%	<i>Implied, Non-Located</i>	0.4%
<i>Damage Requiring Repair</i>	2.7%	<i>Could Not Open</i>	2.3%
<i>High Priority, Major Damage</i>	0.8%	<i>Could Not Evaluate</i>	2.9%
<i>Severe Damage or Safety Issue Requiring Immediate Action</i>	0.2%		

### **Task 2: City Staff Training & Supervision**

EPG trained City GIS staff to perform stormwater GIS inventory and condition assessment work so that they will be able to update and maintain the database over time. City staff shadowed EPG staff in the field while EPG crew performed field work, so that they could understand the procedure under real field conditions. EPG outlined the procedure used to QA/QC the field inventory data,

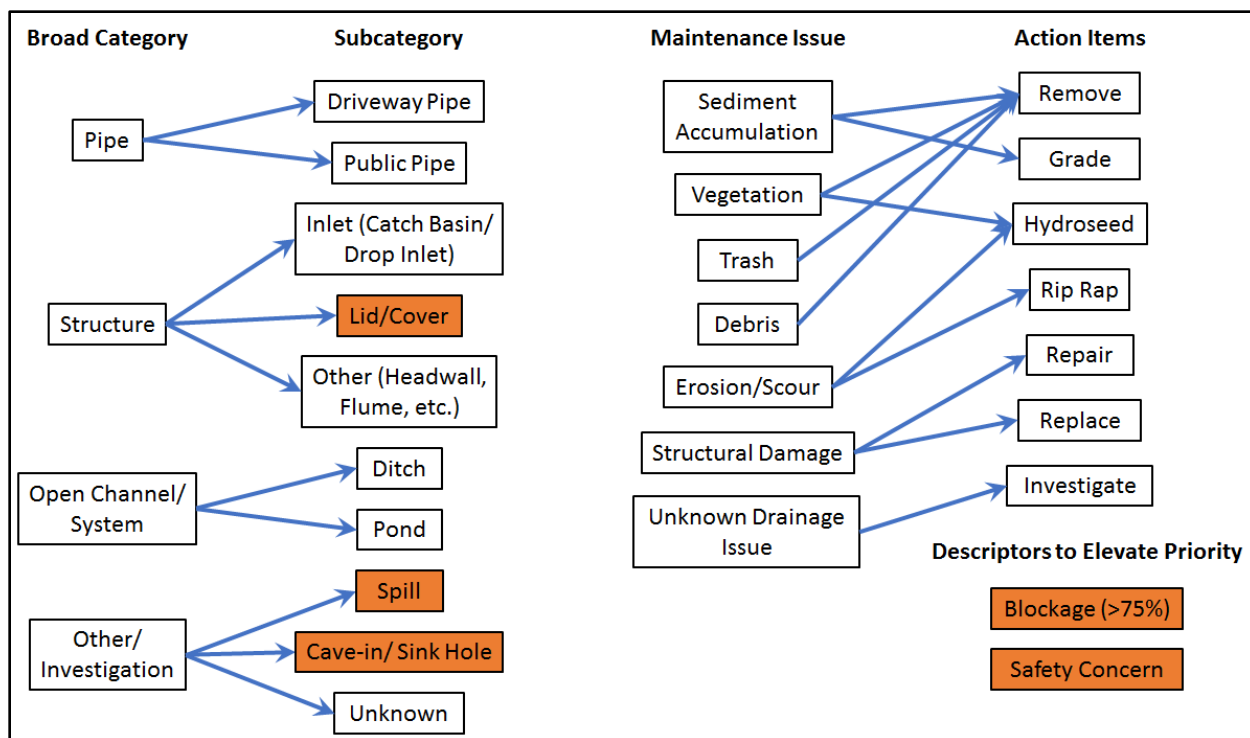
and they trained City staff on this process. EPG staff was available to City staff to answer any questions or troubleshoot any issues. A few areas inventoried by City crews lacked the necessary hydrologic connectivity to fully delineate the watersheds in the City. EPG conducted additional desktop and field investigations to connect these ditches, pipes, and structures as part of the QA/QC process.

### ***Task 3: Maintenance Work Program and Standard Operating Procedures (SOP)***

The first step of this task was to review the City's current work program by analyzing the existing work order database. Geographically, the only obvious pattern of stormwater issues was that there were more stormwater complaints in the urbanized areas of the City. A total of 259 completed work orders from May 19, 2015, to December 20, 2016 were analyzed to determine completion time and frequency of specific tasks.

The City's response time to work orders has improved dramatically since March 2016. The median completion time (50<sup>th</sup> percentile) has improved from 59 days to 8 days. This means that half of the work orders previously took longer than 2 months to address, and now they are being addressed within a week. The new work order system and hiring of a dedicated crew were likely responsible for this improvement. The review of the existing work orders, completion time, and specific task codes are summarized in the Maintenance Work Program SOP document.

The current work order system in HiperWeb, as of December 2016, had used 36 unique task codes. Upon inspecting the task code and task description names in detail, many seemed repetitive and unclear as to the actual issue and action needed. Statesboro's HiperWeb program consultant was working with the City in June 2017 to condense the number of task codes. EPG developed a flow chart (Figure 1) to assist administrative staff answering the phone complaints to more easily categorize the type of stormwater complaint. Not all Maintenance Issues/Action Items apply to each Subcategory, so lines are provided to restrict options to appropriate fields.



**Figure 1: Flowchart for Determining Maintenance Need and Action Items**

*Note: Orange shading notes selections to elevate priority level to “Emergency.”*

The second step was to develop a maintenance work program based on results from the GIS inventory and condition assessment. EPG reviewed the maintenance and structural issues and developed a Maintenance Work Program SOP, which is briefly summarized below. The work program includes projects that will be assigned to one of three major categories:

- 1) Operational maintenance issues, such as erosion control or sediment, debris, or vegetation removal
- 2) Capital maintenance issues, structures that required a more expensive solution, such as replacement of a broken manhole cover
- 3) Capital improvement issues, major drainage issues that require an engineered solution.

Categories 1 and 2 can be addressed by the City’s stormwater crews and Category 3 projects will be addressed as part of the Capital Improvement Program, described in Task 4.

EPG worked with the City to develop SOP for the drainage crews to conduct routine and proactive maintenance of the drainage system. This includes a description of the City’s extent of service, i.e. where the crews will and will not work, a description of the various maintenance services they provide, and a schedule for providing those services. As part of this SOP, EPG assessed the City’s current drainage system maintenance zones and schedules. The operational maintenance issues, identified above as Category 1, should be reduced as the City crews become more proactive in their maintenance procedures. The City will still respond to phone call initiated work orders shortly after they are received. Proactive maintenance, however, should reduce the volume of phone call complaints.

The City is still in the process of working out how HiperWeb will incorporate the drainage GIS database and work orders for the stormwater program. For now, EPG has set up a field in the existing GIS database that identifies if maintenance is needed based on the condition assessment. The system to prioritize and create a route and schedule are described in the Maintenance Work Program SOP. Table 2 illustrates the methodology for recognizing assigning maintenance need and the level of priority based on the condition assessment. “Elevated” has the highest priority level, followed by “Priority,” and then “Routine.”

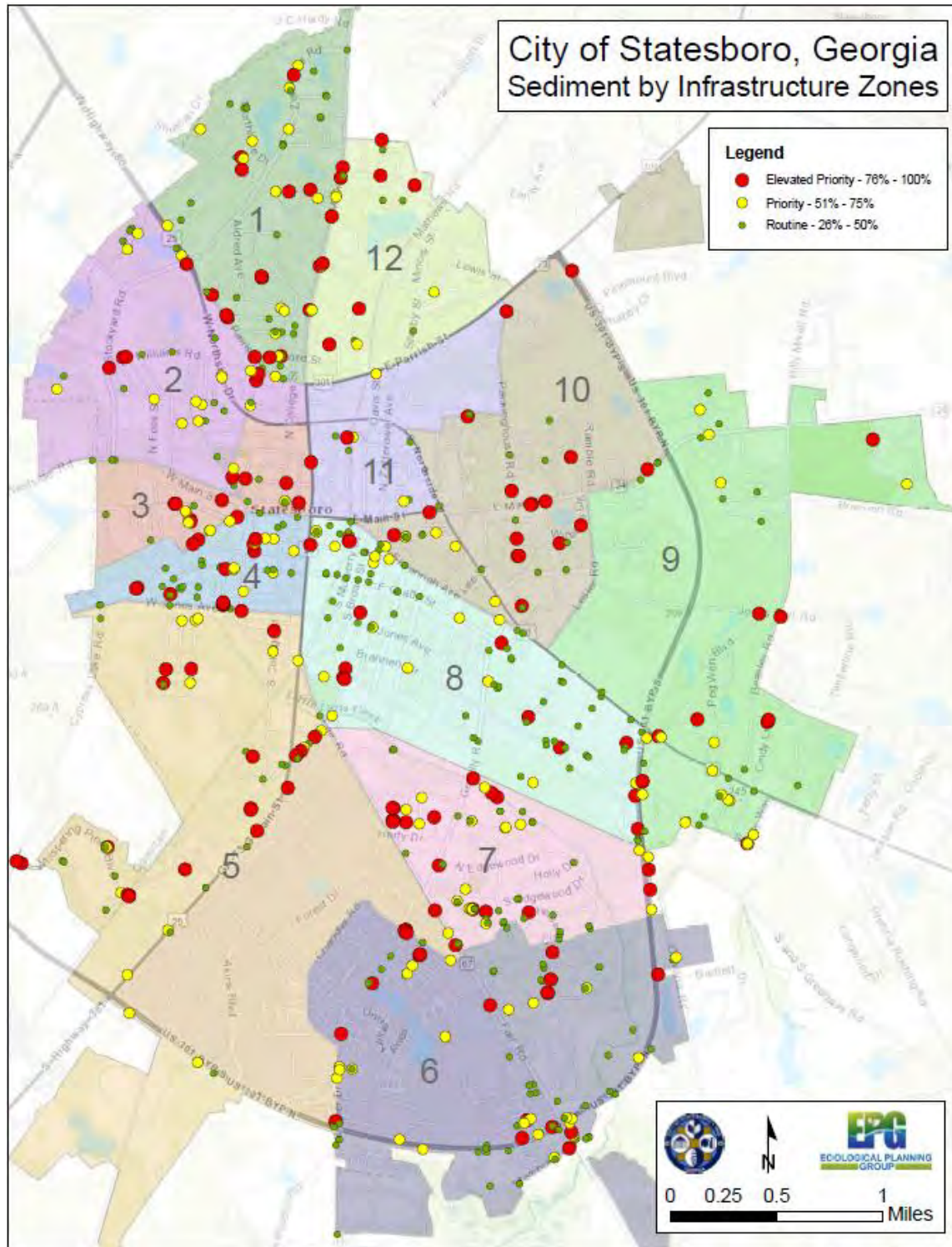
**Table 2: Method to Assign and Prioritize Maintenance Based on Condition Assessment**

<b>Field Selections</b>	<b>Work Order</b>	<b>Level of Urgency</b>	<b>Field Selections</b>	<b>Work Order</b>	<b>Level of Urgency</b>
<b>Sediment</b>			<b>Bank Erosion</b>		
<i>0-25%</i>	No		<i>None</i>	No	
<i>26-50%</i>	Yes	Routine	<i>Minor</i>	No	
<i>51-75%</i>	Yes	Priority	<i>Moderate</i>	Yes	Routine
<i>76-100%</i>	Yes	Elevated	<i>Severe</i>	Yes	Priority
<b>Debris</b>			<b>Channel Erosion</b>		
<i>Not Present</i>	No		<i>None</i>	No	
<i>Non-Problematic</i>	No		<i>Minor</i>	No	
<i>Problematic</i>	Yes	Routine	<i>Moderate</i>	Yes	Routine
<i>Habitual</i>	Yes	Routine	<i>Severe</i>	Yes	Priority
<b>Vegetation</b>			<b>Structural Erosion</b>		
<i>Natural</i>	No		<i>None</i>	No	
<i>Lacking</i>	Yes	Routine	<i>Minor</i>	No	
<i>Overgrown Access</i>	Yes	Routine	<i>Moderate</i>	Yes	Routine
<i>Overgrown Flow</i>	Yes	Priority	<i>Severe</i>	Yes	Priority
<b>Structural Damage<sup>1</sup></b>			<b>Evaluation Status<sup>2</sup></b>		
<i>No Damage</i>	No		<i>Complete</i>	No	
<i>Low Priority, Minor Damage Monitor Condition</i>	No		<i>Implied Non- Located</i>	Yes	Investigate
<i>Damage Requiring Repair</i>	Yes	CIP List	<i>Could Not Open</i>	Yes	Investigate
<i>High Priority, Major Damage</i>	Yes	CIP List	<i>Could Not Evaluate</i>	Yes	Investigate
<i>Severe Damage or Safety Issue Requiring Immediate Action</i>	Yes	CIP List			

<sup>1</sup> Assets with structural damage were investigated as part of the capital maintenance and capital improvement program.

<sup>2</sup> For the incomplete evaluations, a Work Order was added to re-evaluate and investigate further.

As an example, a map presenting sediment issues across the 12 maintenance zones is presented in Figure 2, and the points are color coded to indicate prioritization. EPG will provide a series of map books, for use by the City's storm water crews, that geolocates structures in need of require maintenance.



**Figure 2: Sediment Issues by Maintenance Zone; Example Map**

The recommended route for conducting proactive maintenance is based on the City's current 12 Maintenance Zones, which were presented in Figure 2. This system seems to be the best course of action because these zones are already established and used by others. Since there are 12 maintenance zones, the proposed approach focuses on one zone per month, with similar tasks addressed on the same day (e.g., erosion control, vegetation/debris removal, sediment removal). The order of the tasks will be assigned based on priority levels.

1. First, address all "Elevated" Work Orders, moving from zone to zone until all are completed.
2. Next, move to "Priority" Work Orders and follow the same procedure.
3. Finally, address the "Routine" Work Orders. If one zone has been complete for the prioritization level being addressed, skip this zone until all of the same priority are completed.

Table 3 shows that the maintenance zones are not evenly divided by area or number of structures. The percentage of total City area ranges in area from 2.4% – 20.6%, and the number of structures ranges from 2.9% – 16.0%. Table 3 also highlights that between 35% and 60% of structures in every maintenance zone, 45% in total, will have a work order created for some type of maintenance or further inspection. Approximately 70% of these work orders are routine issues and not urgent. The work orders classified as "elevated" and "priority" status that are in need of more urgent maintenance based on the results of the condition assessment are described below.

- Total Maintenance Work Orders:
  - 1,675 Work Orders (45.5% of all structures)
- Elevated:
  - 154 Work Orders (9.2% of Work Orders)
  - Sediment, 76-100%, 154 issues
- Priority:
  - 362 Work Orders (21.6% of Work Orders)
  - Sediment, 51-75%, 156 issues
  - Bank Erosion, Severe, 44 issues
  - Channel Erosion, Severe, 14 issues
  - Structural Erosion, Severe, 111 issues
  - Vegetation, Overgrown Flow, Severe, 107 issues
  - As a note, some sites have multiple "priority" issues or some were addressed at sites with "elevated" status.
- Routine:
  - 885 Work Orders
- Other (Could Not Evaluate/Locate; Other Structural Issues; Notes in Line Maintenance Category)
  - 274 Work Orders (16.4%)

**Table 3: Summary of Maintenance Zones and Subsequent Maintenance Needs**

Maintenance Zone #	Total Area (Acres)	Percentage of Total	Total Structures	Percentage of Total	Structures in need of Maintenance	Percentage in need of Maintenance
1	655	7.1%	254	6.9%	124	49%
2	642	7.0%	298	8.1%	104	35%
3	240	2.6%	182	4.9%	95	52%
4	225	2.4%	246	6.7%	99	40%
5	1,897	20.6%	389	10.6%	197	51%
6	1,258	13.6%	410	11.1%	192	47%
7	525	5.7%	245	6.7%	146	60%
8	800	8.7%	589	16.0%	261	44%
9	1,302	14.1%	371	10.1%	153	41%
10	884	9.6%	317	8.6%	129	41%
11	340	3.7%	274	7.4%	127	46%
12	454	4.9%	108	2.9%	48	44%
<b>Total</b>	<b>9,222</b>		<b>3,683</b>		<b>1,675</b>	<b>45%</b>

In order to account for the differences in maintenance zone area, the data was normalized by dividing the number of structures with an issue by the total number of structures in the maintenance zone. The resulting rankings in Table 4 show which maintenance zone is more or less concentrated with a specific issue. A few interesting results from Table 3 include:

- The maintenance zones with the three highest percentages of structures having sediment and vegetation issues are both 1, 6, and 7.
- The maintenance zones with the four highest percentages of structures having bank erosion and structural erosion are both 3, 10, 11, and 12.

**Table 4: Rank of Percentage of Structures in Need of Maintenance, per Maintenance Zone**

Maintenance Zone	Sediment	Bank Erosion	Channel Erosion	Structural Erosion	Vegetation	Debris	Total
1	1	6	12	12	3	6	<b>141</b>
2	9	8	3	9	6	10	<b>135</b>
3	7	2	1	4	11	1	<b>116</b>
4	4	12	6	10	9	2	<b>120</b>
5	5	10	10	5	7	3	<b>217</b>
6	3	9	9	11	1	11	<b>228</b>
7	2	7	2	7	2	5	<b>175</b>
8	6	11	11	8	4	9	<b>272</b>
9	11	5	4	6	5	8	<b>183</b>
10	10	3	7	3	10	7	<b>165</b>
11	12	4	8	1	12	12	<b>153</b>
12	8	1	5	2	8	4	<b>70</b>
<b>Total Issues</b>	<b>638</b>	<b>228</b>	<b>50</b>	<b>523</b>	<b>174</b>	<b>362</b>	<b>1,975</b>

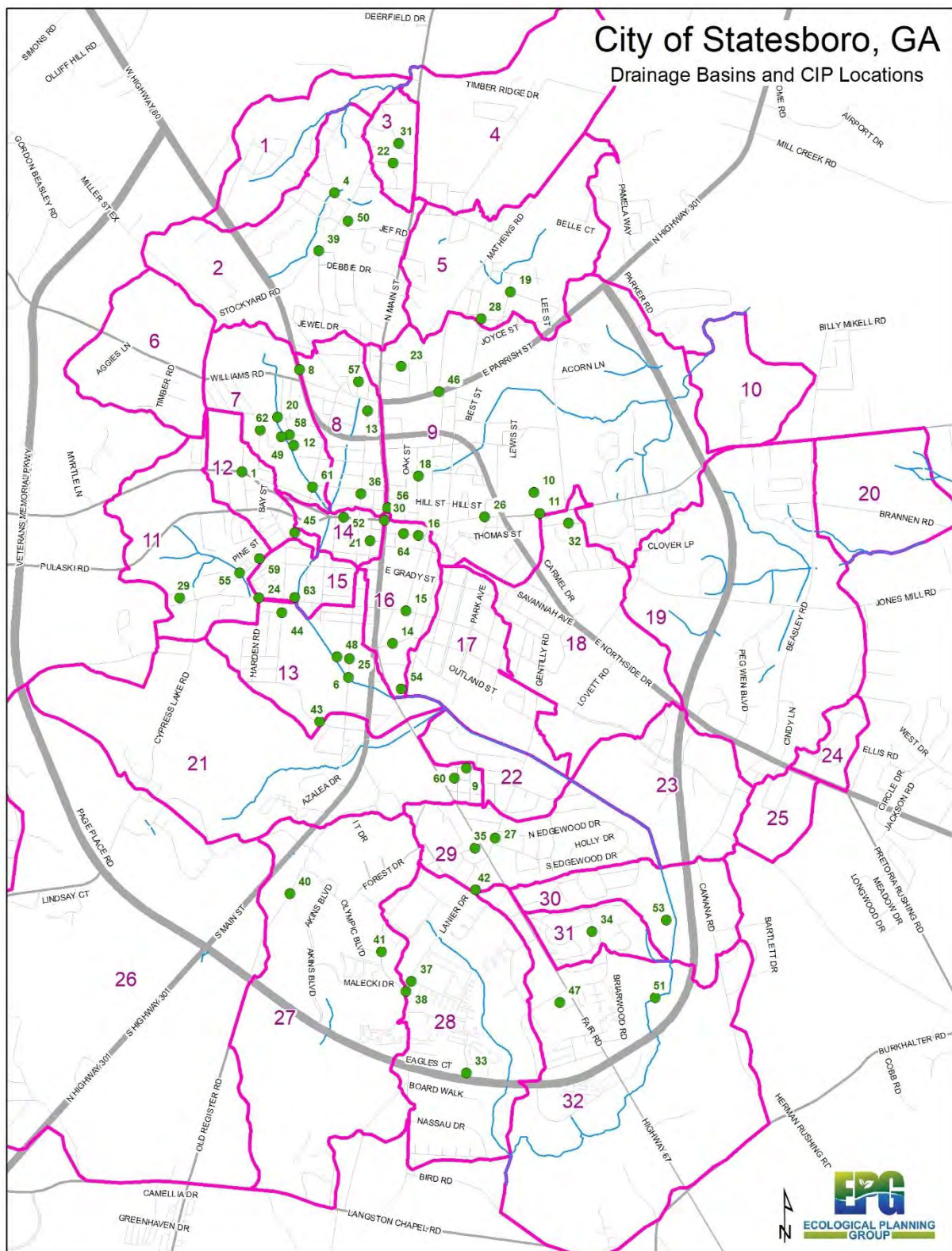
#### ***Task 4: Capital Improvement Program (CIP) Update & Prioritization Analysis***

The Project Team worked with the City to review the City's CIP projects based on the results of the inventory and condition assessment. The Project Team reviewed the currently identified drainage capital projects, expanded 3 CIP projects, and added 12 new CIP projects. The cost estimates for all of the incomplete CIP projects were also updated for year 2017. This information is included in the Revised CIP Project Descriptions document. The Project Team visited field sites with City staff to assess CIP projects, including a few sites already identified by the City. The Project Team utilized the ranking system provided in the City's CIP to help assess the projects for implementation. They were all assigned a CIP Index (rating), and the projects were then ranked.

Based on the updated CIP, EPG worked to update the basin prioritization. The watershed delineations were revised based on 1-ft contours and the drainage system GIS inventory. The revised watershed map is presented in Figure 3.

Table 5 presents the 20 sub-basins that contain a CIP project. The higher priority basins for CIP projects are bolded and highlighted in the table. A brief reasoning for their selection is also provided in the bulleted list. The factors considered were individual ranks of CIP projects, collective ranks for sub-basins with multiple projects, cost of projects that were ranked high, density of CIP projects per sub-basin area, and location within the watershed (higher up in watershed was given priority).

- MLK West ranks 2<sup>nd</sup> in CIP projects and 3<sup>rd</sup> in density of projects per area – 6 CIPs for 242 acres. It also includes 3 CIP projects ranked in the top 15, including #2 and #4. The two highest rated projects are relatively large – \$256,908 and \$150,000. This basin is at the top of the watershed.
- Lake Sal Area has 3 CIP projects all ranked in the top 15. The 15<sup>th</sup> ranked project is proposed regional detention. This basin is at the top of the watershed.
- Johnson has both of its CIPs ranked in the top 10, totaling \$344,274. The project ranked 10<sup>th</sup> is large – \$277,968. It is near the top of the watershed.
- Cromartie has 5 CIP projects, including a relatively large project (\$190,362) that is ranked 5<sup>th</sup> overall.
- South Downtown East ranks tied for 3<sup>rd</sup> in CIP projects and 2<sup>nd</sup> in density of projects per area – 5 CIPs for 166 acres. It is near the top of the watershed.



**Figure 3: Watershed Map**

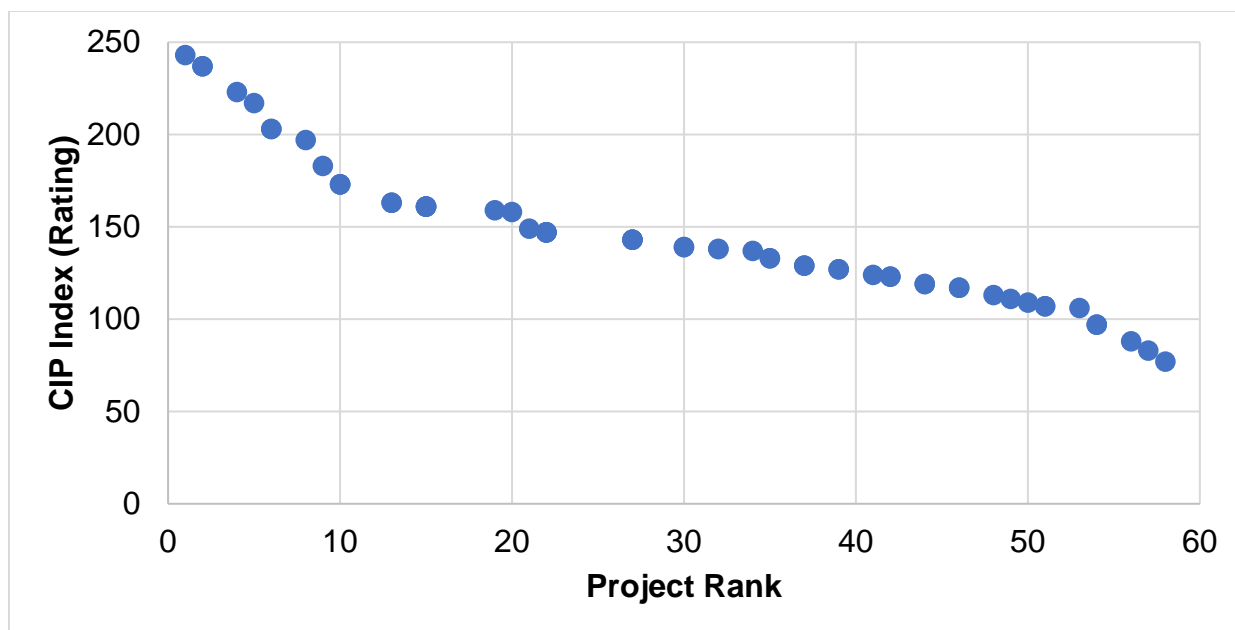
**Table 5: List of Sub-Basins with CIP Projects**

Sub-Basin	Sub-Basin Name	Drainage Area (acres)	No. CIP Projects	CIP Project Cost	Ranks	Total Score
<b>2</b>	<b>Lake Sal Area</b>	<b>624</b>	<b>3</b>	<b>\$ 425,686</b>	<b>2, 8, 15</b>	<b>595</b>
3	Rogers Pond Area	81	2	\$ 53,125	30, 56	227
5	Whitesville	425	2	\$ 55,958	32, 44	257
<b>7</b>	<b>MLK West</b>	<b>242</b>	<b>6</b>	<b>\$ 1,022,007</b>	<b>2, 4, 15, 27, 42, 46</b>	<b>1,004</b>
8	MLK East	189	4	\$ 504,854	46, 49, 50, 54	434
9	Mill Creek Tributaries	1263	7	\$ 279,218	6, 21, 27, 32, 35, 54, 58	940
11	Westside	343	4	\$ 79,118	1, 13, 30, 44	664
<b>12</b>	<b>Johnson</b>	<b>124</b>	<b>2</b>	<b>\$ 344,274</b>	<b>6, 10</b>	<b>376</b>
<b>13</b>	<b>Cromartie</b>	<b>305</b>	<b>5</b>	<b>\$ 373,687</b>	<b>5, 22, 27, 57, N/A</b>	<b>590</b>
14	South Downtown Upper	70	3	\$ 344,015	20, 22, 53	411
15	South Downtown Lower	95	1	\$ 73,390	10	173
<b>16</b>	<b>South Downtown East</b>	<b>166</b>	<b>5</b>	<b>\$ 288,700</b>	<b>15, 22, 22, 22, 48</b>	<b>715</b>
18	Mall/High School	482	1	\$ 65,245	51	107
21	Beautiful Eagle Creek	820	2	\$ 123,338	10, 34	310
27	GSU Campus	935	3	\$ 124,046	13, 35, 41	420
28	Southside	591	2	\$ 51,703	37, 39	256
29	Edgewood	294	3	\$ 336,344	9, 15, 42	467
30	Woodlawn Terrace Upper	243	1	\$ 410,100	39	127
31	Woodlawn Terrace Lower	103	1	\$ 22,638	37	129
32	Little Lotts Creek	1072	2	\$ 1,030,940	19, 51	266
<b>Total</b>			<b>59</b>	<b>\$ 6,008,386</b>		<b>8,468</b>

*Note: Bold and yellow highlighted cells represent higher priority basins for CIP projects*

In order to put project ranks in perspective, the CIP Index (rating) was plotted against the total rank in Figure 4. A few important results are summarized below.

- The relationship is not linear.
- There is a more rapid drop in CIP Index (rating) at the high end and low end of the ranked projects.
- The top 10 have an Index from 173 – 243, and then the CIP Index levels off after the Top 10.
- The Index for projects ranked 13<sup>th</sup> to 53<sup>rd</sup> decrease gradually, and then the Index drops rapidly from 106 at 53<sup>rd</sup> to 77 at 58<sup>th</sup>.



**Figure 4: CIP Index (Rating) versus Project Rank**

The top 10 highest rated CIP projects (including ties) are listed in Table 6. As a note, 7 of the projects on this list are in the higher priority sub-basins, including all of the top 8, except for two projects that are less than \$10,000.

**Table 6: Top 10 Highest Rated CIP Projects**

Rank	CIP Index	Project ID Number	Project Type	Estimated Cost	Sub-Basin
1	243	59	O&M	\$2,640	11, Westside
T2	237	4	Drainage	\$44,000	<b>2, Lake Sal Area</b>
T2	237	61	Drainage	\$150,000	<b>7, MLK West</b>
4	223	62	Drainage	\$256,908	<b>7, MLK West</b>
5	217	6	Drainage	\$190,362	<b>13, Cromartie</b>
T6	203	56	Drainage	\$8,965	9, Mill Creek Tributaries
T6	203	45	Drainage	\$66,306	<b>12, Johnson</b>
8	197	39	O&M	\$43,470	<b>2, Lake Sal Area</b>
9	183	27	O&M	\$59,284	29, Edgewood
T10	173	63	O&M	\$73,390	15, South Downtown Lower
T10	173	60	Drainage	\$8,250	21, Beautiful Eagle Creek
T10	173	1	Drainage	\$277,968	<b>12, Johnson</b>

Twelve sub-basins were delineated that do not contain a CIP project. Most of these span the City limits, and they were recently added to ensure all of the City's stormwater infrastructure would be captured in a watershed. These sub-basins are described in Table 7, and the eight boundary watersheds are noted.

**Table 7: List of Other Sub-Basins Without CIP Projects.**

<b>Project ID Number</b>	<b>Sub-Basin Name</b>	<b>Area (acres)</b>	<b>Boundary Watershed</b>
1	Landfill	217	Yes
4	Francis Scott	492	Yes
6	Williams West	273	Yes
10	Oak Crest	182	Yes
17	Lumberyard	269	No
19	Eastside	944	No
20	Mill Creek Regional Park	255	Yes
22	Wendwood	129	No
23	Statesboro Crossing	301	No
24	Cardinal	60	Yes
25	Sandy Way	89	Yes
26	Westbrooke	2,045	Yes

EPG also worked with the City to identify which sub-basins will be initially modeled and master planned as part of Task Order 02. The first priority for modeling is MLK West (sub-basin #7), and the second priority is Lake Sal Area (sub-basin #2). These were selected because they are in the top of the watershed, and work in the upper portion of the watershed will have a positive impact on downstream conditions. These are among the highest ranked sub-basins on the CIP prioritization list, described above. The third priority is to continue south down the main drainage basin to South Downtown Upper (sub-basin #14) because there is an ongoing detention project in this basin, and it has a high density of CIP projects (3 projects in a 70-acre sub-basin). However, in order to model conditions in this basin, MLK East (sub-basin #8) would also need to be modeled because it has flow contributing to the main channel.

#### ***Task 5: Project Management***

The EPG Project Team attended a kick-off meeting with City staff and continued to meet with the City periodically throughout the course of this project. EPG staff also communicated with and updated the City on the progress of this project through emails and calls. Table 8 summarizes the primary quarterly meetings with City of Statesboro, EPG, and Parker Engineering.

**Table 8: Summary of Quarterly Project Team Update Meetings.**

<b>Meeting #</b>	<b>Date</b>	<b>Brief Description</b>
<b>1</b>	<b>10/24/2016</b>	<b>Kickoff Meeting</b> <ul style="list-style-type: none"> <li>• Introductions and outline of plan and schedule.</li> </ul>
<b>2</b>	<b>1/9/2017</b>	<b>Condition Assessment and Inventory Review</b> <ul style="list-style-type: none"> <li>• Review first 20% of condition assessment data, review work completed by City crews, discuss consolidation and QA/QC.</li> <li>• Reviewed summary of Work Order history.</li> <li>• Discussed plan for CIP project update.</li> </ul>

<b>Meeting #</b>	<b>Date</b>	<b>Brief Description</b>
<b>3</b>	<b>4/3/2017</b>	<b>Updates for CIP Plan and Maintenance SOP</b> <ul style="list-style-type: none"> <li>• Discussed coordination to add new CIPs identified from condition assessment and the City's observations of ongoing issues.</li> <li>• Reviewed preliminary results from condition assessment and presented plan for using these data for creating work orders for proactive maintenance.</li> </ul>
<b>4</b>	<b>6/19/2017</b>	<b>Updates for CIP Plan and Maintenance SOP</b> <ul style="list-style-type: none"> <li>• The 12 new CIPs and 3 updated CIPs were presented.</li> <li>• Maintenance Work Program and SOP were outlined, and maps overlaid on the City's maintenance zones were presented with various maintenance issues.</li> <li>• Initial watershed delineations were presented.</li> </ul>
<b>5</b>	<b>9/25/2017</b>	<b>Presentation of Final Products from Task Order 01</b> <ul style="list-style-type: none"> <li>• Map with watershed delineations</li> <li>• Map with prioritized watersheds based on CIP list and maintenance issues to use for Task Order 02 (H&amp;H modeling)</li> <li>• Maintenance Work Program and SOP presented for City review.</li> </ul>

## APPENDIX A - Maintenance Work Program and Standard Operating Procedures

**City of Statesboro**  
**Stormwater Masterplan**

Maintenance Work Program and Standard Operating Procedures

*October 2017*

Prepared by:  
Ecological Planning Group



## Table of Contents

1. Introduction .....	1
2. Review Existing Work Order System & Phone Initiated Work Orders.....	1
3. Proactive Maintenance Plan .....	3
3.1. Prioritization.....	3
3.2. Schedule/Route.....	5
3.3. Summary of Condition Assessment Results and Proactive Maintenance Needs .....	6
4. Extent of Service .....	10
5. Considerations for Phase II NPDES Requirements:.....	10
6. Other Recommendations:.....	11
Supplement A: Review Existing Work Order System (Detailed Summary) .....	12
Supplement B: One-Page Summary of Maintenance Work Program.....	15
Supplement C: Detailed Summary of Work Orders by Zone and Maintenance Issue .....	16

## 1. Introduction

A drainage system GIS inventory and condition assessment was performed for all publicly-owned drainage infrastructure throughout the City. A map-grade inventory was conducted by visiting each stormwater structure in the field and identifying its spatial location on an x/y coordinate system using a GPS-enabled tablet or smart phone. The following information was collected as part of the comprehensive assessment: Structure Type; Structure Material; Pipe Size; Pipe Material; Structural Damage; presence of Sediment, Debris, Dry Weather Flows, Water Quality Issues, Erosion, Vegetation; and Line Maintenance Need. This information, along with photographs and notes are included in the GIS database.

Upon completion of the GIS inventory and condition assessment, EPG reviewed the maintenance and structural issues identified and developed a maintenance work program, which is described herein. The work program includes projects that will be assigned to one of three major categories:

- 1) Operational maintenance issues, such as erosion control or sediment, debris, or vegetation removal
- 2) Capital maintenance issues, structures that require a more expensive solution, such as replacement of a broken manhole cover
- 3) Capital improvement issues, major drainage issues that require an engineered solution.

Categories 1 and 2 can be addressed by the City's stormwater crews. Category 3 projects will be addressed as part of the Capital Improvement Program. This document addresses scheduling and prioritizing maintenance issues identified within Category 1.

EPG worked with the City to develop a standard operating procedure (SOP) for the drainage crews to conduct routine and proactive maintenance of the drainage system. This is detailed herein and will include a description of the City's extent of service (i.e. where the crews will and will not work), a description of the various maintenance services they provide, and a schedule for providing those services. As part of this SOP, EPG assessed the City's current drainage system maintenance zones and schedules. The operational maintenance issues, previously identified as Category 1, should be reduced as the City crews become more proactive in their maintenance procedures. The City will continue responding to phone call initiated work orders shortly after they are received. Proactive maintenance, however, should reduce the volume of phone call complaints over time.

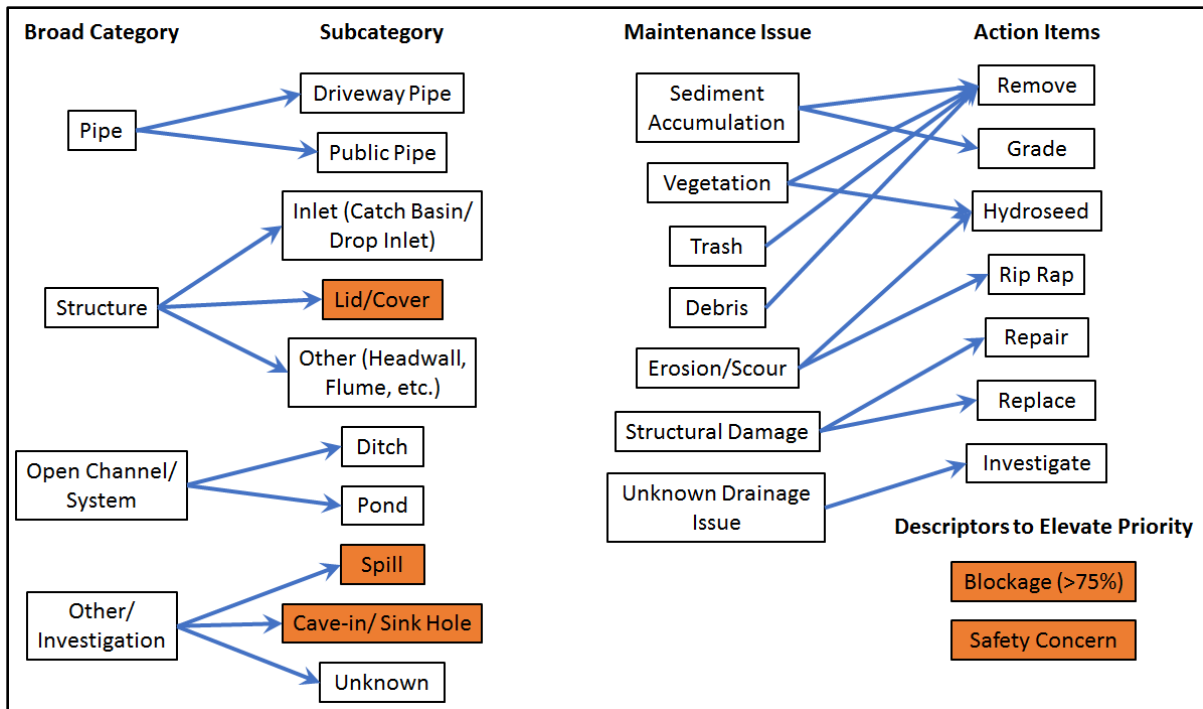
## 2. Review Existing Work Order System & Phone Initiated Work Orders

The City's current work program was evaluated by analyzing the existing work order database. Geographically, the only obvious pattern of stormwater issues was that there were more stormwater complaints in the urbanized areas of the City. A total of 259 Work Orders were completed over 19 months from May 19, 2015, to December 20, 2016. The work orders were assigned three priority levels – Routine, Priority, and Emergency. The total work orders by level were 244 Routine, 14 Priority, and 1 Emergency. As of December 2, 2016, there were still 24 active work orders, all of which were routine. Monthly work order frequency increased dramatically starting in March 2016. This was due to a new system and updated protocols. After March 1, 2016, the tracking system was used more frequently, so the analysis examined Pre-March 2016 and Post-March 2016 work orders.

The City's response time to work orders has improved dramatically since March 2016. The new work order system and hiring of a dedicated crew were likely responsible for this improvement. Prior to March 2016, there were 28 total work orders, and the average completion time was 100 days. The median time (50<sup>th</sup> percentile) was 59 days, meaning that half of the work orders took longer than two months to address. Since March 2016, there were 231 work orders. It was observed that 98 work orders were completed on the same day they were initiated. Many of these were created and addressed from already deployed field crews. Of the 123 work orders that took at least one day to complete, the average was 17 days, and the median response time was 8 days. This means that half of the work orders that were not completed on the day that they are initiated were completed within a week. Overall, the fraction of Work Orders taking longer than one day, was 50-58% for all Categories except "Inlet/Grate Missing/Broken" which was 17% (1 out of 6). For the 14 Priority work orders, only four took longer than one day, but three were completed within the first week. The 1 Emergency Work Order was completed in less than one day.

The current work order system in HiperWeb, as of December 2016, used 36 unique task codes. The top 8 comprised 70% of all work orders. Upon inspecting the task code and task description naming in detail, many seemed repetitive and the actual issue and the action were unclear. Since many of the task codes seemed somewhat similar, they were grouped together based on type/location of activity. These are summarized in Supplement A. In addition, time to complete work orders based on these groups is also summarized. In general, work orders that indicated urgency or public safety concerns were addressed immediately. These included: "inlet/grate broken/missing," "sinkholes," and "spill response." As another example of code names that resulted in more rapid completion were for "ditches." Work orders starting with "blockage in ditch..." were completed more rapidly than ones starting with "clean out ditch..."

Following a meeting in June 2017, Statesboro's consultant that manages the HiperWeb program was working with the City to condense the number of task codes. EPG developed a flow chart to assist with the staff answering the phone complaints so that they could more easily categorize the type of infrastructure in need of maintenance and what the potential issue/action step needed is. The flow chart was developed because the current list of task codes seemed repetitive and unclear. Not all Maintenance Issues/Action Items apply to each Subcategory, so lines are provided to restrict options to appropriate fields.



**Figure 1: Flowchart for Determining Maintenance Need and Action Items**

*Note: Orange shading notes selections to elevate priority level to “Emergency.”*

Based on notes in the comments section of the work order database, the distances (lengths) addressed and maintained can be summarized. This task requires inspecting every work order individually. One recommendation is to add new columns/fields in the work order database for: (1) “length maintained” and (2) “inlets maintained.” If Statesboro’s population reaches the threshold for becoming a Phase II NPDES MS4 permittee at the next Census, this step will simplify summarizing these results for the required annual reporting.

### 3. Proactive Maintenance Plan

The City is planning to integrate HiperWeb with its drainage GIS database and work order system for the stormwater program. The capability of HiperWeb and the GIS database is still being explored for being forward/backward compatible (i.e., updates to HiperWeb will be reflected in the GIS database and vice versa). For now, EPG created a field in the existing GIS database that identifies if maintenance is needed based on the condition assessment. A one-page summary of the Maintenance Work Program is outlined in Supplement B. The sections below provide reasoning for why specific issues were prioritized and how the schedule and route were determined.

#### 3.1. Prioritization

Similar to the current Work Order system, three priority levels were defined. The highest priority level for proactive maintenance is “Elevated.” The second priority level is “Priority,” and the third priority level is “Routine.” Table 1 summarizes the conditions for assigning and prioritizing proactive maintenance work orders based on the condition assessment.

**Table 1: Method to Assign and Prioritize Maintenance Based on Condition Assessment**

<b>Field</b> <i>Selections</i>	<b>Work Order</b>	<b>Level of Urgency</b>	<b>Field</b> <i>Selections</i>	<b>Work Order</b>	<b>Level of Urgency</b>
<b>Sediment</b>			<b>Bank Erosion</b>		
<i>0-25%</i>	No		<i>None</i>	No	
<i>26-50%</i>	Yes	Routine	<i>Minor</i>	No	
<i>51-75%</i>	Yes	Priority	<i>Moderate</i>	Yes	Routine
<i>76-100%</i>	Yes	Elevated	<i>Severe</i>	Yes	Priority
<b>Debris</b>			<b>Channel Erosion</b>		
<i>Not Present</i>	No		<i>None</i>	No	
<i>Non-Problematic</i>	No		<i>Minor</i>	No	
<i>Problematic</i>	Yes	Routine	<i>Moderate</i>	Yes	Routine
<i>Habitual</i>	Yes	Routine	<i>Severe</i>	Yes	Priority
<b>Vegetation</b>			<b>Structural Erosion</b>		
<i>Natural</i>	No		<i>None</i>	No	
<i>Lacking</i>	Yes	Routine	<i>Minor</i>	No	
<i>Overgrown Access</i>	Yes	Routine	<i>Moderate</i>	Yes	Routine
<i>Overgrown Flow</i>	Yes	Priority	<i>Severe</i>	Yes	Priority
<b>Structural Damage<sup>1</sup></b>			<b>Evaluation Status<sup>2</sup></b>		
<i>1. No Damage</i>	No		<i>Complete</i>	No	
<i>2. Low Priority, Minor Damage Monitor Condition</i>	No		<i>Implied Non-Located</i>	Yes	Investigate
<i>3. Damage Requiring Repair</i>	Yes	CMP/CIP List	<i>Could Not Open</i>	Yes	Investigate
<i>4. High Priority, Major Damage</i>	Yes	CMP/CIP List	<i>Could Not Evaluate</i>	Yes	Investigate
<i>5. Severe Damage or Safety Issue Requiring Immediate Action</i>	Yes	CMP/CIP List			

<sup>1</sup> Assets with structural damage were investigated as part of the capital maintenance and capital improvement program.

<sup>2</sup> For incomplete evaluations, a Work Order was added to re-evaluate and investigate further.

Only one condition was assigned the highest priority level of “Elevated”: 76-100% full of sediment. When sediment is greater than 75% full, the flow area is restricted by at least 81%. While there may be some examples where vegetation, erosion, or debris issues are more problematic to flow and the structure’s integrity, this level of sediment will consistently result in significant flow restriction; therefore, this issue was selected to be addressed first.

The second priority level, “Priority,” has 5 conditions. These include: (1) 51-75% sediment, (2) vegetation overgrown flow, (3) severe bank erosion, (4) severe channel erosion, and (5) severe structural erosion. The suggested order to address these are as they are written. When a pipe is 51-75% full of sediment, flow is restricted by 50-81%. The next problem to address is overgrown vegetation that restricts flow. These were both set higher than erosion because of the connotation of significant flow restriction. Finally, any of the three erosion issues can be addressed next. These were grouped and assigned in the order proposed so that similar tasks could be performed at once (e.g., sediment removal, vegetation removal, and erosion control). The intention was to limit multiple pieces of equipment being needed on a given day. However, it is recognized that some sites will have multiple issues to address, so they will require more time and additional equipment.

The third priority level, “Routine,” has 8 conditions. These include: (1) problematic debris, (2) habitual debris, (3) vegetation overgrown access, (4) vegetation lacking, (5) moderate bank erosion, (6) moderate channel erosion, (7) moderate structural erosion, and (8) 26-50% sediment. The suggested order to address these are as they are written. Again, this allows similar tasks to be addressed at once. First, debris removal; next, vegetation removal. This will be followed by revegetating and erosion control, and sediment removal.

It is recommended that if at any time, the crews are near a structure that has an incomplete evaluation, they should re-attempt to complete it. When resources are available, crews should try to video stormwater lines to determine missing connections and address incomplete inspections. It is suggested to attempt to spend at least one day per quarter trying to investigate incomplete inspections. However, some of these sites might not be able to be completed until maintenance activities, such as sediment removal, are completed.

### **3.2. *Schedule/Route***

Across the City, the recommended route for conducting proactive maintenance is based on the City’s current 12 “Infrastructure Zones.” Utilizing this system is the best course of action because these zones are already established and used by others. Since there are 12 zones, the proposed approach focuses on one zone per month, with similar tasks addressed on the same day (e.g., erosion control, vegetation/debris removal, sediment removal). The order of the tasks will be assigned based on priority levels.

1. First, address all “Elevated” work orders, moving from zone to zone until all are completed.
  - Note: once a zone is complete, it can be skipped in future cycles until all work orders are complete with “Elevated” prioritization.
2. Next, move to “Priority” work orders and follow the same procedure.
  - Note: once a zone is complete, it can be skipped in future cycles until all work orders are complete with “Priority” prioritization.
3. Finally, address the “Routine” work orders. If one zone has been complete for the prioritization level being addressed, skip this zone until all of the same priority are completed.

Within a zone, the proposed route will be to address the highest priority issues first. When maintaining an individual structure (inlet, junction, outlet), any maintenance issues, regardless of prioritization, for connected sections of pipe (e.g., pipe with one inlet and outlet or collection of pipes joined by junctions and other inlets) should be addressed concurrently. This will ensure that maintenance activities will be addressing any underlying issues within the system before moving onto the next system or individual pipe. For example, erosion or debris issues could be contributing to a sediment problem. By examining all connected inlets and the outlet while in the area and removing the erosion/debris issue, the sediment problem at the opposite end of the pipe will not be perpetuated. This process of addressing the opposite end of the pipe or other inlets within a connected pipe network should be followed as crews move through each of the three prioritization levels.

Since sediment was identified as the maintenance issue used to initially guide the route selection for “Elevated” and “Priority” work orders, the type of structures with these maintenance issues was investigated. A summary of structure type with sediment issues is presented in Table 2. Approximately three-quarters of the sediment issues were at structures typical of an “individual-pipe.” It is suggested to address these first because with only one inlet and outlet, there should be fewer instances of multiple issues to address at once.

**Table 2: Structure Type by Sediment Issue**

Structure Type	Sediment Level		
	76-100%	51-75%	26-50%
End of Pipe	89	79	143
Flared End Section	19	27	59
Headwall	4	14	24
Box Culvert	0	0	9
<i>Catch Basin</i>	25	17	61
<i>Inlet (drop, curb, yard)</i>	14	15	27
<i>Junction</i>	2	3	4
Other	1	1	1
<b>"Individual Pipe"</b>	<b>112 (73%)</b>	<b>120 (77%)</b>	<b>235 (72%)</b>
<b>"Drainage System"</b>	<b>41 (27%)</b>	<b>35 (22%)</b>	<b>92 (28%)</b>

### 3.3. Summary of Condition Assessment Results and Proactive Maintenance Needs

This section provides a summary of the condition assessment results and the frequency of maintenance issues by “Infrastructure Zone” and specific issue. Table 3 shows that the “Infrastructure Zones” are not evenly divided by area or number of structures. The percentage of total City area ranges in area from 2.4% – 20.6%, and the number of structures ranges from 2.9% – 16.0%. Table 3 also highlights that between 35% and 60% of structures in every maintenance zone, 45% in total, will have a work order created for some type of maintenance or further inspection. Approximately 70% of these work orders are routine issues and not urgent. The specific issues for work orders classified as “elevated” and “priority” status that are in need of more urgent maintenance are described below.

- Total Maintenance Work Orders:
  - 1,675 Work Orders (45.5% of all structures)
- Elevated:
  - 154 Work Orders (9.2% of Work Orders)
  - Sediment, 76-100%, 154 issues
- Priority:
  - 362 Work Orders (21.6% of Work Orders)
  - Sediment, 51-75%, 156 issues
  - Bank Erosion, Severe, 44 issues
  - Channel Erosion, Severe, 14 issues
  - Structural Erosion, Severe, 111 issues
  - Vegetation, Overgrown Flow, Severe, 107 issues
  - As a note, some sites have multiple “priority” issues or some were addressed at sites with “elevated” status.
- Routine:
  - 885 Work Orders
- Other (Could Not Evaluate/Locate; Structural Issues; Notes in Line Maint. Category)
  - 274 Work Orders (16.4%)

**Table 3: Summary of Maintenance Zones and Subsequent Maintenance Needs**

Infrastructure Zone #	Total Area (Acres)	Percentage of Total	Total Structures	Percentage of Total	Structures in need of Maintenance	Percentage in need of Maintenance
1	655	7.1%	254	6.9%	124	49%
2	642	7.0%	298	8.1%	104	35%
3	240	2.6%	182	4.9%	95	52%
4	225	2.4%	246	6.7%	99	40%
5	1,897	20.6%	389	10.6%	197	51%
6	1,258	13.6%	410	11.1%	192	47%
7	525	5.7%	245	6.7%	146	60%
8	800	8.7%	589	16.0%	261	44%
9	1,302	14.1%	371	10.1%	153	41%
10	884	9.6%	317	8.6%	129	41%
11	340	3.7%	274	7.4%	127	46%
12	454	4.9%	108	2.9%	48	44%
<b>Total</b>	<b>9,222</b>		<b>3,683</b>		<b>1,675</b>	<b>45%</b>

In order to account for the differences in infrastructure zone area, the data was normalized by dividing the number of structures with an issue by the total number of structures in the zone. These include elevated, priority, and routine issues combined. The resulting rankings in Table 4 show the zones that are more concentrated with a specific issue. A few interesting results from Table 4 include:

- The zones with the three highest percentages of structures having sediment and vegetation issues are both 1, 6, and 7.
- The zones with the four highest percentages of structures having bank erosion and structural erosion are both 3, 10, 11, and 12.

**Table 4: Rank of Percentage of Structures in Need of Maintenance, per Maintenance Zone**

Infrastructure Zone	Sediment	Bank Erosion	Channel Erosion	Structural Erosion	Vegetation	Debris	Total Issues
1	1	6	12	12	3	6	141
2	9	8	3	9	6	10	135
3	7	2	1	4	11	1	116
4	4	12	6	10	9	2	120
5	5	10	10	5	7	3	217
6	3	9	9	11	1	11	228
7	2	7	2	7	2	5	175
8	6	11	11	8	4	9	272
9	11	5	4	6	5	8	183
10	10	3	7	3	10	7	165
11	12	4	8	1	12	12	153
12	8	1	5	2	8	4	70
<b>Total Issues</b>	<b>638</b>	<b>228</b>	<b>50</b>	<b>523</b>	<b>174</b>	<b>362</b>	<b>1,975</b>

The summary statistics for maintenance issues for each category that creates a work order is described in Table 5. Sediment was the only issue identified as “Elevated,” and it was the most common “Priority” item, so it will be used to guide maintenance activities.

**Table 5: Summary Statistics for Maintenance Issues**

Condition	Prioritization Level	Results by Infrastructure Zone		Total Issues
		Range	Median (50 <sup>th</sup> Percentile)	
Sediment 76-100%	Elevated	2 – 25	14	154
Sediment 51-75%	Priority	3 – 24	15	156
Bank Erosion Severe	Priority	0 – 6	4	44
Channel Erosion Severe	Priority	0 – 3	1	14
Structural Erosion Severe	Priority	1 – 20	7	111
Vegetation, Overgrown Flow	Priority	1 – 32	6	107
Sediment 26-50%	Routine	6 – 68	26	328
Bank Erosion Moderate	Routine	3 – 26	16	184
Channel Erosion Moderate	Routine	1 – 6	3	36
Structural Erosion Moderate	Routine	11 – 82	29	412
Vegetation, Overgrown Access	Routine	0 – 13	2	44
Vegetation Lacking	Routine	0 – 7	1	23
Debris Problematic	Routine	13 – 47	27	338
Debris Habitual	Routine	0 – 6	1	24

A summary of the prioritization is described below. Many structures have multiple issues, including issues with a lower prioritization level. “Elevated” priority is only classified for structures with 76-100% sediment. These 154 structures also include 14 “Priority” issues (1 bank

erosion, 2 structural erosion, and 11 vegetation) and 72 “Routine” issues. Once these 154 structures are maintained, at least 237 issues will be addressed.

A total of 432 “Priority” issues were identified, but there are only 362 work orders for “Priority” specific issues. In total 315 sites have 1 “Priority” issue, 38 sites have 2 “Priority” issues, 9 sites have 3 “Priority” issues, and 14 sites would have been addressed by an “Elevated” work order.

“Routine” issue-initiated work orders total 885. These include 697 sites with 1 issue, 166 sites with 2 issues, 21 sites with 3 issues, and 1 site with 4 issues. “Elevated” and “Priority” work orders would have addressed 294 “Routine” issues, 21% of all work orders. These include the following numbers of issues with the percentage of total issues represented in parentheses:

- 32 Sediment (10%)
- 50 Bank Erosion (27%)
- 11 Channel Erosion (31%)
- 37 Structural Erosion (9%)
- 11 Vegetation, Access (25%)
- 8 Vegetation, Lacking (35%)
- 132 Debris, Problematic (39%)
- 12 Debris, Habitual (50%)

Detailed summary tables for “elevated” and “priority” issues are provided in Supplement C. Supplement C also includes a summary table and map for each of the maintenance needs by “Infrastructure Zone.”

Some of the operational maintenance issues may be addressed with the capital maintenance projects or capital improvement projects. Table 6 summarizes sites with both structural damage and operational maintenance issues. The majority of the sites with structural damage also have some type of operational maintenance issue. Separate maps were created for capital maintenance projects and capital improvement projects, and these are included in other sections of this report. Tables describing the capital maintenance project sites and capital improvement projects are also provided.

**Table 6: Summary of Sites with Structural Damage and Other Maintenance Issues**

Category	Structural Damage Priority Level <sup>1</sup>		
	5	4	3
Elevated Work Order (WO)	1	2	2
Priority WO	2	21	32
Routine WO	1	3	43
Total Maintenance WO	4	26	77
Total Sites with Structural Damage	8	29	99
Structural damage sites with other maintenance needs	50%	90%	78%

<sup>1</sup> Structural priority level description listed in Table 1.

## 4. Extent of Service

There are three types of drainage infrastructure, in which the City's extent of service (EOS) is clarified: (1) State routes, (2) driveway culverts/pipes, and (3) ditches. Unless there is a major structural issue, drainage infrastructure on and along State routes are officially the City's responsibility for maintenance. The State should assist with repair for major structural issues.

Driveway pipes are ultimately the private property owner's responsibility. The City will provide installation services at the request of the property owner. The property owner must pay material costs. The City provides this service to private property to ensure that installation is done correctly and that the pipe does not adversely affect the City's drainage system within the ROW. The City also performs maintenance of driveway pipes, on an as needed basis, when malfunction of the driveway pipe could impact the City's public system.

The City had previously created a list of primary and secondary ditches. This list has been plotted on a large map for simplified usage by those unfamiliar with the descriptions, and an ID number was added to assist with identifying and tracking these ditches.

- Primary ditches are larger and are the responsibility of the Stormwater crews.
  - Maintenance of primary ditches will be done primarily in winter months to avoid active snake and alligator season.
  - Maintenance will include removal of debris and woody vegetation by mechanical means where possible and manual means where necessary. Grasses will be left for water quality purposes.
- Secondary ditches will become the responsibility of the Parks Department crews.
  - Secondary ditches will be maintained following the same schedule and method, but they are more likely to be maintained by manual means.

A few additional roadside drainage ditches were identified as part of the GIS inventory and condition assessment, and these will be the responsibility of the Stormwater crews.

## 5. Considerations for Phase II NPDES Requirements:

A benefit of establishing the stormwater utility in Statesboro is that it will help the City to be prepared for future Phase II NPDES requirements. The City has already taken steps to make the transition to meet NPDES requirements based on actions currently performed and expected future tasks. These tasks include:

- Create inventory of stormwater drainage structures
  - Status: Complete
- Inspect 20% of the City's drainage infrastructure per year; complete inspection in 5-year period.
  - Status: City is set up with GIS Inventory to track and complete this task easily. The City can use the same 5 zones that they established when conducting the condition assessment and focus on one zone per year.

- Maintenance of stormwater assets.
  - Status: The City is tracking this with their HiperWeb and GIS programs. The City is also planning to conduct proactive maintenance on issues that they identified in the current condition assessment. It is recommended to add a field in these programs to list specifically the length of pipe/ditch maintained and number of structures maintained for work orders that include multiple structures and pipes/ditches.

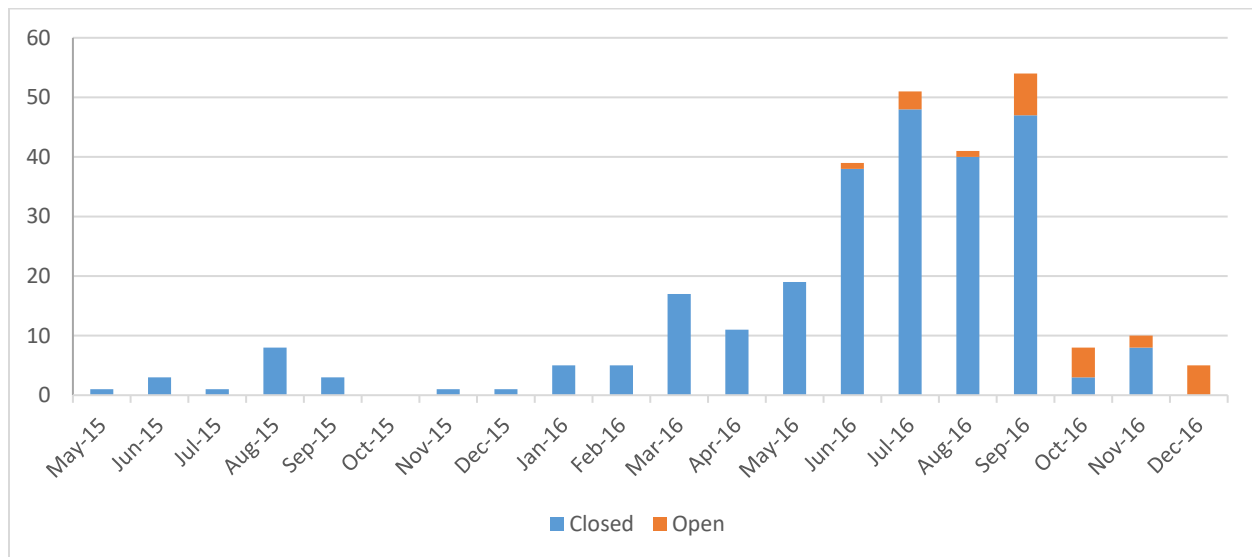
## 6. Other Recommendations:

Some other recommendations based on the analysis conducted as part of this project include:

- Add columns in work order system to track length maintained (for NPDES requirements).
- As sites are being maintained and re-inspected, missing connectivity of ditches and drain pipes should be drawn into the GIS database. There are still some areas that lack connectivity because structures were not able to be fully evaluated due to sediment or access issues.
- Additional GIS staff would benefit the Stormwater Division in order to keep the GIS database current, and to assist with creating maps for Stormwater crews to schedule maintenance plans. The GIS inventory represents a snapshot, so it is important to keep it active and updated.

## Supplement A: Review Existing Work Order System (Detailed Summary)

A summary of the monthly work order frequency for 259 completed Work Orders from May 19, 2015, to December 20, 2016, are described in the table below. The work orders were given three priority levels – Routine, Priority, and Emergency. The total work orders by level were 244 Routine, 14 Priority, and 1 Emergency. As of December 2, 2016, there were still 24 active work orders, all of which were routine.



### Monthly Work Order Frequency 5/9/2015 – 12/20/2016

As shown in this figure, monthly work order frequency increased dramatically starting in March 2016. This was due to a new system and updated protocols. After March 1, 2016, the tracking system was used more frequently, so the analysis below examines Pre-March 2016 and Post-March 2016 work orders.

The City's response time to work orders has improved dramatically. The new work order system and hiring of a dedicated crew were likely responsible for this improvement. Prior to March 2016, there were 28 total work orders, and the average completion time was 100 days. The median time (50<sup>th</sup> percentile) was 59 days, meaning that half of the work orders took longer than 2 months to address. Since March 2016, there were 231 work orders, with 98 listed as being completed on the same day it was initiated. These were from work crews adding a new work order while in the field addressing other items. Of the 123 work orders that took at least one day to complete, the average was 17 days, and the median response time was 8 days. This means that half of the work orders that are not completed on the day that they are initiated are now being completed within a week. As a note, 10 work orders had the completion date prior to initiation date, so these were excluded from the analysis.

The current work order system in HiperWeb, as of December 2016, had used 36 unique task codes. The top 10 are presented in the table below, and the top 8 comprised 70% of all work orders. Upon

inspecting the task code and task description naming in detail, many seemed repetitive and unclear what the actual issue was and the action needed.

#### Summary of Top 10 Most Common Task Codes

Rank	Task Code	Task Description	Total
1	STRW-7	DITCH/CULVERT MAINTENANCE	38
2	STRW-28	HYDRO SEED	34
3	STRW-24	CLEAN OUT DITCH - TRASH/DEBRIS	28
4	STRW-23	CLEAN OUT DITCH - SILTED IN	27
5	STRW-1	BLOCKAGE IN DITCH/CHANNEL/STREAM	26
6	STRW-22	CLEAR DRIVEWAY PIPE	23
7	STRW-21	STORMWATER CAVE-IN/INVESTIGATING/BARRICADE	12
8	PW5-02	CLEAN CATCHBASIN	11
9	MISC	Miscellaneous / Other	10
10	STRW-8	STORMWATER DRAINAGE ISSUE	8

MISC accounted for 1/3 of all Tasks prior to March 2016 (9 out of 28)

Since many of the task codes seemed somewhat similar, they were grouped together based on type/location of activity. The ones that did not fit into these groups were put into “other/miscellaneous/generic,” and these accounted for one-eighth of the work orders. The table below highlights the specific task codes associated with each group, and the number of work orders. Overall, 30.7% of work orders were related to ditches and another 13.4% were classified as the task code “ditch/culvert maintenance.” Hydro seed was third at 12.0%. Cleaning structures/pipes had 9.2% and repairing structures/pipes had 5.3%. Addressing driveway pipes, which are private structures, were identified in 9.2%.

#### Summary of Grouping Task Codes

Item/Category	No. Incidents	% of Total	Specific Task Codes
Ditches	87	30.7%	Clean out ditch (trash/debris or silted in), blockage in ditch/channel/stream, remove trash/debris/veg, regrade ditch
Ditches/Culverts	38	13.4%	Ditch/Culvert Maintenance
Hydro seed	34	12.0%	Hydro seed
Structures/Pipes - Clean	28	9.9%	Clean catchbasin, storm drain, and inlet; clogged storm drain; catch basin blocked
Driveway Pipes	26	9.2%	Clear or clean driveway pipe
Structures/Pipes - Repair	15	5.3%	Repair catchbasin, storm drain, stormwater pipe, drop inlet, and headwall; replace stormwater infrastructure; storm drain repair; raise inlet
Installation Pipe/Rock	9	3.2%	Install stormwater pipe, flume, and riprap
Inlet/Grate Missing/Broken	7	2.5%	Storm inlet missing/broken/fell in basin, storm manhole cover missing/loose
Other/Miscellaneous/Generic	39	13.8%	Stormwater cave-in/investigating/ barricade, miscellaneous/other, E&S Control, sinkhole, beaver control, detention pond maintenance, spill response

Based on notes in the text, the lengths addressed and maintained are summarized in the table below. The summary is based on work orders that provided length estimates in their notes.

Summary of Lengths Addressed/Maintained:

<b>Task</b>	<b>No. Work Orders with Lengths Listed</b>	<b>Total Length (ft)</b>	<b>Average (ft)</b>	<b>Median (ft)</b>	<b>Range (ft)</b>
Cleaned Pipe	23	2,241	97	80	16 – 413
Regraded Ditch	36	12,339	343	275	74 – 1,573
Hydro Seed	13	10,274	790	371	45 – 3,574
Hay and Seed	12	2,861	238	165	74 – 829

More detail is provided below for the time to complete work orders based on the condensed categories. Only 1 out of 6 work orders regarding “inlet/grate broken/missing” was not completed immediately. Since these are likely emergency situations because of public safety concerns, this is a good result. Also, in the “other/miscellaneous/generic” category, “sinkholes” and “spill response” were addressed immediately. Another result showing urgency was for “ditches.” Work orders starting with “blockage in ditch...” were completed more rapidly (21 of 26 were completed in less than 1 day) than ones starting with “clean out ditch...” (14 of 49 were completed in less than 1 day). “Hydro seed” had the fastest completion time. “Clean pipes/structures” and “driveway pipes” were addressed faster than the average. The longest task to complete was “installation of pipe/rock,” and this was followed by “repair structures/pipe.” Repair and new installations make sense that they would take more time to complete. As another note, the item “ditches/culverts” was slower to address than the overall average.

Overall, the fraction of Work Orders taking longer than 1 day, was 50-58% for all Categories except “Inlet/Grate Missing/Broken” which was 17% (1 out of 6). For the 14 Priority work orders, only 4 took longer than 1 day and 3 were completed in the first week. The 1 Emergency Work Order, it was completed in less than 1 day.

Evaluation of time from Request Date to Complete Date by Work Order Category:

<b>Item</b>	<b>Completed Work Orders (WOs)</b>	<b>WOs &gt; 1 Day</b>	<b>Avg. Time, All (days)</b>	<b>Avg. Time, WO's &gt; 1 day (days)</b>
Ditches	78	41	8.7	16.6
Ditches/Culverts	28	15	12.9	24.5
Hydro seed	26	15	4.0	8.2
Structures/Pipes - Clean	24	12	6.0	12.0
Driveway Pipes	22	12	6.2	11.4
Structures/Pipes - Repair	12	7	15.2	26.7
Installation Pipe/Rock	7	4	17.1	31.5
Inlet/Grate Missing/Broken	6	1	5.5	33
Other/ Miscellaneous/ Generic	28	16	11.3	20.1
<b>Total</b>	<b>231</b>	<b>123</b>	<b>9.0</b>	<b>17.2</b>

## Supplement B: One-Page Summary of Maintenance Work Program

The order that work orders should be addressed are as follows:

1. Address phone-initiated stormwater complaints as they are received.
2. “Elevated” work orders
  - 2.1. Sediment: 76-100%
3. “Priority” work orders
  - 3.1. Sediment: 51-75%
  - 3.2. Vegetation: Overgrown Flow
  - 3.3. Bank Erosion: Severe
  - 3.4. Channel Erosion: Severe
  - 3.5. Structural Erosion: Severe
4. “Routine” work orders
  - 4.1. Debris: Problematic
  - 4.2. Debris: Habitual
  - 4.3. Vegetation: Overgrown Access
  - 4.4. Vegetation: Lacking
  - 4.5. Bank Erosion: Moderate
  - 4.6. Channel Erosion: Moderate
  - 4.7. Structural Erosion: Moderate
  - 4.8. Sediment: 26-50%

### Notes & Other Maintenance:

- Maintain primary ditches, once per year (winter). Specific maintenance activities are described in “Extent of Service” section.
- Investigate incomplete inspections, once per quarter. Use video equipment when available. When near a structure with an incomplete evaluation, attempt to complete it.
- For #'s 2–4: Across the City, the route and schedule will be to work in one infrastructure zone per month until all issues with that prioritization level are addressed. If a zone is complete, it can be skipped in the next cycle(s) until all zones are addressed for that prioritization level.
- For #'s 2–4: When maintaining an individual structure (inlet, junction, outlet), any maintenance issues, regardless of prioritization, for connected sections of pipe (e.g., pipe with one inlet and outlet or collection of pipes joined by junctions and other inlets) should be addressed concurrently. Within an infrastructure zone, first attempt to address “individual pipes” then proceed to address drainage systems connected with multiple inlets.
- When funding and sufficient time is available, investigate completing capital maintenance projects. They are prioritized by severity; 5 is the most severe, followed by 4 and then 3. While City crews can resolve many of these structural damage issues, an individual site will take longer to address than ones with operational maintenance issues (e.g., sediment, vegetation, or debris removal, or erosion control). The structural damage issues that cannot be addressed by City crews or require an engineered-solution are listed in the CIP project list.

## Supplement C: Detailed Summary of Work Orders by Zone and Maintenance Issue

Summary tables for “elevated” and “priority” issues are provided in this section. A summary table and map for each of the maintenance needs by “Infrastructure Zone” are provided in this section.

### Summary of Elevated Issues by Infrastructure Zone

<b>Infrastructure Zone</b>	<b>Sediment: 76-100%</b>	<b>Rank</b>
1	18	2
2	6	10
3	13	6
4	11	8
5	25	1
6	17	3
7	16	4
8	14	6
9	10	9
10	16	4
11	2	12
12	6	10
<b>Total</b>	<b>154</b>	

### Summary of Priority Issues by Infrastructure Zone

<b>Infrastructure Zone</b>	<b>Sediment</b>	<b>Bank Erosion</b>	<b>Channel Erosion</b>	<b>Structural Erosion</b>	<b>Vegetation, Overgrown</b>	<b>Total Issues</b>
	<b>51-75%</b>	<b>Severe</b>	<b>Severe</b>	<b>Severe</b>	<b>Flow</b>	
1	19	1	0	1	7	<b>28</b>
2	14	6	3	12	2	<b>37</b>
3	7	2	0	5	3	<b>17</b>
4	11	4	2	5	4	<b>26</b>
5	20	0	0	4	11	<b>35</b>
6	24	3	2	7	32	<b>68</b>
7	17	6	1	5	13	<b>42</b>
8	15	6	0	20	16	<b>57</b>
9	15	3	2	13	11	<b>44</b>
10	7	6	2	16	4	<b>35</b>
11	3	4	1	16	1	<b>25</b>
12	4	3	1	7	3	<b>18</b>
<b>Total</b>	<b>156</b>	<b>44</b>	<b>14</b>	<b>111</b>	<b>107</b>	<b>432</b>

## Sediment

Infrastructure Zone	Maintenance Levels			Total	Rank Normalized by Area
	76-100% (Elevated)	51-75% (Priority)	26-50% (Routine)		
1	18	19	32	69	1
2	6	14	23	43	9
3	13	7	7	27	7
4	11	11	28	50	4
5	25	20	28	73	5
6	17	24	57	98	3
7	16	17	33	66	2
8	14	15	68	97	6
9	10	15	19	44	11
10	16	7	20	43	10
11	2	3	7	12	12
12	6	4	6	16	8
<b>Total</b>	<b>154</b>	<b>156</b>	<b>328</b>	<b>638</b>	

## Bank Erosion

Infrastructure Zone	Maintenance Levels		Total	Rank Normalized by Area
	Severe (Priority)	Moderate (Routine)		
1	1	18	19	6
2	6	15	21	8
3	2	15	17	2
4	4	3	7	12
5	0	16	16	10
6	3	16	19	9
7	6	12	18	7
8	6	16	22	11
9	3	26	29	5
10	6	20	26	3
11	4	18	22	4
12	3	9	12	1
<b>Total</b>	<b>44</b>	<b>184</b>	<b>228</b>	

### Channel Erosion

<b>Infrastructure Zone</b>	<b>Maintenance Levels</b>		<b>Total</b>	<b>Rank Normalized by Area</b>
	<i>Severe (Priority)</i>	<i>Moderate (Routine)</i>		
1	0	1	1	12
2	3	3	6	3
3	0	6	6	1
4	2	2	4	6
5	0	2	2	10
6	2	3	5	9
7	1	4	5	2
8	0	3	3	11
9	2	5	7	4
10	2	3	5	7
11	1	3	4	8
12	1	1	2	5
<b>Total</b>	<b>14</b>	<b>36</b>	<b>50</b>	

### Structural Erosion

<b>Infrastructure Zone</b>	<b>Maintenance Levels</b>		<b>Total</b>	<b>Rank Normalized by Area</b>
	<i>Severe (Priority)</i>	<i>Moderate (Routine)</i>		
1	1	11	12	12
2	12	18	30	9
3	5	27	32	4
4	5	15	20	10
5	4	57	61	5
6	7	21	28	11
7	5	30	35	7
8	20	52	72	8
9	13	41	54	6
10	16	41	57	3
11	16	82	98	1
12	7	17	24	2
<b>Total</b>	<b>111</b>	<b>412</b>	<b>523</b>	

## Vegetation

Infrastructure Zone	Maintenance Levels			Total	Rank Normalized by Area
	<i>Overgrown, Flow (Priority)</i>	<i>Overgrown, Access (Routine)</i>	<i>Lacking (Routine)</i>		
1	7	4	4	15	3
2	2	2	7	11	6
3	3	0	0	3	11
4	4	1	0	5	9
5	11	2	0	13	7
6	32	13	1	46	1
7	13	4	6	23	2
8	16	11	2	29	4
9	11	4	3	18	5
10	4	2	0	6	10
11	1	1	0	2	12
12	3	0	0	3	8
<b>Total</b>	<b>107</b>	<b>44</b>	<b>23</b>	<b>174</b>	

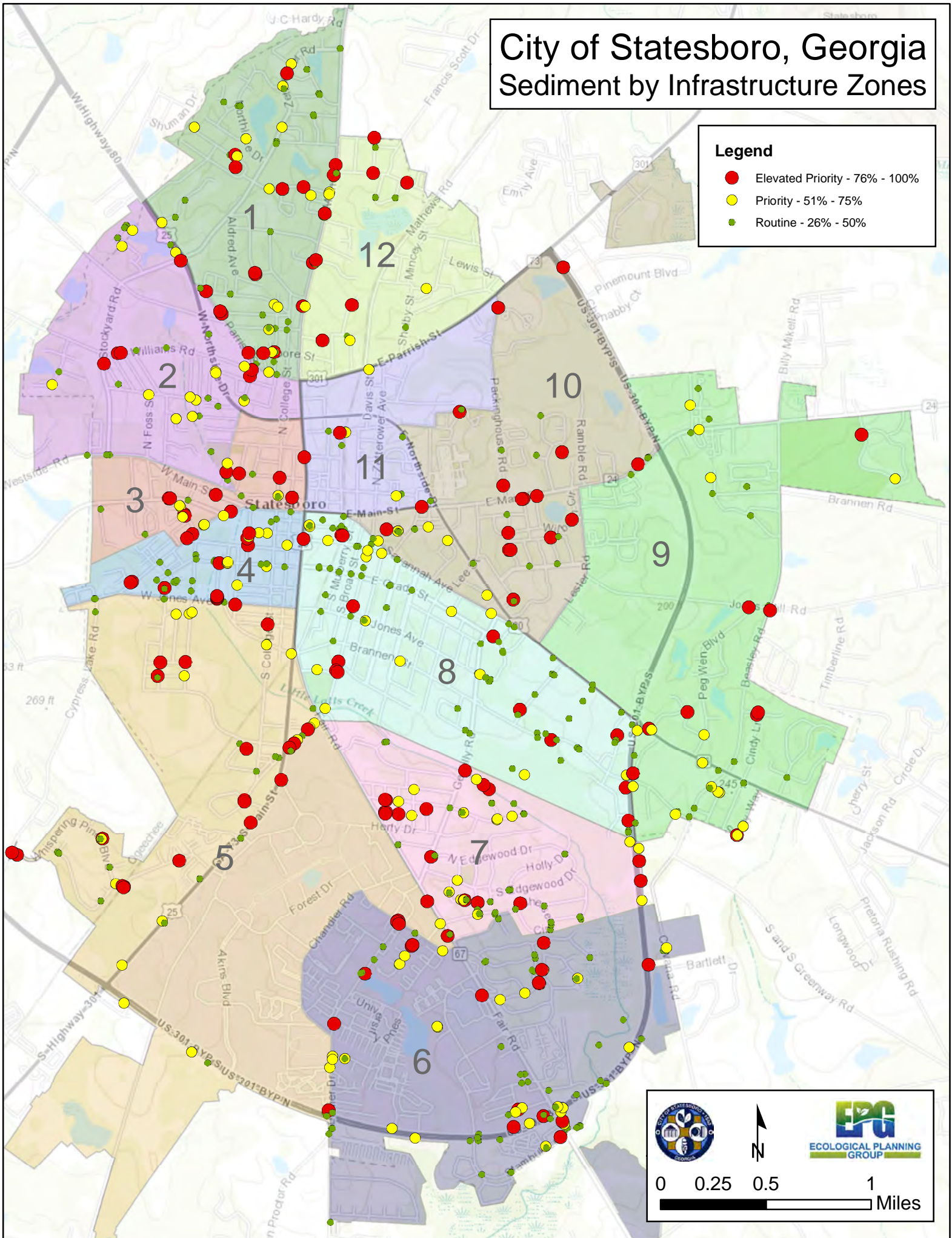
## Debris

Infrastructure Zone	Maintenance Levels		Total	Rank Normalized by Area
	<i>Problematic (Routine)</i>	<i>Habitual (Routine)</i>		
1	25	0	25	6
2	24	0	24	10
3	31	0	31	1
4	31	3	34	2
5	46	6	52	3
6	28	4	32	11
7	22	6	28	5
8	47	2	49	9
9	31	0	31	8
10	25	3	28	7
11	15	0	15	12
12	13	0	13	4
<b>Total</b>	<b>338</b>	<b>24</b>	<b>362</b>	

# City of Statesboro, Georgia Sediment by Infrastructure Zones

## Legend

- Elevated Priority - 76% - 100%
- Priority - 51% - 75%
- Routine - 26% - 50%

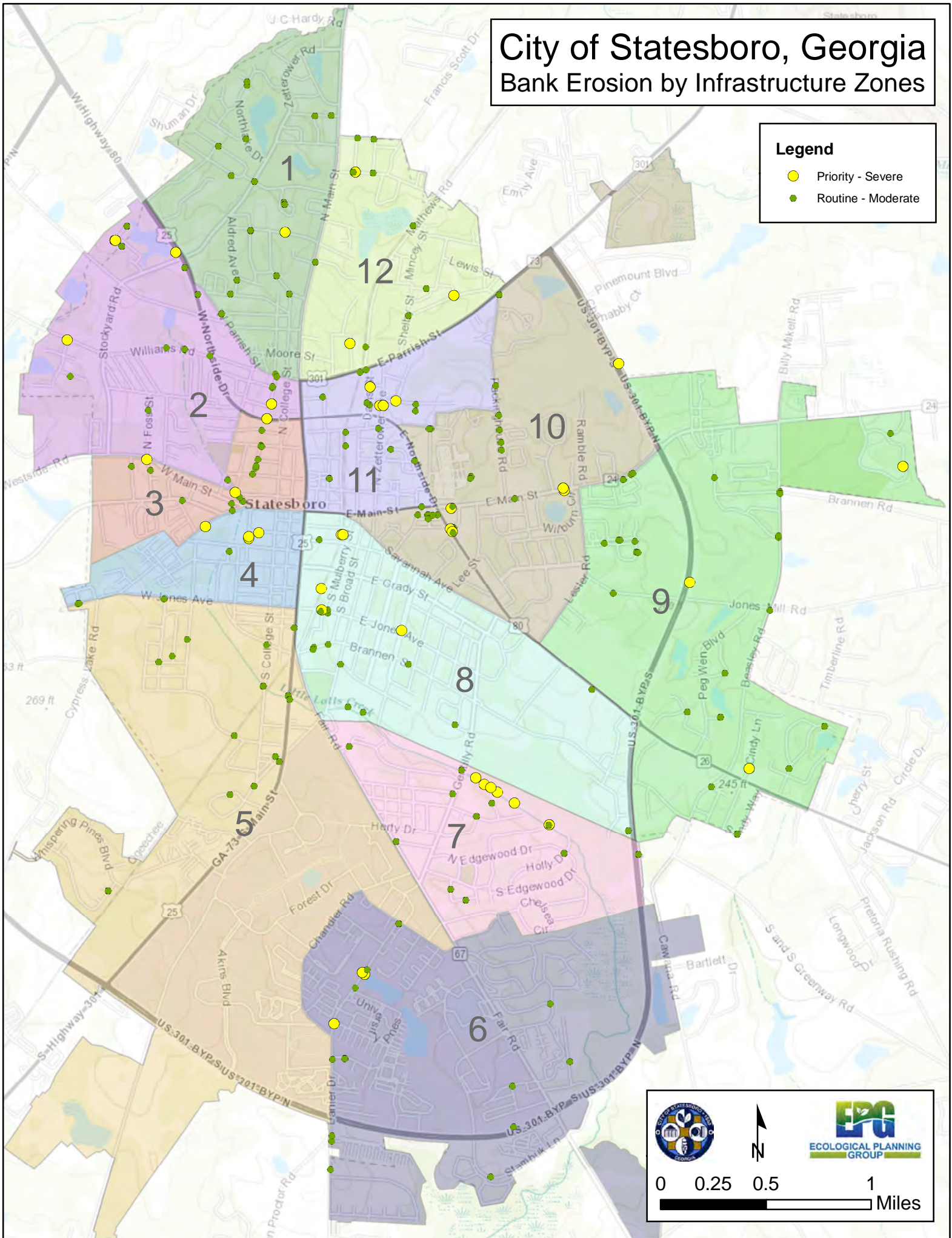


# City of Statesboro, Georgia

## Bank Erosion by Infrastructure Zones

### Legend

- Priority - Severe
- Routine - Moderate

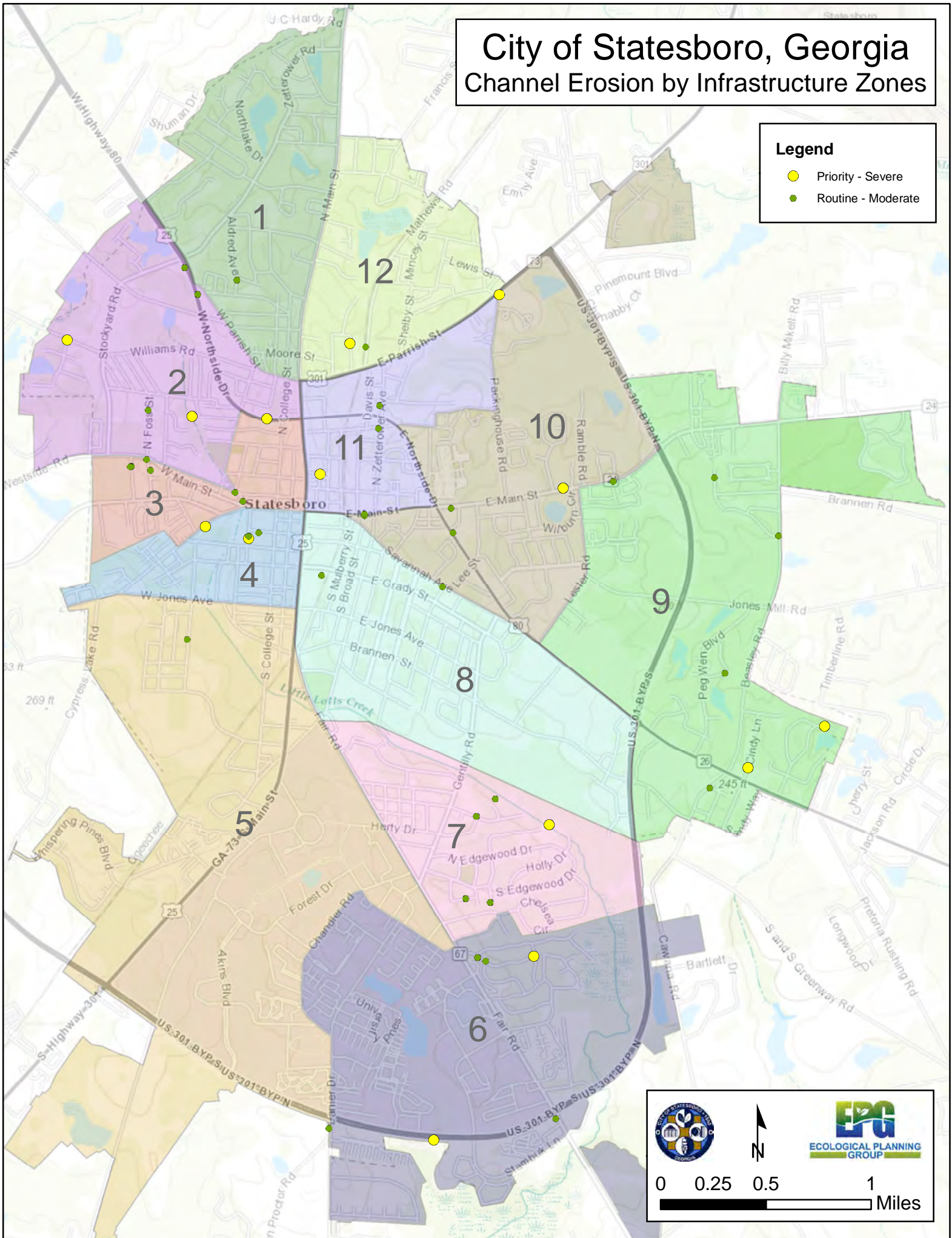


# City of Statesboro, Georgia

## Channel Erosion by Infrastructure Zones

### Legend

- Priority - Severe
- Routine - Moderate

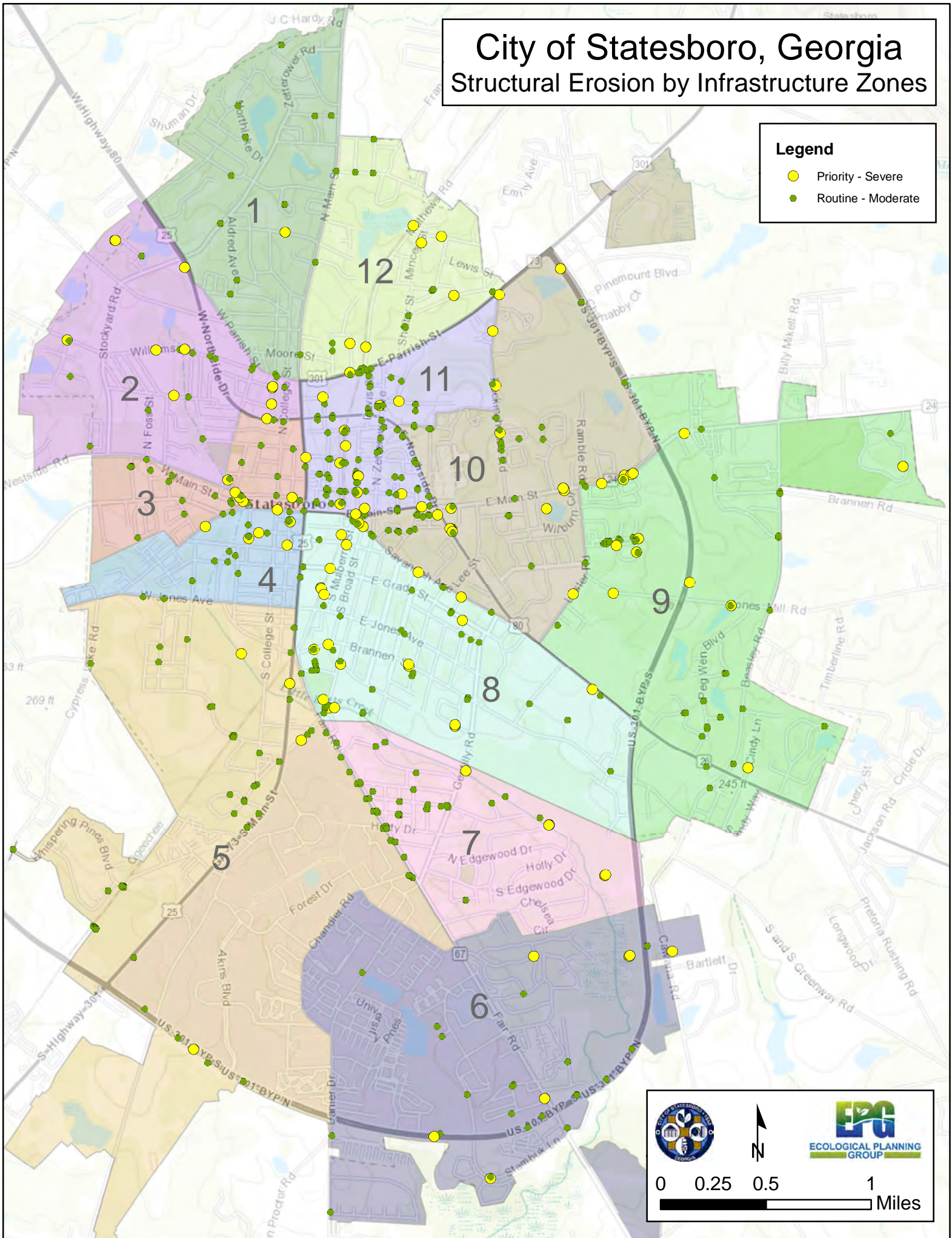


# City of Statesboro, Georgia

## Structural Erosion by Infrastructure Zones

### Legend

- Priority - Severe
- Routine - Moderate

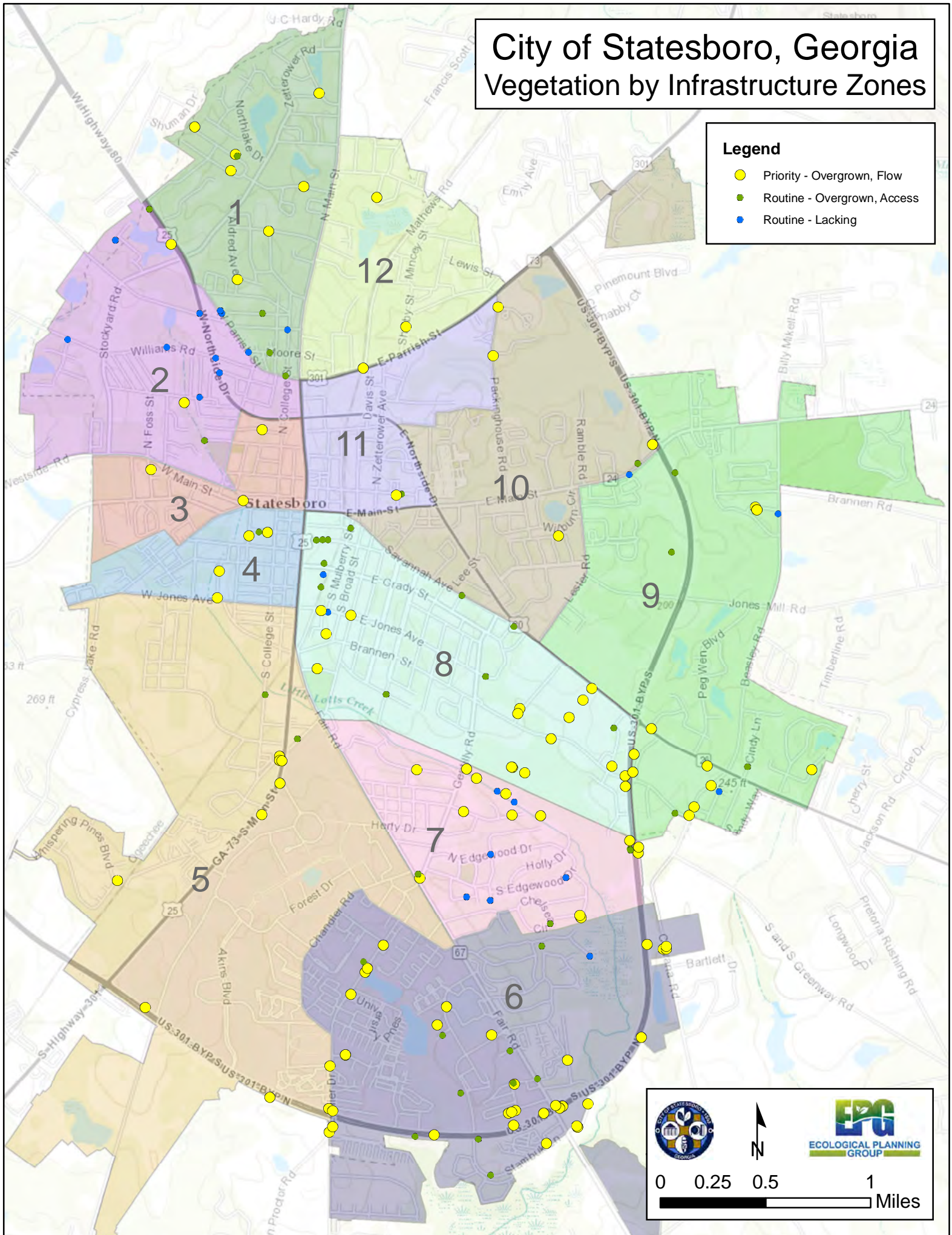


# City of Statesboro, Georgia

## Vegetation by Infrastructure Zones



- Priority - Overgrown, Flow
- Routine - Overgrown, Access
- Routine - Lacking



ECOLOGICAL PLANNING GROUP

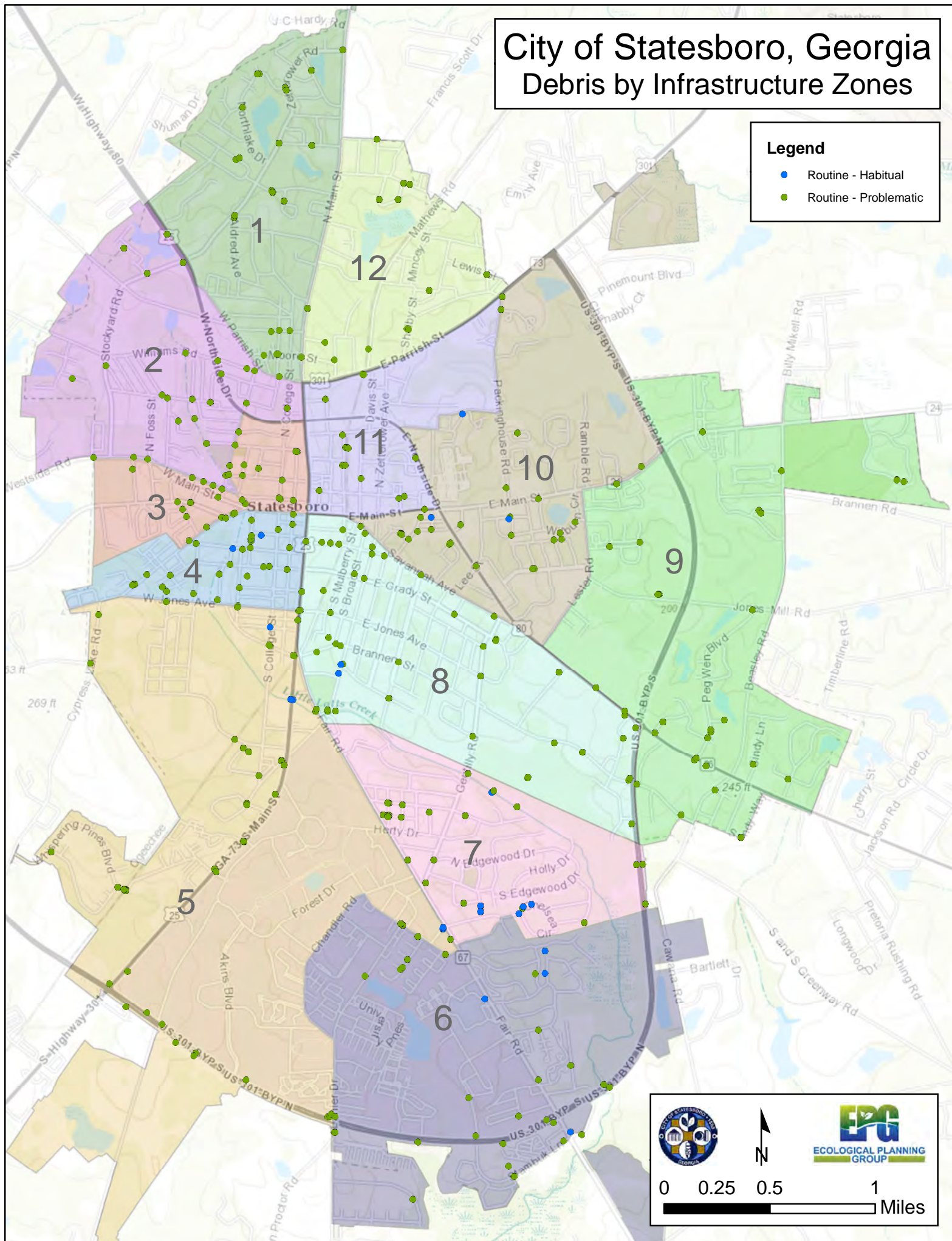
A horizontal scale bar with a black outline. It is divided into four equal segments by three vertical tick marks. Above the bar, the numbers 0, 0.25, 0.5, and 1 are placed at the corresponding tick marks. The word "Miles" is written at the right end of the bar.

# City of Statesboro, Georgia

## Debris by Infrastructure Zones

### Legend

- Routine - Habitual
- Routine - Problematic



## APPENDIX B – CIP PROJECT DESCRIPTIONS

# WEST MAIN ST. AT FOSS ST./#01



24" RCP at intersection

## 2015 Cost Estimate:

\$45,988

## 2017 Cost Estimate:

\$277,968

## Date Engineering Procured:

## Date Construction Started:

## Date Construction Completed:

## Notes:



Outfall ditch and downstream pipes

## Project Description:

24" RCP at the intersection connects to junction box under West Main. This box is paved over and collects an additional pipe from the other side of Foss Street. A 24" HDPE pipe exits the box and discharges to a roadside ditch across West Main. The 24" RCP at the intersection collects road side drainage as well as discharge from the school's detention pond outfall which is a 30" HDPE pipe. The 24" pipe is undersized and causes flooding at the intersection. In addition, the downstream ditch is constricted by 18" and 24" RCP driveway pipes. The road side ditch eventually outfalls at a drainage ditch that the City does not have an easement for. The School Board has indicated to the City that they may be able to adjust the outflow from the pond to reduce flooding. It is proposed to evaluate the school detention pond outfall structure and drainage basin to size the cross drain pipe. The 24" pipe will be upgraded to handle the required flow across West Main. The downstream pipes and roadside ditch will be improved to the outfall ditch. In the future, the City will need to obtain easement on the outfall ditch for maintenance of the ditch.

2017 UPDATE – The School Board has completed the detention pond improvements. In addition to the problems mentioned above, there is a significant amount of storm water entering the lots that border W. Main Street, just south of the intersection with Proctor Street. A curb and gutter system with drainage is proposed for W. Main Street between Foss and Bay Streets. The inlets would connect to the ditch on the east side of Bay Street via a concrete pipe. Also, the resident of #5 Foss stated that he had seen the stormwater from the roadside ditch of Foss and the ditch perpendicular to the street jump the street.



## GORDON/TURNER/LAFAYETTE/THOMAS/#02 (Completed)



Runoff from road goes between houses

### 2015 Cost Estimate:

\$79,200

### 2017 Cost Estimate:

\$79,200

### Date Engineering Procured:

### Date Construction Started: March 2015

### Date Construction Completed: September 2015



Water standing next to house

### Project Description:

Existing homes in the area are in a low lying area. Storm water drains to low areas in yards around homes and sits until it percolates into the soil or evaporates. There are no drainage ditches or structures to convey storm water in the area. It is proposed to survey the area and perform a drainage study to alleviate drainage issues. The City was recently awarded a grant to work on this project.

2017 UPDATE – This project was completed in 2015.

### Notes:

Cc



# CONE CRESCENT/#03 (Completed)



Evidence of water standing in drives

## 2015 Cost Estimate:

\$89,605

## 2017 Cost Estimate:

\$89,605

**Date Engineering  
Procured:**

**Date Construction  
Started:** March 2015

**Date Construction  
Completed:** September 2015



No drainage along roadway

## Project Description:

There are no drainage ditches or structures to convey storm water from the roadway in the area. Drainage from the roadway sits in yards and low lying areas along the road. It is proposed to add shallow roadside swales and drainage structures to connect drainage to Northside Drive drainage to remedy drainage concerns.

## Notes:

2017 UPDATE – This project was completed in 2015.



# ZETTEROWER RD./NORTHLAKE DR./#04



Outfall ditch to Zetterower from Fletcher Park Pond



24" RCP under Zetterower



(2) 36" RCPs under Northlake Drive



(2) 42" RCPs upstream in Myrtle Crossing

## Project Description:

Several areas in the vicinity of Lake Sal area have drainage concerns within the road right of way and on private property. Drainage from off-site areas includes roadway ditches, county pond at Fletcher Park, and Myrtle Crossing detention ponds. These areas contribute to drainage converging at Lake Sal. In particular (2) 36" RCPs with headwalls under Northlake Drive restrict flow from Myrtle Crossing and cause flooding of adjacent yards and a 24" RCP under Zetterower Road restricts flow from Fletcher Park pond causing poor yard and roadway drainage and ditch erosion. The large flows coming into Lake Sal also cause the lake level to rise and flooding of yards along the lake. In addition to upsizing cross drain pipes under the roads, modifications to Lake Sal's outfall structure may be needed to control water levels in the basin. Drainage easements may be needed in some areas to allow construction and maintenance of improvements. It is proposed to survey the area and perform drainage study to alleviate drainage issues.

## 2015 Cost Estimate:

\$44,000

## 2017 Cost Estimate:

\$44,000

## Date Engineering Procured:

## Date Construction Started:

## Date Construction Completed:



# WEST GRADY STREET HEADWALL/#05 (Completed)



Upstream side in need of headwall

## 2015 Cost Estimate:

\$18,700

## 2017 Cost Estimate:

\$22,000

## Date Engineering Procured:

## Date Construction Started:

## Date Construction Completed:



Downstream side previously completed

## Project Description:

A concrete headwall was previously constructed at this location on the downstream side of the road crossing. It is proposed to add the headwall on the upstream side. The City has design plans currently for the project.

2017 UPDATE – This project was completed in 2015.

## Notes:



# SOUTH COLLEGE ST. INFRASTRUCTURE REPAIR/#06



Last section of 84" RCP falling off

## 2015 Cost Estimate:

\$115,200

## 2017 Cost Estimate:

\$190,362

## Date Engineering

**Completed:** August 2016

## Date Construction

**Started:**

## Date Construction

**Completed:**



Smaller downstream culverts under rail road

## Project Description:

The existing double 84" RCP pipes under South College Street are failing causing erosion and potential for roadway washout. Smaller pipes exist immediately downstream that carries storm water under rail road. It is proposed to add a box culvert with headwalls to replace failing pipes.

2017 UPDATE – Engineering has been procured for this project. The project has been redesigned. Instead of replacing the 84-inch pipes with box culverts, the 84-inch pipes will be kept. New headwalls will be constructed in the field to prevent further erosion.

## Notes:



# BEASLEY ROAD DITCH PIPING/#07 (Completed)



Beasley Road ditch

## 2015 Cost Estimate:

\$177,900

## 2017 Cost Estimate:

\$182,725

**Date Engineering  
Procured:** 2016

**Date Construction  
Started:**

**Date Construction  
Completed:** 2017



24" HDPE discharge pipe

## Project Description:

A 24" HDPE discharges into the roadside ditch along Beasley Road. This pipe collects water from S.R. 24, detention pond from the Mill Creek School site, and Beasley Road. The downstream ditch erodes from the high volume and velocity of storm water. It is proposed to pipe the ditch to the outfall point and regrade ditches. A study will also be needed to address the private pond located at the outfall point to insure that the improvements won't impact the pond.

2017 UPDATE – This project was completed in 2017

## Notes:



# HIGHWAY 80 DRAINAGE IMPROVEMENTS/#08



Hwy 80 roadside drainage

## 2015 Cost Estimate:

\$260,436.00

## 2017 Cost Estimate:

\$367,570.50

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



Hwy 80 roadside drainage

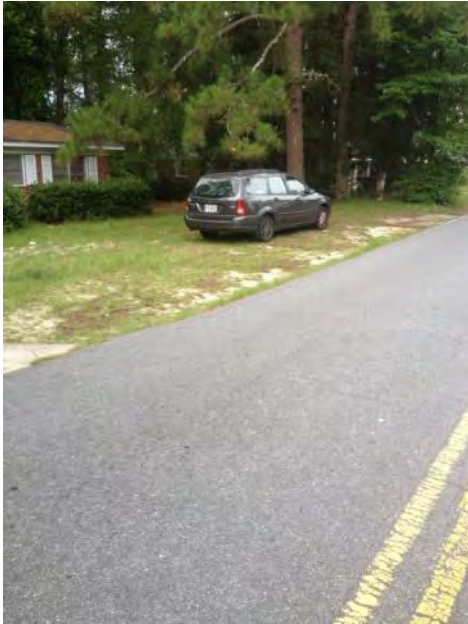
## Project Description:

Ditches and piping along Hwy. 80 are undersized causing erosion and flooding of roadway. GDOT currently has construction plans to remedy the problem, but construction has been postponed.

## Notes:



# PITT-MOORE ROAD DRAINAGE IMPROVEMENTS/#09



Areas where water stands during rainfall

## 2015 Cost Estimate:

\$85,580

## 2017 Cost Estimate:

\$115,087.50

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



No swales or ditches along roadway

## Project Description:

There are no roadway ditches/swales or storm drainage structure in the area to convey storm water runoff. Water runs along the roadway and stands at low points along the road and yards. It is proposed to add roadside swales and storm piping to handle run off to outfall ditch from Faculty Blvd. to SR 67.

## Notes:



# CEMETERY DITCH IMPROVEMENTS/#10



Low area near ditch that holds water

## 2015 Cost Estimate:

\$74,600

## 2017 Cost Estimate:

\$91,250

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



Low area near ditch that holds water

## Project Description:

The cemetery ditch is a major drainage outfall for the city. In sections, the ditch banks are very steep and eroded. Also several areas along the ditch hold water instead of draining to the ditch. It is proposed to widen the ditch to handle the flow, lower the velocity, and provide proper side slopes. The areas holding water along the ditch will be graded to allow water to enter the ditch.

## Notes:



# EAST MAIN (SR 24) NEAR LEE STREET/#11



Existing pipes and headwall

## 2015 Cost Estimate:

\$47,325.00

## 2017 Cost Estimate:

\$80,228.50

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



Areas eroded and caving in around catch basin

## Project Description:

An old brick culvert carries water under S.R. 24 and existing catch basins don't work properly. Run off bypasses catch basins causing erosion and areas are caving in around old pipes. GDOT has not corrected the problem. It is proposed to replace the existing pipes with a box culvert with headwalls and replace existing catch basins and connecting pipes.

2017 UPDATE – It appears that the pipe underneath S.R. 24 is undersized. Drainage calculations should be performed to properly size the pipes without engendering downstream flooding.

## Notes:



# ROUNTREE STREET/#12



Small pipe and no connection to large ditch

## 2015 Cost Estimate:

\$30,355

## 2017 Cost Estimate:

\$200,292

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**

**Notes:**



5-feet Wide Asphalt Gutter on South Side of Rountree

## Project Description:

Shallow roadside swales carry drainage down the road toward the large drainage ditch located at the end of Rountree. Small 12" and 15" pipes collect the water and discharge it prior to connecting to the large ditch. Water ponds in ditches and yards near the large ditch due to pipes being too small and not connecting to the large ditch. It is proposed to upgrade storm piping and connect them to the large ditch.

**2017 UPDATE** - Rountree is an 800-feet long dead end street with a significant amount of topographical relief. The house lots are higher than the street. City forces created drive through asphalt gutters without curbs along both sides of Rountree. The gutter system seems to be working well; however, it is not aesthetically pleasing. In order to improve the aesthetics, a roll-over curb and gutter system with inlets and piping is recommend. Roll-over is necessary because the residents are accustomed to parking everywhere. Also, the smaller curb would not trap water behind the curb in the lots. There is a significant number of driveways that would have to be removed and replaced once the curb has been constructed. An easement may need to be obtained to provide piping to the ditch. Existing utilities may also be problematic for installing storm piping due to potential conflicts.



# NORTH COLLEGE ST. AT THE SUMMIT/#13



Area where water ponds in gutter.

## 2015 Cost Estimate:

\$25,163

## 2017 Cost Estimate:

\$50,220

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



View along roadway

## Project Description:

Storm water collects in the curb and gutter along North College Street from the right of way as well as from the Summit Apartment complex. Due to long travel to the next inlet, slope of curb and gutter, and the high volume of water, run off ponds in the road. It is proposed to add storm drainage in this section to alleviate the problem.

2017 UPDATE – A storm box needs to be added either at the driveway of the motel south of the Summit or directly across the street in order to catch stormwater from the motel parking lot.

## Notes:



# BRANNEN ST. AT LOTTS CREEK TRIBUTARY/#14



Pipes under Brannen Street

## 2015 Cost Estimate:

\$97,215

## 2017 Cost Estimate:

\$38,500

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



36" CMP constriction in junction box

## Project Description:

The large ditch is piped under Brannen Street with (3) 24" RCP pipes. These pipes connect to a large junction box that collects an additional 24" and 18" RCP pipe. A 36" CMP leaves that box and carries storm water to a downstream wetland area. The 36" CMP constricts the flow of the ditch and causes water to back up in ditches and overtop the road. It is proposed to upsize the 36" CMP to alleviate flooding. A drainage study would also be needed to properly size this network.

2017 UPDATE – A drainage study should be prepared before commencing construction. The study should address pipe sizes to ensure that the pipes are adequately sized and would not negatively impact property below due to constrictions downstream.

## Notes:



# EAST JONES AVE AT SOUTH MULBERRY ST/#15



Water standing near culverts

## 2015 Cost Estimate:

\$25,850

## 2017 Cost Estimate:

\$33,800

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



Buildup of silt and vegetation holding water

## Project Description:

Currently water stands in the large ditch due to a buildup of silt and vegetation. It is proposed to re-grade the ditch and remove vegetation. This will allow water to flow freely with little ponding.

## Notes:



# EAST VINE STREET AT RAIL ROAD/#16



Water standing in ditch



Water standing at submerged pipe



Water standing at submerged pipe

## 2015 Cost Estimate:

\$85,650

## 2017 Cost Estimate:

\$40,700

## Date Engineering Procured:

## Date Construction Started:

## Date Construction Completed:



Pipes with headwalls entering ditch

## Project Description:

Various drainage pipes enter the rail road ditch at this location. Water is holding in the ditch due to silt build up, grading issues, and vegetation. There is erosion along the bank and existing headwalls. Some of the headwalls are in poor shape and need replacing. In addition, the downstream outfall may possibly constrict flow from this area causing water to back up along the trail. It is proposed to regrade the ditches, maintain vegetation, and replace failing headwalls. Additional study may be needed to determine adequacy of outfall pipe at end of the ditch.

2017 UPDATE – A drainage study is required in order to ensure that proposed pipes are adequately sized and that any drainage improvements do not negatively impact downstream properties.

## Notes:



# EAST OLLIFF ROAD/#17 (Completed)



View of box culvert under road

## 2015 Cost Estimate:

\$6,160

## 2017 Cost Estimate:

\$6,160

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:** 2017



View of leaking joint and missing grout

## Project Description:

The existing box culvert under East Olliff Street has joints that are leaking and grout has fallen out. Joints do not look uneven or appear to be separating. It is proposed to clean existing joints and replace grout.

2017 UPDATE – This project was completed in 2017.

## Notes:



# FIRST BAPTIST CHURCH - TBM/#18



Pipe under Railroad Street



Pipe under Railroad Street at 1<sup>st</sup>  
Baptist Church



Roof inlet at edge of warehouse



Outfall pipe at other side of warehouse

## 2015 Cost Estimate:

\$19,250

## 2017 Cost Estimate:

\$21,450

## Date Engineering Procured:

## Date Construction Started:

## Date Construction Completed:

## Notes:

## Project Description:

Currently drainage from 1<sup>st</sup> Baptist Church's detention pond and roadside drainage cross under Railroad Street at two cross drain locations. This storm drainage also flows under the rail road at these locations and onto Tillman, Brannen and Minick's property (private). A roof inlet collects the drainage near the edge of the warehouse and an 18-inch RPC drainage pipe runs under the warehouse. This pipe causes drainage issues in the road right of way when it becomes clogged and may cause flooding of Tillman, Brannen and Minick's warehouse. The outfall pipe and ditch past the warehouse is also on private property. It is proposed to survey the area, perform a drainage study, and develop construction plans to alleviate drainage issues. Drainage easements will be necessary to install and maintain improvements.



# LEWIS STREET HEADWALL/#19



View of headwall and pipe

## 2015 Cost Estimate:

\$20,015.00

## 2017 Cost Estimate:

\$22,957.50

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



View of broken headwall next to road

## Project Description:

Currently a 15" RCP pipe carries storm water under Lewis Street. There is a headwall at the location that is broken and clogged with debris and vegetation. It is proposed to remove the headwall, replace with a ditch inlet, and regrade the roadside ditch

## Notes:



# DONNIE SIMMONS WAY AT BIG DITCH/#20



Ditch and pipes with headwall



Inlets on roadway



Standing water in large ditch

## 2015 Cost Estimate:

\$69,788.00

## 2017 Cost Estimate:

\$91,732.50

## Date Engineering Procured:

## Date Construction Started:

## Date Construction Completed:



Pipes with no headwall

## Project Description:

There are two 18" and one 24" RCPs that run under Donnie Simmons Way. The pipes are at all different invert elevations of which none are at the bottom of the ditch. This is causing standing water in the upstream ditch area. Erosion is also taking place due to one side not having a headwall. It is proposed to replace the pipes with a box culvert with headwalls at the correct elevation to remedy standing water in the ditches.

2017 UPDATE – It is more likely that the ponding in the upstream ditch is due to a downstream obstruction or from the upstream ditch being too deep after recent maintenance.

## Notes:



# SOUTH WALNUT ST AT CHERRY ST /#21

**2015 Cost Estimate:**

\$2,860

**2017 Cost Estimate:**

\$4,950

**Date Engineering  
Procured:****Date Construction  
Started:****Date Construction  
Completed:**

Broken inlet top

**Project Description:**

The existing inlet top has been crushed and has fallen into the drainage structure causing a blockage. It is proposed to replace the top of the inlet.

**Notes:**

# DUKE ROAD AT SPRINGDALE ROAD/#22



Ditch and driveway pipe

## 2015 Cost Estimate:

\$27,400

## 2017 Cost Estimate:

\$29,050

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



Outfall ditch

## Project Description:

The existing roadway ditches and 18" and 24" RCP driveway pipes at the location are graded with little slope. As ditches and pipes get full adjacent ditches/low lying areas fill with storm water. The outfall ditch is also small, lacks grade, and on private property. It is proposed to regrade the existing ditches along the road and outfall ditch. The outfall ditch will need easement for maintenance.

## Notes:



# PINE DRIVE/#23



Upstream pipe entrance where it clogs

## 2015 Cost Estimate:

\$13,982.00

## 2017 Cost Estimate:

\$30,382.50

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



Downstream pipe exit

## Project Description:

Roadway drainage is collected by an existing 18" RCP pipe. This pipe clogs easily allowing water to back up along roadway and adjacent areas. It is proposed to increase the pipe size and add headwalls or flared end sections to reduce clogging potential.

## Notes:



# WEST JONES AVE AT HARDEN ROAD/#24



No storm drainage at Harden and West Jones

## 2015 Cost Estimate:

\$17,623.00

## 2017 Cost Estimate:

\$31,977.50

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



No storm drainage along Harden

## Project Description:

There is no storm drainage on one side of Harden. Runoff runs down the edge of pavement creating erosion and ponding at the intersection. It is proposed to add a storm drainage inlet and pipe to connect to the other side of Harden Road to correct the problem.

2017 UPDATE – A 42-inch concrete storm pipe connects the canal west of Harden with the City canal east of Cromartie. The pipe is just outside the east bound lane; in some areas it is underneath the sidewalk on the east side of the road. According to City personnel this pipe has surcharged into the street. This storm pipe intersects the City's sewer pipe in several locations using conflict manholes. Three conflict manholes were observed. According to City personnel there is one and maybe two more conflict manholes that have been covered with asphalt. As can be seen in the photo above, conflict manholes are notorious for catching and holding debris, which could engender flooding. It is essential to have access to these manholes for inspection and cleaning.

It is proposed to have a video crew locate all manholes between the two canals. A contractor should be hired to remove the asphalt, remove the lid, use bricks and/or risers to lift the manhole, install a new lid and pave around the manhole.

## Notes:





STORMWATER  
DIVISION

# **SOUTH COLLEGE STREET AT AA BUILDING/#25**

**2015 Cost Estimate:**

\$3,403.00

**2017 Cost Estimate:**

\$6,891.50

**Date Engineering  
Procured:****Date Construction  
Started:****Date Construction  
Completed:**

End of pipe broken

**Project Description:**

The existing 18" RCP under the driveway along South College Street is broken. It is proposed to replace the end of the pipe and add a flared end section to help stabilize the area.

**Notes:**

# EAST MAIN STREET AT GORDON STREET/#26



Crushed inlet top

## 2015 Cost Estimate:

\$2,860

## 2017 Cost Estimate:

\$4,950

## Date Engineering Procured:

## Date Construction Started:

## Date Construction Completed:



Crushed inlet top

## Project Description:

Curb inlet top at edge of parking lot adjacent to East Main Street has been crushed by vehicles turning into the parking lot. The crushed top has clogged the inlet. Multiple pipes enter the structure carrying storm water from the right of way. It is proposed to replace the top of the structure.

## Notes:



# GENTILLY FROM SUBDIVISION/#27



View of large drainage ditch

## 2015 Cost Estimate:

\$44,478

## 2017 Cost Estimate:

\$59,284

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



View of discharge pipe into large ditch

## Project Description:

Existing subdivisions located along S.R. 67 and Gentilly Road drain east toward a large drainage ditch that becomes Little Lotts Creek. At the drainage outfall points into the ditch, RCP pipes extend under the ditch access/maintenance road and connect to the large ditch. Erosion is evident at several locations. It is proposed to replace existing pipes with properly sized RCP pipes and stabilize the connections into the large ditch.

## Notes:



# WHITESVILLE COMMUNITY/#28



Roadway section with no side ditches



Clogged ditch and pipe views



Clogged driveway pipe

## 2015 Cost Estimate:

\$33,000

## 2017 Cost Estimate:

\$33,000

## Date Engineering Procured:

## Date Construction Started:

## Date Construction Completed:



Roadway with shallow swales

## Project Description:

The community of Whitesville is roughly bounded by E. Parrish Street, Matthews Road, and the City Limits. The roadways through the neighborhood typically have small or no drainage swales, small 15" driveway culverts, and small cross drains to outfall ditches. Many of the pipes and ditches are clogged and overgrown or have silted up to non-existence. It is proposed to evaluate the neighborhood's drainage, clean out pipes, regrade ditches, and upgrade necessary cross drains and outfall ditches.

## Notes:



# SUGAR HILL COMMUNITY/#29



Roadway with small ditches and pipes

## 2015 Cost Estimate:

\$27,500

## 2017 Cost Estimate:

\$27,500

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



Roadway with no ditches

## Project Description:

The roadways through the neighborhood typically have small or no drainage swales, small 15" driveway culverts, and small cross drains to outfall ditches. Many of the pipes and ditches are clogged and overgrown or have silted up to non-existence. It is proposed to evaluate the neighborhood's drainage, clean out pipes, regrade ditches, and upgrade necessary cross drains and outfall ditches.

**Notes:**



# NORTH AND SOUTH MAIN STREET/#30

**2015 Cost Estimate:**

\$154,370

**2017 Cost Estimate:**

\$163,060

**Date Engineering  
Procured:****Date Construction  
Started:****Date Construction  
Completed:****Project Description:**

Due to recent GDOT resurfacing and past resurfacing projects along the State Route, the curb and gutter as well as curb inlets have had their capacity to carry run off greatly reduced. Water ponds in the roadway due to reduced carrying capacity. It is proposed to replace the inlets with hooded drop inlets with grates and mill asphalt next to inlets to increase capacity. GDOT participation should be requested prior to City involvement with project.

**Notes:**

# WESTLAKE DRIVE AT MONTGOMERY DRIVE/#31



Upstream side of 24" RCP

## 2015 Cost Estimate:

\$19,950

## 2017 Cost Estimate:

\$24,075

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



Downstream side of 24" RCP

## Project Description:

A recently installed 24" RCP has some erosion around the ends of the pipes and erosion of the ditch. The ditch currently holds some water due to outfall ditch elevation. The outfall ditch is on private property. It is proposed to add headwalls to the existing 24" RCP pipe. An easement will be needed to improve the outfall ditch

## Notes:



# LYDIA STREET AT HART STREET/#32



Junction of 15" RCP and 18" HDPE at corner

## 2015 Cost Estimate:

\$48,965

## 2017 Cost Estimate:

\$65,245

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



View along 18"HDPE pipe route

## Project Description:

A 15" RCP pipe carries water under the road and also under the driveway to an 18" HDPE pipe. The 18" RCP runs through a back yard and under an existing shed (private property). Apparently, an old ditch was piped to create a more useable back yard. The current configuration may lead to flooding of the back yard. It is proposed to reroute the storm drainage along the road right of way to the outfall ditch.

## Notes:



# STATESORO PLACE CIRCLE/#33



Roadway without catch basins

## 2015 Cost Estimate:

\$33,426

## 2017 Cost Estimate:

\$45,515

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



Ponding near intersection at Bypass

## Project Description:

Statesboro Place Circle provided access to several commercial and apartment developments. The roadway was installed with no curb inlets. The lack of inlets causes ponding due to excessive gutter flow travel. It is proposed to add curb inlets and piping to provide drainage relief in areas of ponding.

## Notes:



# HENDLEY VS. PERSINGER DRAINAGE DISPUTE/#34



Pond outfall into roadside ditch

## 2015 Cost Estimate:

\$4,886

## 2017 Cost Estimate:

\$22,638

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



Upstream ponding from high water in pond

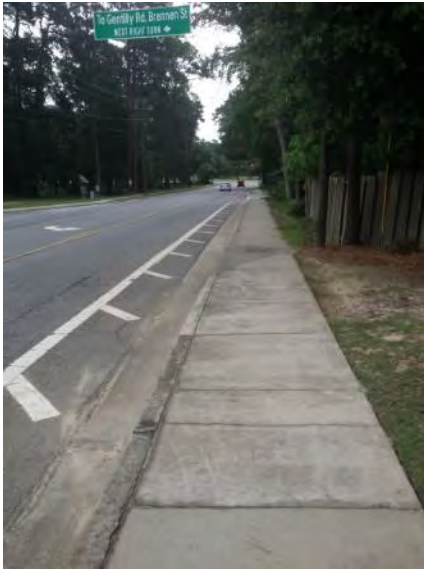
## Project Description:

Drainage from a private pond overflows to the roadside ditch during large rainfall events. The roadside ditch carries the pond and roadway drainage to a discharge point downstream. As the earthen pond outlet becomes overgrown or clogged, the pond and upstream ditch water levels rise, causing additional ponding on other private properties and road right of way. It is proposed to install a permanent concrete pond overflow and lower/regrade ditch and driveway pipe grades to the outfall point.

## Notes:



# CHANDLER ROAD DRAINAGE/#35



View along Chandler Road

## 2015 Cost Estimate:

\$174,509

## 2017 Cost Estimate:

\$238,870

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



Curb inlet lid welded on

## Project Description:

The existing 18" RCP pipes carry run off from existing commercial areas near the intersection of Chandler Road and Georgia Avenue. The 18" pipes extend down Chandler Road to S.R. 67 and outfall into a large drainage ditch. This pipe appears to be too small and storm water has raised the lids off of curb inlets along Chandler during large storm events. It is proposed to upgrade the pipe to a larger size to accommodate the flow.

## Notes:



# COLLEGE STREET NEAR ELM STREET/#36



**Curb and gutter along roadway**

## **2015 Cost Estimate:**

\$22,989

## **2017 Cost Estimate:**

\$34,975

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



**Drive where water runs onto private property**

## **Project Description:**

The curb and gutter along College Street near Elm Street drains poorly. In large storm events the runoff tops the curb and runs between houses and crosses private property. The runoff eventually makes its way to Elm Street where it is collected by the drainage system. It is proposed to add curb inlets and storm piping to collect the storm water and connect to drainage piping on Elm Street to alleviate the problem.

2017 UPDATE – A drainage study should be completed to make sure the pipes are correctly sized. Moreover, the study should insure that any drainage improvements do not negatively impact downstream properties.

## **Notes:**



# LANIER DRIVE AT STADIUM WALK/#37

**2015 Cost Estimate:**

\$3,245.00

**2017 Cost Estimate:**

\$6,187.50

**Date Engineering  
Procured:****Date Construction  
Started:****Date Construction  
Completed:****Notes:**

Existing clogged pipe

**Project Description:**

The existing 15" RCP pipe under the driveway at Stadium Walk is clogged with sediment. The outlet end has been completely covered up and sod has been laid over the area. It is proposed to clean out the pipe and regrade the outfall ditch to drain to the pond at Cambridge. It may be necessary to obtain an easement from Cambridge Apartments.



# STADIUM ENTRANCE AT CHANDLER RD/#38



Area that water collects near stadium

## 2015 Cost Estimate:

\$26,417

## 2017 Cost Estimate:

\$38,341

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



No drainage swales along Chandler at stadium

## Project Description:

Chandler Road near the GSU stadium holds water along the side of the road. This is due to no drainage ditch or storm drainage in that area. It is proposed to grade a shallow swale and install storm drain piping with an inlet to collect the storm water.

## Notes:



# ZETTEROWER RD AT MATTIE LIVELY/#39



Ditch at entrance to school

## 2015 Cost Estimate:

\$29,940

## 2017 Cost Estimate:

\$43,470

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



Flat shallow ditch along Zetterower

## Project Description:

Stormwater in ditches along Zetterower Road overtops roadside ditches, crosses the road, and flows across a private residential lot. This is due to flat, shallow roadside ditches and undersized cross drains under Zetterower Road. It is proposed to regrade the roadside ditches and upsize cross drain pipes to alleviate the problem.

## Notes:



# OLD REGISTER RD AT MONARCH APARTMENTS/#40

## 2015 Cost Estimate:

\$20,535.00

## 2017 Cost Estimate:

\$30,704.50

## Date Engineering Procured:

## Date Construction Started:

## Date Construction Completed:

## Notes:



Flooding along Old Register Road

## Project Description:

Storm water in ditches along Old Register Road and detention ponds at Monarch Apartments overtops roadside ditches and Old Register Road. This is likely due to undersized cross drains under the road. It is proposed to upsize cross drain pipes to alleviate the problem.



# CHANDLER STREET AT GEORGIA VILLAS/#41



Flooding at Ga Villas

## 2015 Cost Estimate:

\$55,000

## 2017 Cost Estimate:

\$55,000

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**

**Notes:**



HDPE pipe under Chandler from Ga Villas

## Project Description:

Storm water from Ga Villas drains into a pipe that goes under Chandler Road. This pipe connects to the drainage system of Olympic Blvd and outfalls into the wetlands behind the fraternity/sorority houses along Olympic Blvd. During the recent large rain event, the drainage system was inundated which caused storm water to back out of inlets along Olympic Drive as well as back up in Ga Villas. This was witnessed by City staff. The outfall ditch was flowing full and it appeared like the wetland discharge point was full which slowed the discharge of water. As soon as the wetland area began draining, the ponded water drained off in a short time after the storm event. It is proposed to survey and study the drainage system to come up with a solution to alleviate the problem.



# BLAND AVENUE NEAR GEORGIA AVENUE/#42



Area that holds water along road

## 2015 Cost Estimate:

\$33,768

## 2017 Cost Estimate:

\$38,190

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



No roadside drainage along road

## Project Description:

Bland Avenue near Georgia Avenue holds water along the side of the road. This is due to no drainage ditches or storm drainage in that area. It is proposed to grade a shallow swale along either side of the road and install storm drain piping with an inlet to collect the storm water.

## Notes:



# BRUCE DRIVE AT RAIL ROAD/#43



Pavement failing at pipe location

## 2015 Cost Estimate:

\$17,361.00

## 2017 Cost Estimate:

\$23,532.50

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



Ditch along Rail Road

## Project Description:

The existing 15" RCP pipes under Bruce Drive at the rail road are failing and causing the pavement to fail. This area is in the rail road right of way. The rail road should be contacted to repair the pipes prior to City involvement. It is proposed to replace and upsize cross drain pipes to alleviate the problem.

## Notes:



# CROMARTIE DRIVE AT THE OVAL/#44



Pavement failing at pipe location

## 2015 Cost Estimate:

\$21,181

## 2017 Cost Estimate:

\$29,585

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



Sediment clogged pipe

## Project Description:

The existing 15" RCP pipe under The Oval is failing and causing the pavement to fail. The existing 15" under Cromartie Drive is also undersized. This is creating erosion and the small pipes are clogging. It is proposed to replace and upsize cross drain pipes to alleviate the problem.

## Notes:



# JOHNSON STREET NEAR JOHNSON AVENUE/#45



Erosion downstream.

## 2015 Cost Estimate:

\$43,415

## 2017 Cost Estimate:

\$66,306

## Date Engineering Procured:

## Date Construction Started:

## Date Construction Completed:



Headwall and existing pipes under road.

## Project Description:

During large storm events, the two existing 30" RCP pipes under Johnson Street get clogged with trash and debris causing yards to flood on the upstream side of the crossing. The upstream ditch is shallow and the City does not have easement on this area. It is proposed to replace, upsize, provide headwalls, and lower the cross drain pipes to alleviate the problem.

2017 UPDATE – There is an inordinate amount of erosion downstream of the pipes underneath Johnson Street. A drainage study should be completed to determine the proper size of the pipes with respect to flow and insuring downstream properties will not be adversely impacted. The study should also address erosion, including pipe size, end treatment, channel armoring and stream channel restoration.;

## Notes:



# MATTHEWS ROAD AT EAST PARRISH ST/#46



Sediment build up in roadway

## 2015 Cost Estimate:

\$33,779.00

## 2017 Cost Estimate:

\$41,990.50

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



Old outfall pipe

## Project Description:

The existing 12", 15", and 18" storm drainage pipes in this area are old and under sized. Drainage from Parrish Street and adjacent parcels run down the road to the existing railroad drainage ditch instead of being carried by the storm drains. This is creating erosion and the small pipes are clogging. It is proposed to replace and upsize drainage pipes and provide inlets to alleviate the problem. This appears to be within GDOT right of way and GDOT should be contacted prior to City involvement.

## Notes:



# ARCHWAY AND BRAMPTON AVENUE/#47

**2015 Cost Estimate:**

\$3,300

**2017 Cost Estimate:**

\$5,500

**Date Engineering  
Procured:****Date Construction  
Started:****Date Construction  
Completed:****Notes:**

Ponding in Road Behind McDonalds

**Project Description:**

The existing roadway and drainage system on Archway is relatively new. This area drains to a private detention pond. It appears ponding was probably due to the pond outfall structure and ditch being overgrown creating elevated water levels in the pond. It is proposed to inspect and clean out the outfall structure and ditch.



# SOUTH COLLEGE STREET DRAINAGE CANAL/#48



Drainage Canal

## 2015 Cost Estimate:

\$101,920

## 2017 Cost Estimate:

\$123,315

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**

**Notes:**



Existing drainage pipe connection from the canal to adjacent low lying area-along the canal.

## Project Description:

The drainage canal located near south college street provides conveyance of storm water run-off along South College Street as well other areas on the west side of the city. The city currently owns approximately 5.76 acres of low lying land here adjacent to the drainage canal. From NWI wetland inventory maps, this parcel appears to be almost all wetlands. The wetlands would need to be delineated and approved by the USCOE to determine the extent of the project and necessary wetland impact permitting. It is proposed to provide improved connections from the canal to the adjacent low lying areas to provide increased flood storage potential. If possible, areas may be excavated to also provide additional storage. The flood storage could provide relief both up and downstream. Wetland permits and stream buffer variances will be required.



# CANAL AT CHURCH ST & DONNIE SIMMONS RD/#49



Maintenance Road with adjacent drainage canal

## 2015 Cost Estimate:

\$95,390

## 2017 Cost Estimate:

\$96,490

## Date Engineering Procured:

## Date Construction Started:

## Date Construction Completed:

## Notes:



Stream bank along Maintenance Road

## Project Description:

The drainage canal provides storm water run-off conveyance from adjacent properties located in the north west portion of the city. The city currently owns approximately 4 acres in this location. From the NWI wetland maps, portions of this property appear to be wetland. Wetlands will need to be delineated and approved by the USCOE to determine impacted permitting needed for the project. Wetland permits and stream buffer variance will be needed. The canal and maintenance road is currently grown up with vegetation and the banks of the canal are eroded. The restoration of the stream bank and construction /stabilization of the maintenance road is recommended. The over grown vegetation should be removed from both the road and ditch. The canal banks should be repaired and stabilized to help prevent future erosion. The existing maintenance road should be improved with a gravel surface to provide better access for maintenance.



## REGIONAL DETENTION AT ZETTEROWER AND JEF ROAD/#50



Roadside ditch along Zetterower Road canal

### 2015 Cost Estimate:

\$303,291

### 2017 Cost Estimate:

\$338,216

### Date Engineering Procured:

### Date Construction Started:

### Date Construction Completed:



Drainage ditch along Jef Road

### Project Description:

Several areas in the vicinity of Lake Sal have drainage concerns within the road right of way and on private property. Drainage from off-site areas includes roadway ditches, county pond at Fletcher Park, and residential lots. In particular, a 24" RCP under Zetterower Road restricts flow and causes poor yard and roadway drainage as well as erosion. It is proposed to provide regional detention/flood storage in the area to alleviate drainage issues at this location as well as issues identified in Project #4. A privately-owned parcel of approximately 4.3 acres is located at the corner of Zetterower road and Jef road. From the NWI maps approximately 1.3 acres are wetlands. Wetlands will need to be delineated and approved by the USCOE to determine actual wetland limits and permitting requirements. This property will need to be purchased by the City for this project. These areas contribute to the Project #4 of this report.

### Notes:



# GENTILLY CANAL/#51



Drainage canal with severe erosion along the bank

## 2015 Cost Estimate:

\$959,000

## 2017 Cost Estimate:

\$1,025,440

## Date Engineering Procured:

## Date Construction Started:

## Date Construction Completed:



Stream bank along Maintenance Road

## Project Description:

The drainage canal at Gentilly road collects drainage from the majority of the city. Due to large volumes and high velocities of runoff, there is severe erosion along the bank of the canal. It is recommended that the stream bank be reconstructed and stabilized. The existing maintenance road should be improved with gravel to provide improved maintenance access along the canal. Property may have to be purchased or easements obtained to complete the project. Wetlands will also need to be delineated and approved by the USCOE to determine permitting requirements. Wetland permits and stream buffer variance will be required.

## Notes:



# WEST MAIN AT COLLEGE & JOHNSON ST/#52



West Main Street

## 2015 Cost Estimate:

\$123,645

## 2017 Cost Estimate:

\$176,005

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



Separation of joint in storm water piping

## Project Description:

The 800 linear feet of 24" RCP pipe on West Main Street between College Street and Johnson Street is failing. The piping shows cracking and joint separation due to extensive wear. It is recommended that the pipe be replaced.

## Notes:



# GENTILLY CANAL REGIONAL DETENTION/#53



Drainage canal with severe erosion along the bank

## 2015 Cost Estimate:

\$327,050

## 2017 Cost Estimate:

\$410,100

## Date Engineering Procured:

## Date Construction Started:

## Date Construction Completed:

## Notes:



View along 18" HDPE pipe route

## Project Description:

The drainage canal in the area between Edgewood, Woodlawn, and Hawthorn neighborhoods and the 301 Bypass carry a large volume of storm water from the city. Due to the large volume of storm water, erosion is present along the banks. The city owns a large tract of low lying property along the canal in this area. From NWI maps, most of this tract may be wetlands. The wetland will need to be delineated and approved by the USCOE to determine the extent of permitting requirements, wetland permits, and stream buffer variances will be required. It is proposed to improve connections from the canal to adjacent low lying areas to provide increased flood storage. If possible area may also be excavated to provide additional storage area for flood waters. The flood storage could provide flood relief to up and downstream areas.



# REPAIR 36-INCH RCP AT JAYCEE FIELD/#54



Starting Manhole Behind Jaycee Centerfield

**2015 Cost Estimate:**

N/A

**2017 Cost Estimate:**

\$106,825

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



36-inch RCP Under Softball Field, Note Sinkhole

## Project Description:

There are approximately 500 linear feet of 36-inch RCP between the Jaycee Field and the Statesboro Canal displaying signs of soil entering the pipe. A visual inspection revealed two sinkholes behind left field of the softball field. There are three options: 1. Remove and replace the pipe. 2. Line the pipe with a HDPE liner. 3. Repair pipe with grout as issues arise. This pipe is under an active park so it is proposed to line it with an HDPE product since this method is trenchless, and non-disruptive at the surface. It should be noted that the pipe is undersized and the "remove and replace" option would allow a larger pipe to be installed.

## Notes:



# CULVERTS AT 348 JOHNSON STREET/#55



West Main Street

**2015 Cost Estimate:**

N/A

**2017 Cost Estimate:**

\$17,000

**Date Engineering**

**Procured:** N/A

**Date Construction  
Started:**

**Date Construction  
Completed:**

**Notes:**



West Main Street

## Project Description:

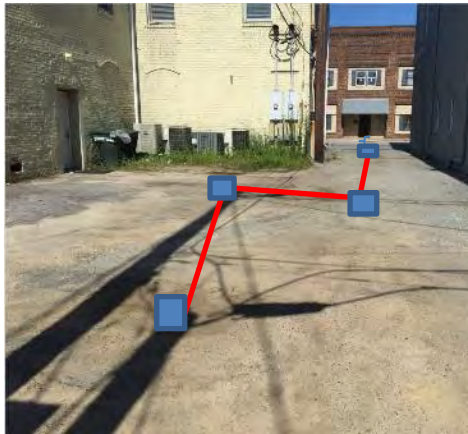
There are three parallel concrete culverts crossing underneath Johnson Street just west of the two-story apartments. The middle culvert is 24-inches in diameter and connected to the two curb inlets on Johnson. The other two culverts are 30-inches and are holding water in the upstream end. A flashlight inspection revealed the pipes have separated at the joint about 40-feet from the inlet. It appears the pipes have settled causing the water to pond. There is also a sinkhole on the upstream side between the 24-inch pipe and the eastern most 30-inch pipe. The flashlight inspection did not reveal where the soil was entering the pipe.

Johnson Street does not appear to be settling so the pipe settling may have stabilized. In the short-term, this pipe should be evaluated by crawling into the pipe and inspecting it with a flashlight during dry conditions. The two areas where the pipes have settled should be grouted to prevent water and soil from entering the pipes.

There is an erosion problem downstream. A hydrology study should be performed to address the erosion issues and to determine the proper size of the culverts with respect to a 25-year storm.



# DISTRICT ATTORNEY'S ALLEY/#56



Proposed Pipe Route



Gutter Filled in at Driveway



Alley Looking Toward Seibald

## Project Description:

The alley behind the District Attorney's office is experiencing flooding during high intensity rains and ponding after most rains. There are two problems: First the gutter behind in North Main Street has been filled in which has slowed the rate of stormwater entering North Main. Second, there is not a drainage inlet for the water to enter.

A video inspection should be performed in the drainage system on North Main Street to determine if there is a drainage pipe at the alley driveway. If a pipe is present, it is proposed to add a drainage inlet on top of the existing pipe in the North Main Street right-of-way.

In the future, the owners of the buildings that use the alley could add drainage inlets and pipe in the alley and connect the pipes to the proposed drainage inlet on North Main Street.

## 2015 Cost Estimate:

N/A

## 2017 Cost Estimate:

\$8,965

## Date Engineering Procured:

## Date Construction Started:

## Date Construction Completed:

## Notes:



# HENRY STREET AT W. MOORE STREET/#57



Existing 18-inch pipe on Henry Street



Evidence of Repaired Sinkholes

## 2015 Cost Estimate:

N/A

## 2017 Cost Estimate:

\$52,088

## Date Engineering Procured:

## Date Construction Started:

## Date Construction Completed:

## Notes:

## Project Description:

There is a run of 18-inch of RCP parallel to Henry Street, just south of Moore Street that appears to have pipe joints that are poorly sealed. When groundwater moves through the soil profile and into the pipes through the joints it pulls soil with it in a phenomena known as piping. The results of piping are sinkholes on top of the pipe.

This pipe was constructed in the right-of-way and probably replaced a road side ditch. There are at least three options: 1. Lining the pipe. 2. Remove and replace the pipe. 3. Repair sections of pipe as sinkholes manifest. Since this pipe is not underneath a pavement, the costly lining process, is not necessary. One can continue to patch, however, this may prove more costly when evaluated from a long term perspective. "Remove and replace" is the preferred option. It also provides the opportunity to replace an undersized section of 12-inch pipe that is halfway between Moore and Parrish.



# JAMES STREET /#58



James Street Looking Toward Ditch

**2015 Cost Estimate:**

N/A

**2017 Cost Estimate:**

\$226,584

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**



Evidence of Stormwater Entering Elks Lodge Property

## Project Description:

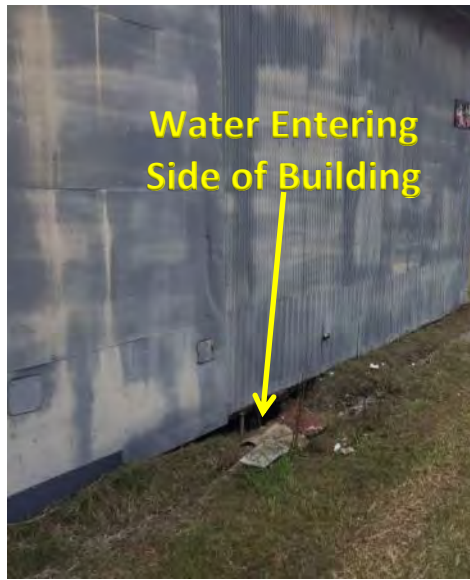
There are no drainage features on the south side James Street – stormwater simply follows the edge of the road and travels east towards the large drainage canal. The lack of drainage features creates street flooding. The majority of the lots have an elevation higher than the street so this does not present a problem. However, the mortuary and Elk's Lodge are lower than the street and the stormwater enters these lots. The north side of the street has a small ditch with 12-inch and 15-inch pipes that are probably undersized.

A roll-over curb and gutter system with pipe and inlets is proposed. The inlets should be positioned to capture the stormwater before it enters the lots. Roll-over curb and gutter should be utilized in order to maintain the parking patterns of the neighborhood. Underground conflicts with other utilities should be a concern.

## Notes:



# JOHNSON STREET AT RAILROAD/#59



Possible Cause of Erosion

## 2015 Cost Estimate:

N/A

## 2017 Cost Estimate:

\$2,640

## Date Engineering Procured:

## Date Construction Started:

## Date Construction Completed:



Eroded Hole at Western Corner of Building on Johnson Street

## Project Description:

There is erosion occurring underneath the sidewalk and under the building located just west of the railroad tracks on Johnson Street. During an inspection, a 3-foot metal pole was inserted under the new sidewalk and under the building. The curb inlet immediately east of this problem was also examined. There is only a pipe leaving the box and going under Johnson Street so this box may be ruled out. However, there is a manhole just east of this curb inlet that needs further examination. This manhole is not connected to the curb inlet adjacent to the building but does have a pipe that appears pointed directly towards the eroding area. This pipe should be cleaned out and a video inspection completed. Another area that should be inspected is a hole on the eastern side of the building. Water has been entering this hole and it may be the cause of the problem but it is doubtful.

## Notes:



# MARVIN AVENUE AT FAIR ROAD/#60



West Main Street

**2015 Cost Estimate:**

N/A

**2017 Cost Estimate:**

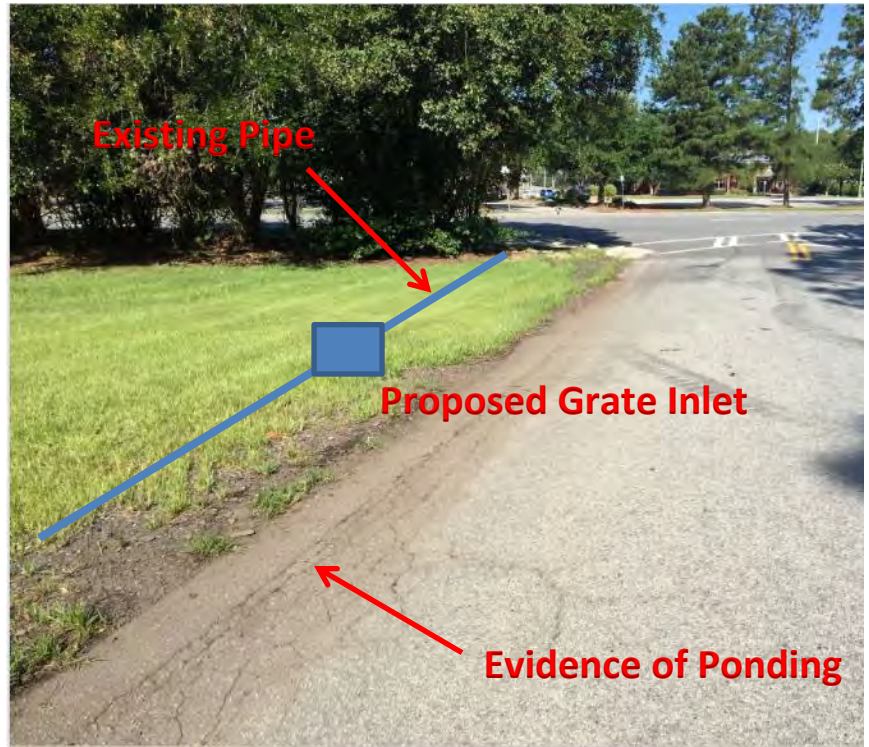
\$8,250

**Date Engineering**

**Procured:** N/A

**Date Construction  
Started:**

**Date Construction  
Completed:**



West Main Street

## Project Description:

Storm water ponds on the southern side of Marvin Avenue just east of Fair Road. The ponding is a nuisance and has contributed to the asphalt failures on Marvin Avenue. This problem can be solved by constructing a grate inlet over an existing pipe. The grate should be set at an elevation slightly lower than the street and yard. Engineering is not required for this project.

## Notes:



# MLK AT PROCTOR & ELM STREETS/#61



Low Head Crossing at Proctor

**2015 Cost Estimate:**

N/A

**2017 Cost Estimate:**

\$150,000

**Date Engineering  
Procured:**

**Date Construction  
Started:**

**Date Construction  
Completed:**

**Notes:**



Four 36-inch Pipes at Under Blitch Street near MLK

## Project Description:

Two large canals converge in the parking lot of Gary's convenience store located on MLK, south of Proctor Street. This area floods just south of the Luetta Moore Park where the canal crosses Blitch Lane with (4) 36-inch pipes. Downstream of the four pipes is a 9-ft x 3-ft box culvert underneath Proctor Street. Calculations confirmed that these two crossings are equivalent with regards to capacity so upgrading the (4) 36-inch pipes would not relieve flooding.

The 10-ft x 3-ft culvert underneath Proctor also fails. It should be noted that there is not much cover of this culvert so it is not possible to generate substantial head pressure to push the water through. The two canals converge at Gary's and enter a double 8.5-ft x 4-ft box culvert.

A drainage study of the drainage canals should be completed. The drainage study should model the canal system as it is currently built, provide solutions including pipe sizes, and finally should model the system again with the improvements.

During the next large storm when MLK floods, City personnel should be dispatched to Gary's parking lot to see if capacity exists downstream of the flooding.



# MORRIS STREET AT GREEN STREET/#62



Undersized Ditch North of Morris

## 2015 Cost Estimate:

N/A

## 2017 Cost Estimate:

\$256,908

## Date Engineering Procured:

## Date Construction Started:

## Date Construction Completed:

## Notes:



Water Crosses the Morris Street Here and Enters the Yard

## Project Description:

Drainage on Morris Street is provided by an undersized 18-inch culvert underneath the sidewalk located on the west side of the street. A ditch that starts at old Julia P. Bryant campus discharges into this pipe. During large storms the pipe becomes full and is unable to accept all of the water from ditch. The excess water jumps across Morris Street and through the yard of Ms. Brown and then ponds in her and her neighbor's yards.

It appears that a large portion of campus drains into this system. Also a large portion of the area between Morris and Foss Streets drains into this system as well. It is severely undersized. Ideally an upsized pipe would be installed and it would run from the ditch, down Green Street, across the Railroads property and into the City's canal. If the railroad will not permit this then the new system must travel north down Morris and then east down Donnie Simmons until it reaches the canal. The entire sidewalk and one half of a lane must be removed to complete this project. In the interim, curb and gutter in front along Morris would prevent water from passing unchecked through the front yards of residents. However it would still pond in their back yards.



# CLEAN AND EXPAND POND AT PARK ON W. JONES STREET/#63



The Upper Edge of the Vegetation

## 2015 Cost Estimate:

N/A

## 2017 Cost Estimate:

\$73,390

## Date Engineering Procured:

## Date Construction Started:

## Date Construction Completed:



Canal on the Left and the Pond on the Right

## Project Description:

The City constructed a detention pond in conjunction with a park located at the intersection of Parker and W. Jones. Due to overgrowth of vegetation and trees, the pond has lost some of its stormwater detention capacity. An area 250-ft long and 60-ft wide needs to be cleared and then restored with grass seed. Before starting work, a wetland scientist should be consulted to determine whether a 404 permit is required.

According to City personnel, W. Jones Street has flooded at this location before, which suggests that the pond may not be large enough. The area between the pond and the canal could possibly be removed to increase the pond's capacity.

## Notes:



# RELINING PIPES ON VINE STREET/#64



Headwall Near the Outfall

## 2015 Cost Estimate:

N/A

## 2017 Cost Estimate:

\$68,875

## Date Engineering Procured:

## Date Construction Started:

## Date Construction Completed:



Vine Street, Standing at Ditch and Looking Towards South Main Street

## Project Description:

A 24-inch RCP is underneath the east bound travel lane. Video taken by City staff revealed damaged pipe that needs to be lined or replaced.

Due to the high traffic in this area, lining the pipe with a cured-in-place liner is the preferred option. It was assumed that the pipe repair project would start near the City Hall and end in the ditch adjacent to the railroad. During a recent inspection, it was determined that the pipe was 24-inches in diameter near the ditch. The run of pipe near City Hall could not be accessed but for the purposes of cost estimating it was assumed to be 24-inches in diameter as well.

## Notes:



Project ID & Project Name	Project Cost	Project Type
ID# 1 - W. MAIN ST AT FOSS ST	\$277,968.00	Construction
ID# 2 - Gordon/Turner/Lafayette/Thomas Street Area (PROJECT CO	\$0.00	Drainage Study
ID# 3 - CONE CRESCENT ST (PROJECT COMPLETED)	\$0.00	Construction
ID# 4 - Zetterower Road and Lakeview Roa	\$44,000.00	Drainage Study
ID# 5 - WEST GRADY STREET (PROJECT COMPLETED)	\$0.00	Construction
ID# 6 - S. COLLEGE ST	\$190,362.00	Construction
ID# 7 - BEASLEY ROAD (PROJECT COMPLETED)	\$0.00	Construction
ID# 8 - HWY 80 DRAINAGE IMPROVEMENTS	\$367,570.50	Construction
ID# 9 - PITT MOORE RD	\$115,087.50	Construction
ID# 10 - CEMETERY DITCH	\$91,250.00	Grading
ID# 11 - E. MAIN ST NEAR LEE STREET	\$80,228.50	Construction
ID# 12 - ROUNTREE ST.	\$200,292.00	Construction
ID# 13 - N. COLLEGE ST. AT SUMMIT	\$50,220.00	Construction
ID# 14 - BRANNEN STREET A LOTT'S CREEK TRIBUTARY	\$38,500.00	Grading
ID# 15 - E. JONES AT MULBERRY STREET	\$33,800.00	Construction
ID# 16 - E. VINE ST. AT RR	\$40,700.00	Construction
ID# 17 - E. OLLIFF ST (PROJECT COMPLETED IN 2017)	\$0.00	Repair
ID# 18 - RR Street at First Baptist Church	\$21,450.00	Drainage Study
ID# 19 - LEWIS STREET	\$22,957.50	Construction
ID# 20 - DONNIE SIMMONS WAY	\$91,732.50	Construction
ID# 21 - SOUTH WALNUT ST AT CHERRY ST	\$4,950.00	Repair
ID# 22 - DUKE AND SPRINGDALE	\$29,050.00	Grading
ID# 23 - PINE DR.	\$30,382.50	Construction
ID# 24 - W. JONES ST AT HARDEN ST.	\$31,977.50	Construction
ID# 25 - S. COLLEGE ST AT AA BUILDING	\$6,891.50	Construction
ID# 26 - E. MAIN AT GORDON ST.	\$4,950.00	Repair
ID# 27 - Gentilly From Subdivisor	\$59,284.00	Construction
ID# 28 - Whitesville Community	\$33,000.00	Drainage Study
ID# 29 - Sugar Hill Community	\$27,500.00	Drainage Study
ID# 30 - MAIN ST.	\$163,060.00	Construction
ID# 31 - WESTLAKE DR AT MONTGOMERY DR	\$24,075.00	Construction
ID# 32 - LYDIA STREET AT HART STREET	\$65,245.00	Construction
ID# 33 - STATESBORO PLACE CIRCLE	\$45,515.00	Construction
ID# 34 - Hendley vs. Persinger Drainage Disput	\$22,638.00	Construction
ID# 35 - CHANDLER ROAD DRAINAGE	\$238,870.00	Construction
ID# 36 - COLLEGE NEAR ELM STREET	\$34,975.00	Construction
ID# 37 - Lanier Drive at Stadium Wall	\$6,187.50	Grading
ID# 38 - Stadium at Chandle	\$38,341.00	Construction
ID# 39 - Zetterower Road at Mattie Live	\$43,470.00	Construction
ID# 40 - Old Register Road at Monarch Apartment	\$30,704.50	Construction
ID# 41 - Georgia Villas and Olympic Boulevar	\$55,000.00	Drainage Study
ID# 42 - Bland Avenue @ Georgia Avenu	\$38,190.00	Construction
ID# 43 - Bruce Drive @ RR	\$23,532.50	Construction
ID# 44 - Cromartie Drive @ the Ovz	\$29,585.00	Construction
ID# 45 - Johnson Lane	\$66,306.00	Construction
ID# 46 -Matthews Road @ East Parrish S	\$41,990.50	Construction
ID# 47 Archway and Brampton Avenu	\$5,500.00	Maintenance
ID# 48 - South College St Drainage Canz	\$123,315.00	Maintenance
ID# 49 - Outman Church St and Donnie Simmoi	\$96,490	Maintenance
ID# 50 - Regional Detentior	\$338,216	Regional Masterplar
ID# 51 - Gentilly Cana	\$1,025,440	Maintenance
ID# 52 - 24" Pipe West main St and College St	\$176,005	Maintenance
ID# 53 - Gentilly Canal Regional Detentio	\$410,100	Regional Masterplar
ID#54 - 36-Inch RCP at Jaycee Fielc	\$ 106,825.00	Construction
ID#55 - Culverts at 348 Johnson Stree	\$ 17,000.00	Drainage Study
ID#56 - District Attorney Alley	\$ 8,965.00	Construction
ID#57 - Henry Street at W. Moore Stree	\$ 52,088.00	Construction
ID#58 - James Stree	\$ 226,584.00	Construction
ID#59 - Johnson Street at Railroa	\$ 2,640.00	Maintenance
ID#60 - Marvin Avenue at Fair Roa	\$ 8,250.00	Construction
ID#61 - MLK at Proctor & Elm Streets	\$ 150,000.00	Regional Masterplar
ID#62 - Morris Street at Green Stree	\$ 256,908.00	Construction
ID#63 - Pond at Park on W. Jones Stree	\$ 73,390.00	Maintenance
ID#64 - Reline Pipes on Vine Stree	\$ 68,875.00	Construction

Total

\$6,008,380.00

**ID# 1 - W. MAIN ST AT FOSS ST**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$3,000.00	\$3,000.00
3	Grading	JOB	LS	\$10,000.00	\$10,000.00
4	Relocate Underground Utilities	JOB	LS	\$10,000.00	\$10,000.00
<b>SUBTOTAL</b>					<b>\$25,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$2,000.00	\$1,000.00
2	Rip Rap Outlet Protection	30	SY	\$65.00	\$1,950.00
3	Hay Bale Check Dam	4	EA	\$250.00	\$1,000.00
<b>SUBTOTAL</b>					<b>\$3,950.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	Remove existing 24" RCP	160	LF	\$12.00	\$1,920.00
2	18" RCP	725	LF	\$45.00	\$32,625.00
3	24" RCP	140	LF	\$55.00	\$7,700.00
4	36" RCP	160	LF	\$90.00	\$14,400.00
5	42" RCP	56	LF	\$120.00	\$6,720.00
6	Curb Inlets	6	EA	\$3,000.00	\$18,000.00
7	Drainage Inlets	2	EA	\$2,500.00	\$5,000.00
8	Remove and replace storm mh	1	EA	\$3,000.00	\$3,000.00
9	24-Inch Curb and Gutter	1,450	LF	\$20.00	\$29,000.00
10	Headwalls	2	EA	\$3,000.00	\$6,000.00
11	Connect to Existing Storm System	1	EA	\$1,000.00	\$1,000.00
12	36" FES	5	EA	\$1,750.00	\$8,750.00
<b>SUBTOTAL</b>					<b>\$134,115.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Replace 6-Inch Thick Concrete Driveways	6	EA	\$1,000.00	\$6,000.00
2	Cut and Patch with GAB	66	SY	\$35.00	\$2,310.00
3	Construct Sidewalk	403	SY	\$40.00	\$16,120.00
4	165 lb/SY 9.5 mm Asphalt	202	TN	\$110.00	\$22,220.00
5	Bituminous Tack Coat	1,000	GL	\$5.00	\$5,000.00
6	5-Inch White Thermoplastic Striping	6,000	LF	\$0.60	\$3,600.00
7	5-Inch Yellow Thermoplastic Striping	6,000	LF	\$0.60	\$3,600.00
8	24-Inch Stop Bar	10	LF	\$10.00	\$100.00
9	Cut and Patch Asphalt Pavement	175	SY	\$55.00	\$9,625.00
<b>SUBTOTAL</b>					<b>\$68,575.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$231,640.00</b>
<b>10% CONTINGENCY</b>					<b>\$23,164.00</b>
<b>ENGINEERING/SURVEY</b>					<b>\$23,164.00</b>
<b>PROJECT TOTAL</b>					<b>\$277,968.00</b>

ID# 2 - Gordon/Turner/Lafayette/Thomas Street Area (PROJECT COMPLETED)

OPINION OF PROBABLE COST

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
SECTION I - GENERAL					
1	Survey	JOB	LS	\$30,000.00	\$30,000.00
2	Engineering--Drainage study	JOB	LS	\$42,000.00	\$42,000.00
SUBTOTAL					\$72,000.00
TOTAL					\$72,000.00
10% CONTINGENCY					\$7,200.00
PROJECT TOTAL					\$79,200.00

**ID# 3 - CONE CRESCENT ST (PROJECT COMPLETED)**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$500.00	\$500.00
2	Traffic Control	JOB	LS	\$500.00	\$500.00
3	Grading	JOB	LS	\$4,000.00	\$4,000.00
<b>SUBTOTAL</b>					<b>\$5,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$3,000.00	\$3,000.00
2	Rip Rap Outlet Protection	30	SY	\$50.00	\$1,500.00
3	Hay Bale Check Dam	20	EA	\$250.00	\$5,000.00
4	Inlet Sediment Trap	12	EA	\$150.00	\$1,800.00
<b>SUBTOTAL</b>					<b>\$11,300.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	18" RCP	550	LF	\$23.00	\$12,650.00
2	Grate inlet	12	EA	\$2,000.00	\$24,000.00
3	Ditch inlet	1	EA	\$2,500.00	\$2,500.00
4	Connect to existing system	2	EA	\$2,000.00	\$4,000.00
<b>SUBTOTAL</b>					<b>\$43,150.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Concrete Pavement	100	SY	\$55.00	\$5,500.00
2	Cut and Patch Asphalt Pavement	160	SY	\$35.00	\$5,600.00
<b>SUBTOTAL</b>					<b>\$11,100.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$70,550.00</b>
<b>10% CONTINGENCY</b>					<b>\$7,055.00</b>
<b>ENGINEERING/SURVEY</b>					<b>\$12,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$89,605.00</b>

**ID# 4 - Zetterower Road and Lakeview Road**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Survey	JOB	LS	\$15,000.00	\$15,000.00
2	Engineering--drainage study	JOB	LS	\$25,000.00	\$25,000.00
<b>SUBTOTAL</b>					<b>\$40,000.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$40,000.00</b>
<b>10% CONTINGENCY</b>					<b>\$4,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$44,000.00</b>

**ID# 5 - WEST GRADY STREET (PROJECT COMPLETED)**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$3,000.00	\$3,000.00
2	Traffic Control	JOB	LS	\$2,000.00	\$2,000.00
<b>SUBTOTAL</b>					<b>\$5,000.00</b>
<b>SECTION II - STORM DRAINAGE</b>					
1	Concrete Headwall	1	EA	\$15,000.00	\$15,000.00
<b>SUBTOTAL</b>					<b>\$15,000.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$20,000.00</b>
<b>10% CONTINGENCY</b>					<b>\$2,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$22,000.00</b>

ID# 6 - S. COLLEGE ST					
OPINION OF PROBABLE COST					
Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$500.00	\$500.00
2	Traffic Control	JOB	LS	\$2,000.00	\$2,000.00
3	Grading	JOB	LS	\$1,000.00	\$1,000.00
<b>SUBTOTAL</b>					<b>\$3,500.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$1,000.00	\$1,000.00
2	Rip Rap Outlet Protection	153	SY	\$75.00	\$11,475.00
3	Silt Fence	135	LF	\$3.00	\$405.00
<b>SUBTOTAL</b>					<b>\$12,880.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	Concrete Headwall	55	CY	\$1,350.00	\$74,250.00
2	8'x8' Concrete Box Culvert	65	LF	\$800.00	\$52,000.00
3	Galvanized Handrail	110	LF	\$51.00	\$5,610.00
4	Divert Ditch	Job	LS	\$2,000.00	\$2,000.00
5	Saw Cut Existing Pipes Flush	Job	LS	\$575.00	\$575.00
6	24-inch RCP	24	LF	\$55.00	\$1,320.00
7	24-inch FES	1	EA	\$1,000.00	\$1,000.00
<b>SUBTOTAL</b>					<b>\$136,755.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Asphalt Pavement	100	SY	\$55.00	\$5,500.00
<b>SUBTOTAL</b>					<b>\$5,500.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$158,635.00</b>
<b>10% CONTINGENCY</b>					<b>\$15,863.50</b>
<b>ENGINEERING/SURVEY</b>					<b>\$15,863.50</b>
<b>PROJECT TOTAL</b>					<b>\$190,362.00</b>

**ID# 7 - BEASLEY ROAD (PROJECT COMPLETED)**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$500.00	\$500.00
2	Traffic Control	JOB	LS	\$500.00	\$500.00
3	Grading	JOB	LS	\$10,000.00	\$10,000.00
4	Cut and Patch	150	SY	\$55.00	\$8,250.00
5	Remove Unsuitable Material	10	CY	\$50.00	\$500.00
<b>SUBTOTAL</b>					<b>\$19,750.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$1,500.00	\$1,000.00
2	Rip Rap Outlet Protection	25	SY	\$50.00	\$1,250.00
3	Hay Bale Check Dam	5	EA	\$250.00	\$1,250.00
<b>SUBTOTAL</b>					<b>\$3,500.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	Storm Manhole	1	EA	\$2,500.00	\$2,500.00
2	24" RCP	2,500	LF	\$30.00	\$75,000.00
3	Ditch Inlet	10	EA	\$2,500.00	\$25,000.00
4	Connect to Existing Storm System	2	EA	\$2,000.00	\$4,000.00
<b>SUBTOTAL</b>					<b>\$106,500.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$129,750.00</b>
<b>10% CONTINGENCY</b>					<b>\$12,975.00</b>
<b>ENGINEERING STUDY OF POND/SURVEY</b>					<b>\$40,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$182,725.00</b>

**ID# 8 - HWY 80 DRAINAGE IMPROVEMENTS**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,500.00	\$2,500.00
2	Traffic Control	JOB	LS	\$2,500.00	\$2,500.00
3	Grading	JOB	LS	\$5,000.00	\$5,000.00
<b>SUBTOTAL</b>					<b>\$10,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$5,000.00	\$5,000.00
2	Rip Rap Outlet Protection	200	SY	\$75.00	\$15,000.00
3	Sediment Inlet Trap	7	EA	\$250.00	\$1,750.00
<b>SUBTOTAL</b>					<b>\$21,750.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	Remove existing 15" RCP	245	LF	\$10.00	\$2,450.00
2	Remove existing 18" RCP	405	LF	\$10.00	\$4,050.00
3	Remove existing 24" RCP	130	LF	\$12.00	\$1,560.00
4	Remove existing 30" RCP	735	LF	\$17.00	\$12,495.00
5	18" RCP	150	LF	\$45.00	\$6,750.00
6	24" RCP	1,220	LF	\$55.00	\$67,100.00
7	30" RCP	1,850	LF	\$70.00	\$129,500.00
8	Adjust existing curb inlets	4	EA	\$1,500.00	\$6,000.00
9	Adjust existing storm box	2	EA	\$1,500.00	\$3,000.00
10	Adjust existing drop inlet	1	EA	\$1,500.00	\$1,500.00
11	Connect to Existing Storm System	7	EA	\$1,000.00	\$7,000.00
12	18" FES	8	EA	\$750.00	\$6,000.00
13	24" FES	22	EA	\$1,000.00	\$22,000.00
<b>SUBTOTAL</b>					<b>\$269,405.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Asphalt Pavement	600	SY	\$55.00	\$33,000.00
<b>SUBTOTAL</b>					<b>\$33,000.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$334,155.00</b>
<b>10% CONTINGENCY</b>					<b>\$33,415.50</b>
<b>10% ENGINEERING/SURVEY</b>					<b>\$33,415.50</b>
<b>PROJECT TOTAL</b>					<b>\$367,570.50</b>

**ID# 9 - PITT MOORE RD**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$2,000.00	\$2,000.00
3	Grading	JOB	LS	\$4,000.00	\$4,000.00
<b>SUBTOTAL</b>					<b>\$8,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$3,000.00	\$3,000.00
2	Hay Bale Check Dam	20	EA	\$250.00	\$5,000.00
3	Rip Rap Outlet Protection	25	SY	\$75.00	\$1,875.00
4	Inlet Sediment Trap	8	EA	\$250.00	\$2,000.00
<b>SUBTOTAL</b>					<b>\$11,875.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	18" RCP	800	LF	\$45.00	\$36,000.00
2	Grate inlet	8	EA	\$2,500.00	\$20,000.00
3	18" FES	1	EA	\$750.00	\$750.00
4	Connect to existing system	1	EA	\$1,000.00	\$1,000.00
<b>SUBTOTAL</b>					<b>\$57,750.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Concrete Pavement	170	SY	\$45.00	\$7,650.00
2	Cut and Patch Asphalt Pavement	170	SY	\$55.00	\$9,350.00
<b>SUBTOTAL</b>					<b>\$17,000.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$94,625.00</b>
<b>10% CONTINGENCY</b>					<b>\$9,462.50</b>
<b>ENGINEERING/SURVEY</b>					<b>\$11,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$115,087.50</b>

**ID# 10 - CEMETERY DITCH**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$500.00	\$500.00
3	Clearing and Grubbing	JOB	LS	\$20,000.00	\$20,000.00
4	Grading	JOB	LS	\$25,000.00	\$25,000.00
<b>SUBTOTAL</b>					<b>\$47,500.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$5,000.00	\$5,000.00
2	Stone Checkdams	25	EA	\$600.00	\$15,000.00
<b>SUBTOTAL</b>					<b>\$20,000.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$67,500.00</b>
<b>10% CONTINGENCY</b>					<b>\$6,750.00</b>
<b>WETLAND CONSULTING</b>					<b>\$4,000.00</b>
<b>ENGINEERING/SURVEY</b>					<b>\$13,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$91,250.00</b>

**ID# 11 - E. MAIN ST NEAR LEE STREET**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$3,000.00	\$3,000.00
2	Traffic Control	JOB	LS	\$3,000.00	\$3,000.00
3	Grading	JOB	LS	\$10,000.00	\$10,000.00
<b>SUBTOTAL</b>					<b>\$16,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$500.00	\$1,000.00
2	Rip Rap Outlet Protection	30	SY	\$75.00	\$2,250.00
<b>SUBTOTAL</b>					<b>\$3,250.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	Remove 30" RCP	60	LF	\$17.00	\$1,020.00
2	2'x3' Concrete Box Culvert	60	LF	\$150.00	\$9,000.00
3	6" Header Curb	20	LF	\$12.00	\$240.00
4	Remove and Replace 18" RCP	60	LF	\$55.00	\$3,300.00
5	Type C Catch Basin	2	EA	\$3,000.00	\$6,000.00
6	Concrete Headwall	2	EA	\$10,000.00	\$20,000.00
<b>SUBTOTAL</b>					<b>\$39,560.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Asphalt Pavement	75	SY	\$55.00	\$4,125.00
<b>SUBTOTAL</b>					<b>\$4,125.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$62,935.00</b>
<b>10% CONTINGENCY</b>					<b>\$6,293.50</b>
<b>DRAINAGE STUDY/ENGINEERING/SURVEY</b>					<b>\$11,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$80,228.50</b>

**ID# 12 - ROUNTREE ST.**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$3,000.00	\$3,000.00
2	Traffic Control	JOB	LS	\$3,000.00	\$3,000.00
3	Grading Complete	JOB	LS	\$15,000.00	\$15,000.00
3	Relocate Existing Utilities	JOB	LS	\$10,000.00	\$10,000.00
<b>SUBTOTAL</b>					<b>\$31,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$3,000.00	\$1,000.00
2	Silt Fence	100	LF	\$2.00	\$200.00
3	Rip-Rap	JOB	LS	\$800.00	\$800.00
4	Inlet Protection	6	EA	\$200.00	\$1,200.00
<b>SUBTOTAL</b>					<b>\$3,200.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	Remove existing 12" RCP	250	LF	\$10.00	\$2,500.00
2	18" RCP	360	LF	\$45.00	\$16,200.00
3	24" RCP	350	LF	\$55.00	\$19,250.00
4	24" FES	4	EA	\$1,000.00	\$4,000.00
5	Headwall	1	EA	\$1,500.00	\$1,500.00
6	Curb Inlets	6	EA	\$3,000.00	\$18,000.00
7	24-Inch Curb and Gutter	1,600	LF	\$20.00	\$32,000.00
<b>SUBTOTAL</b>					<b>\$93,450.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Concrete Pavement	39	SY	\$55.00	\$2,145.00
2	Reconstruct Driveway	17	SY	\$1,000.00	\$17,000.00
3	165 lb/SY 9.5 mm. Asphalt	169	TN	\$110.00	\$18,590.00
4	5-Inch Tellow Thermoplastic Striping	1,600	LF	\$0.60	\$960.00
5	24-Inch White Thermoplastic Striping	10	LF	\$10.00	\$100.00
6	Bituminous Tack Coat	93	GL	\$5.00	\$465.00
<b>SUBTOTAL</b>					<b>\$39,260.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$166,910.00</b>
<b>10% CONTINGENCY</b>					<b>\$16,691.00</b>
<b>ENGINEERING/SURVEY</b>					<b>\$16,691.00</b>
<b>PROJECT TOTAL</b>					<b>\$200,292.00</b>

**ID# 13 - N. COLLEGE ST. AT SUMMIT**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$1,000.00	\$1,000.00
<b>SUBTOTAL</b>					<b>\$3,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Inlet Sediment Trap	1	EA	\$250.00	\$250.00
<b>SUBTOTAL</b>					<b>\$250.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	Drop Inlet V-1 with hood	2	EA	\$3,000.00	\$6,000.00
2	18" RCP	300	LF	\$45.00	\$13,500.00
3	Connect to Existing System	1	EA	\$1,000.00	\$1,000.00
<b>SUBTOTAL</b>					<b>\$20,500.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Asphalt Pavement	250	SY	\$55.00	\$13,750.00
2	Remove and replace 18" curb and gutter	150	LF	\$18.00	\$2,700.00
<b>SUBTOTAL</b>					<b>\$16,450.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$40,200.00</b>
<b>10% CONTINGENCY</b>					<b>\$4,020.00</b>
<b>ENGINEERING/SURVEY</b>					<b>\$6,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$50,220.00</b>

**ID# 14 - BRANNEN STREET A LOTT'S CREEK TRIBUTARY**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Survey	JOB	LS	\$10,000.00	\$10,000.00
2	Engineering/Drainage Study	JOB	LS	\$15,000.00	\$15,000.00
3	Wetlands Mitigation	JOB	LS	\$10,000.00	\$10,000.00
<b>SUBTOTAL</b>					<b>\$35,000.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$35,000.00</b>
<b>10% CONTINGENCY</b>					<b>\$3,500.00</b>
<b>PROJECT TOTAL</b>					<b>\$38,500.00</b>

**ID# 15 - E. JONES AT MULBERRY STREET**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$3,000.00	\$3,000.00
2	Traffic Control	JOB	LS	\$500.00	\$500.00
3	Clearing and Grubbing	JOB	LS	\$8,500.00	\$8,500.00
4	Grading	JOB	LS	\$11,000.00	\$11,000.00
<b>SUBTOTAL</b>					<b>\$23,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$3,500.00	\$5,000.00
<b>SUBTOTAL</b>					<b>\$5,000.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$28,000.00</b>
<b>10% CONTINGENCY</b>					<b>\$2,800.00</b>
<b>WETLAND PERMITTING</b>					<b>\$3,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$33,800.00</b>

**ID# 16 - E. VINE ST. AT RR**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Survey	JOB	LS	\$10,000.00	\$10,000.00
2	Engineering/Drainage Study	JOB	LS	\$15,000.00	\$15,000.00
3	Clearing and Grubbing	JOB	LS	\$2,000.00	\$2,000.00
4	Grading	JOB	LS	\$10,000.00	\$10,000.00
<b>SUBTOTAL</b>					<b>\$37,000.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$37,000.00</b>
<b>10% CONTINGENCY</b>					<b>\$3,700.00</b>
<b>PROJECT TOTAL</b>					<b>\$40,700.00</b>

**ID# 17 - E. OLLIFF ST (PROJECT COMPLETED IN 2017)**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$300.00	\$300.00
2	Traffic Control	JOB	LS	\$300.00	\$300.00
3	Box Culvert point repairs (cleaning and grouting)	JOB	LS	\$5,000.00	\$5,000.00
<b>SUBTOTAL</b>					<b>\$5,600.00</b>
<b>TOTAL</b>					<b>\$5,600.00</b>
<b>10% CONTINGENCY</b>					<b>\$560.00</b>
<b>PROJECT TOTAL</b>					<b>\$6,160.00</b>

**ID# 18 - RR Street at First Baptist Church**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Survey	JOB	LS	\$9,000.00	\$9,000.00
2	Engineering--Drainage study	JOB	LS	\$10,500.00	\$10,500.00
<b>SUBTOTAL</b>					<b>\$19,500.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$19,500.00</b>
<b>10% CONTINGENCY</b>					<b>\$1,950.00</b>
<b>PROJECT TOTAL</b>					<b>\$21,450.00</b>

**ID# 19 - LEWIS STREET**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$700.00	\$700.00
3	Grading	JOB	LS	\$3,000.00	\$3,000.00
4	Clearing and Grubbing	JOB	LS	\$2,000.00	\$2,000.00
<b>SUBTOTAL</b>					<b>\$7,700.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Inlet Sediment Trap	1	EA	\$250.00	\$250.00
2	Grassing	JOB	LS	\$500.00	\$500.00
3	Rip Rap Outlet Protection	15	SY	\$75.00	\$1,125.00
<b>SUBTOTAL</b>					<b>\$1,875.00</b>
<b>SECTION II - STORM DRAINAGE</b>					
1	Remove Concrete Headwall	1	EA	\$2,500.00	\$2,500.00
2	Ditch Inlet	1	EA	\$2,500.00	\$2,500.00
3	18" FES	1	EA	\$750.00	\$750.00
4	Connect to Existing System	1	EA	\$1,000.00	\$1,000.00
<b>SUBTOTAL</b>					<b>\$6,750.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$16,325.00</b>
<b>10% CONTINGENCY</b>					<b>\$1,632.50</b>
<b>ENGINEERING/SURVEY</b>					<b>\$5,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$22,957.50</b>

**ID# 20 - DONNIE SIMMONS WAY**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$3,000.00	\$3,000.00
2	Traffic Control	JOB	LS	\$2,000.00	\$2,000.00
3	Grading	JOB	LS	\$3,000.00	\$3,000.00
<b>SUBTOTAL</b>					<b>\$8,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$500.00	\$1,000.00
2	Rip Rap Outlet Protection	60	SY	\$75.00	\$4,500.00
<b>SUBTOTAL</b>					<b>\$5,500.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	Remove 18" RCP	125	LF	\$10.00	\$1,250.00
2	Remove 24" RCP	125	LF	\$15.00	\$1,875.00
3	3'x8' Concrete Box Culvert	60	LF	\$200.00	\$12,000.00
4	Concrete Headwall	2	EA	\$20,000.00	\$40,000.00
<b>SUBTOTAL</b>					<b>\$55,125.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Asphalt Pavement	100	SY	\$75.00	\$7,500.00
2	Cut and Patch Concrete Pavement	10	SY	\$45.00	\$450.00
<b>SUBTOTAL</b>					<b>\$7,950.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$76,575.00</b>
<b>10% CONTINGENCY</b>					<b>\$7,657.50</b>
<b>ENGINEERING/SURVEY</b>					<b>\$7,500.00</b>
<b>PROJECT TOTAL</b>					<b>\$91,732.50</b>

**ID# 21 - SOUTH WALNUT ST AT CHERRY ST**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$500.00	\$500.00
<b>SUBTOTAL</b>					<b>\$2,500.00</b>
<b>SECTION II - STORM DRAINAGE</b>					
1	Remove damaged inlet top	1	EA	\$500.00	\$500.00
2	Replace inlet top	1	EA	\$1,500.00	\$1,500.00
<b>SUBTOTAL</b>					<b>\$2,000.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$4,500.00</b>
<b>10% CONTINGENCY</b>					<b>\$450.00</b>
<b>PROJECT TOTAL</b>					<b>\$4,950.00</b>

**ID# 22 - DUKE AND SPRINGDALE  
OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$500.00	\$500.00
3	Grading	JOB	LS	\$8,000.00	\$8,000.00
<b>SUBTOTAL</b>					<b>\$10,500.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$3,000.00	\$5,000.00
2	Stone Checkdams	5	EA	\$500.00	\$5,000.00
<b>SUBTOTAL</b>					<b>\$10,000.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$20,500.00</b>
<b>10% CONTINGENCY</b>					<b>\$2,050.00</b>
<b>ENGINEERING/SURVEY</b>					<b>\$6,500.00</b>
<b>PROJECT TOTAL</b>					<b>\$29,050.00</b>

**ID# 23 - PINE DR.**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$500.00	\$500.00
3	Grading	JOB	LS	\$500.00	\$500.00
4	Television Inspection	JOB	LS	\$1,500.00	\$1,500.00
<b>SUBTOTAL</b>					<b>\$4,500.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$500.00	\$1,000.00
2	Rip Rap Outlet Protection	30	SY	\$75.00	\$2,250.00
<b>SUBTOTAL</b>					<b>\$3,250.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	Remove 18" RCP	30	LF	\$10.00	\$300.00
2	24" RCP	30	LF	\$55.00	\$1,650.00
3	24" FES	2	EA	\$1,000.00	\$2,000.00
4	Cut Asphalt, Raise Lid, Repair Asphalt	2	EA	\$5,000.00	\$10,000.00
<b>SUBTOTAL</b>					<b>\$13,950.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Asphalt Pavement	25	SY	\$55.00	\$1,375.00
<b>SUBTOTAL</b>					<b>\$1,375.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$23,075.00</b>
<b>10% CONTINGENCY</b>					<b>\$2,307.50</b>
<b>ENGINEERING/SURVEY</b>					<b>\$5,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$30,382.50</b>

**ID# 24 - W. JONES ST AT HARDEN ST.  
OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$1,000.00	\$1,000.00
3	Grading	JOB	LS	\$2,000.00	\$2,000.00
4	Television Inspection	JOB	LS	\$1,500.00	\$1,500.00
<b>SUBTOTAL</b>					<b>\$5,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Inlet Sediment Trap	2	EA	\$250.00	\$500.00
2	Grassing	JOB	LS	\$500.00	\$500.00
3	Haybale check dam	2	EA	\$250.00	\$500.00
<b>SUBTOTAL</b>					<b>\$1,500.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	Ditch Inlet	1	EA	\$2,500.00	\$2,500.00
2	18" RCP	45	LF	\$45.00	\$2,025.00
3	Connect to Existing System	1	EA	\$1,000.00	\$1,000.00
4	Cut Asphalt, Raise Lid, Repair Asphalt	2	EA	\$5,000.00	\$10,000.00
<b>SUBTOTAL</b>					<b>\$15,525.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Asphalt Pavement	40	SY	\$55.00	\$2,200.00
2	18" curb and gutter	20	LF	\$15.00	\$300.00
<b>SUBTOTAL</b>					<b>\$2,500.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$24,525.00</b>
<b>10% CONTINGENCY</b>					<b>\$2,452.50</b>
<b>ENGINEERING/SURVEY</b>					<b>\$5,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$31,977.50</b>

**ID# 25 - S. COLLEGE ST AT AA BUILDING**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$700.00	\$700.00
3	Grading	JOB	LS	\$500.00	\$500.00
<b>SUBTOTAL</b>					<b>\$3,200.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Rip Rap Outlet Protection	25	SY	\$75.00	\$1,875.00
<b>SUBTOTAL</b>					<b>\$1,875.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	Remove 18" RCP	8	LF	\$10.00	\$80.00
2	18" RCP	8	LF	\$45.00	\$360.00
3	18" FES	1	EA	\$750.00	\$750.00
<b>SUBTOTAL</b>					<b>\$1,190.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$6,265.00</b>
<b>10% CONTINGENCY</b>					<b>\$626.50</b>
<b>PROJECT TOTAL</b>					<b>\$6,891.50</b>

**ID# 26 - E. MAIN AT GORDON ST.  
OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$500.00	\$500.00
<b>SUBTOTAL</b>					<b>\$2,500.00</b>
<b>SECTION II - STORM DRAINAGE</b>					
1	Remove damaged inlet top	1	EA	\$500.00	\$500.00
2	Replace inlet top	1	EA	\$1,500.00	\$1,500.00
<b>SUBTOTAL</b>					<b>\$2,000.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$4,500.00</b>
<b>10% CONTINGENCY</b>					<b>\$450.00</b>
<b>PROJECT TOTAL</b>					<b>\$4,950.00</b>

**ID# 27 - Gentilly From Subdivision**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Grading	JOB	LS	\$2,500.00	\$2,500.00
<b>SUBTOTAL</b>					<b>\$4,500.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$1,500.00	\$1,500.00
2	Hay Bale Check Dam	6	EA	\$250.00	\$1,500.00
3	Rip Rap Outlet Protection	100	SY	\$75.00	\$7,500.00
<b>SUBTOTAL</b>					<b>\$10,500.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	30" RCP	192	LF	\$70.00	\$13,440.00
2	30" FES	12	EA	\$1,250.00	\$15,000.00
<b>SUBTOTAL</b>					<b>\$28,440.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$43,440.00</b>
<b>10% CONTINGENCY</b>					<b>\$4,344.00</b>
<b>ENGINEERING/SURVEY</b>					<b>\$11,500.00</b>
<b>PROJECT TOTAL</b>					<b>\$59,284.00</b>

**ID# 28 - Whitesville Community**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Survey	JOB	LS	\$10,000.00	\$10,000.00
2	Engineering--Drainage study	JOB	LS	\$20,000.00	\$20,000.00
<b>SUBTOTAL</b>					<b>\$30,000.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$30,000.00</b>
<b>10% CONTINGENCY</b>					<b>\$3,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$33,000.00</b>

**ID# 29 - Sugar Hill Community**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Survey	JOB	LS	\$10,000.00	\$10,000.00
2	Engineering--drainage study	JOB	LS	\$15,000.00	\$15,000.00
<b>SUBTOTAL</b>					<b>\$25,000.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$25,000.00</b>
<b>10% CONTINGENCY</b>					<b>\$2,500.00</b>
<b>PROJECT TOTAL</b>					<b>\$27,500.00</b>

**ID# 30 - MAIN ST.**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$4,000.00	\$4,000.00
2	Traffic Control	JOB	LS	\$2,000.00	\$2,000.00
<b>SUBTOTAL</b>					<b>\$6,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Inlet Sediment Trap	25	EA	\$250.00	\$6,250.00
<b>SUBTOTAL</b>					<b>\$6,250.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	Remove drop inlets	25	EA	\$2,000.00	\$50,000.00
2	Drop Inlet w/ Hood	25	LF	\$2,500.00	\$62,500.00
3	Connect to Existing System	1	EA	\$1,000.00	\$1,000.00
<b>SUBTOTAL</b>					<b>\$113,500.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Asphalt Pavement	70	SY	\$55.00	\$3,850.00
2	Restore curb and gutter	250	LF	\$20.00	\$5,000.00
3	1" mill on roadway side	1,400	SY	\$5.00	\$7,000.00
<b>SUBTOTAL</b>					<b>\$8,850.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$134,600.00</b>
<b>10% CONTINGENCY</b>					<b>\$13,460.00</b>
<b>ENGINEERING/SURVEY</b>					<b>\$15,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$163,060.00</b>

**ID# 31 - WESTLAKE DR AT MONTGOMERY DR**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$1,000.00	\$1,000.00
3	Grading	JOB	LS	\$2,000.00	\$2,000.00
<b>SUBTOTAL</b>					<b>\$5,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$500.00	\$1,000.00
2	Rip Rap Outlet Protection	30	SY	\$75.00	\$2,250.00
<b>SUBTOTAL</b>					<b>\$3,250.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	Concrete Headwall	2	EA	\$5,000.00	\$10,000.00
<b>SUBTOTAL</b>					<b>\$10,000.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$18,250.00</b>
<b>10% CONTINGENCY</b>					<b>\$1,825.00</b>
<b>ENGINEERING/SURVEY</b>					<b>\$4,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$24,075.00</b>

**ID# 32 - LYDIA STREET AT HART STREET**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$500.00	\$500.00
3	Grading	JOB	LS	\$3,000.00	\$3,000.00
4	Demolition	JOB	LS	\$1,000.00	\$1,000.00
<b>SUBTOTAL</b>					<b>\$6,500.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$500.00	\$500.00
2	Inlet Sediment Trap	6	EA	\$250.00	\$1,500.00
3	Rip Rap Outlet Protection	10	SY	\$75.00	\$750.00
<b>SUBTOTAL</b>					<b>\$2,750.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	18" RCP	550	LF	\$45.00	\$24,750.00
2	18" FES	1	EA	\$750.00	\$750.00
3	Ditch Inlet	6	EA	\$2,500.00	\$15,000.00
4	Connect to existing system	1	EA	\$1,000.00	\$1,000.00
<b>SUBTOTAL</b>					<b>\$41,500.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Concrete Pavement	40	SY	\$55.00	\$2,200.00
<b>SUBTOTAL</b>					<b>\$2,200.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$52,950.00</b>
<b>10% CONTINGENCY</b>					<b>\$5,295.00</b>
<b>ENGINEERING/SURVEY</b>					<b>\$7,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$65,245.00</b>

**ID# 33 - STATESBORO PLACE CIRCLE**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$1,500.00	\$1,500.00
3	Grading	JOB	LS	\$2,000.00	\$2,000.00
<b>SUBTOTAL</b>					<b>\$5,500.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$500.00	\$500.00
2	Inlet Sediment Trap	4	EA	\$250.00	\$1,000.00
3	Rip Rap Outlet Protection	10	SY	\$75.00	\$750.00
<b>SUBTOTAL</b>					<b>\$2,250.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	18" RCP	120	LF	\$45.00	\$5,400.00
2	18" FES	2	EA	\$750.00	\$1,500.00
3	Curb Inlet Type "A"	4	EA	\$3,000.00	\$12,000.00
4	Storm Manhole	2	EA	\$2,500.00	\$5,000.00
5	Connect to existing system	2	EA	\$1,000.00	\$2,000.00
<b>SUBTOTAL</b>					<b>\$25,900.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$33,650.00</b>
<b>10% CONTINGENCY</b>					<b>\$3,365.00</b>
<b>ENGINEERING/SURVEY</b>					<b>\$8,500.00</b>
<b>PROJECT TOTAL</b>					<b>\$45,515.00</b>

**ID# 34 - Hendley vs. Persinger Drainage Dispute**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$1,000.00	\$1,000.00
3	Grading	JOB	LS	\$2,000.00	\$2,000.00
<b>SUBTOTAL</b>					<b>\$5,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$1,000.00	\$1,000.00
2	Hay Bale Check Dam	3	EA	\$250.00	\$750.00
3	Rip Rap Outlet Protection	10	SY	\$75.00	\$750.00
<b>SUBTOTAL</b>					<b>\$2,500.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	18" RCP	32	LF	\$45.00	\$1,440.00
2	Roof Inlet Outfall Structure	1	EA	\$2,500.00	\$2,500.00
3	18" FES	1	EA	\$750.00	\$750.00
4	Concrete Headwall	2	EA	\$1,200.00	\$2,400.00
<b>SUBTOTAL</b>					<b>\$7,090.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Concrete Pavement	18	SY	\$55.00	\$990.00
<b>SUBTOTAL</b>					<b>\$990.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$15,580.00</b>
<b>10% CONTINGENCY</b>					<b>\$1,558.00</b>
<b>ENGINEERING/SURVEY</b>					<b>\$5,500.00</b>
<b>PROJECT TOTAL</b>					<b>\$22,638.00</b>

**ID# 35 - CHANDLER ROAD DRAINAGE**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$2,500.00	\$2,500.00
3	Grading	JOB	LS	\$3,000.00	\$3,000.00
4	Demolition	JOB	LS	\$25,000.00	\$25,000.00
5	Striping	JOB	LS	\$1,500.00	\$1,500.00
<b>SUBTOTAL</b>					<b>\$34,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$1,000.00	\$1,000.00
2	Inlet Sediment Trap	9	EA	\$250.00	\$2,250.00
<b>SUBTOTAL</b>					<b>\$3,250.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	18" RCP	80	LF	\$45.00	\$3,600.00
2	24" RCP	450	LF	\$55.00	\$24,750.00
3	30" RCP	950	LF	\$70.00	\$66,500.00
4	Grate inlet	2	EA	\$2,500.00	\$5,000.00
5	Drop Inlet Type V-1	1	EA	\$2,500.00	\$2,500.00
6	Storm Manhole	6	EA	\$2,500.00	\$15,000.00
7	Connect to existing system	2	EA	\$1,000.00	\$2,000.00
<b>SUBTOTAL</b>					<b>\$119,350.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Concrete Pavement	80	SY	\$45.00	\$3,600.00
2	Cut and Patch Asphalt Pavement	400	SY	\$55.00	\$22,000.00
3	18" Std. Curb and Gutter	100	LF	\$15.00	\$1,500.00
4	Concrete Sidewalk	450	SY	\$40.00	\$18,000.00
<b>SUBTOTAL</b>					<b>\$45,100.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$201,700.00</b>
<b>10% CONTINGENCY</b>					<b>\$20,170.00</b>
<b>ENGINEERING/SURVEY</b>					<b>\$17,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$238,870.00</b>

**ID# 36 - COLLEGE NEAR ELM STREET**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$500.00
2	Traffic Control	JOB	LS	\$1,000.00	\$500.00
3	Grading	JOB	LS	\$1,000.00	\$1,000.00
<b>SUBTOTAL</b>					<b>\$2,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$300.00	\$300.00
2	Inlet Sediment Trap	2	EA	\$150.00	\$300.00
<b>SUBTOTAL</b>					<b>\$600.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	18" RCP	230	LF	\$45.00	\$10,350.00
2	Connect to existing system	1	EA	\$1,000.00	\$1,000.00
3	Type C Catch Basin	1	EA	\$2,500.00	\$2,500.00
4	Storm Manhole	1	EA	\$2,500.00	\$2,500.00
<b>SUBTOTAL</b>					<b>\$16,350.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Asphalt Pavement	60	SY	\$55.00	\$3,300.00
<b>SUBTOTAL</b>					<b>\$3,300.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$22,250.00</b>
<b>10% CONTINGENCY</b>					<b>\$2,225.00</b>
<b>DRAINAGE STUDY</b>					<b>\$4,000.00</b>
<b>ENGINEERING/SURVEY</b>					<b>\$6,500.00</b>
<b>PROJECT TOTAL</b>					<b>\$34,975.00</b>

**ID# 37 - Lanier Drive at Stadium Walk**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$500.00	\$500.00
3	Grading	JOB	LS	\$2,000.00	\$2,000.00
<b>SUBTOTAL</b>					<b>\$4,500.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$500.00	\$500.00
2	Hay Bale Check Dam	1	EA	\$250.00	\$250.00
3	Rip Rap Outlet Protection	5	SY	\$75.00	\$375.00
<b>SUBTOTAL</b>					<b>\$1,125.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$5,625.00</b>
<b>10% CONTINGENCY</b>					<b>\$562.50</b>
<b>PROJECT TOTAL</b>					<b>\$6,187.50</b>

**ID# 38 - Stadium at Chandler**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$1,000.00	\$1,000.00
3	Grading	JOB	LS	\$2,000.00	\$2,000.00
<b>SUBTOTAL</b>					<b>\$5,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$500.00	\$3,000.00
2	Hay Bale Check Dam	2	EA	\$250.00	\$500.00
3	Inlet Sediment Trap	3	EA	\$250.00	\$750.00
<b>SUBTOTAL</b>					<b>\$4,250.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	18" RCP	320	LF	\$45.00	\$14,400.00
2	Grate inlet	2	EA	\$2,500.00	\$5,000.00
3	Connect to existing system	1	EA	\$1,000.00	\$1,000.00
<b>SUBTOTAL</b>					<b>\$20,400.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Concrete Pavement	12	SY	\$55.00	\$660.00
<b>SUBTOTAL</b>					<b>\$660.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$30,310.00</b>
<b>10% CONTINGENCY</b>					<b>\$3,031.00</b>
<b>ENGINEERING/SURVEY</b>					<b>\$5,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$38,341.00</b>

**ID# 39 - Zetterower Road at Mattie Lively**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$500.00	\$500.00
3	Grading	JOB	LS	\$5,500.00	\$5,500.00
<b>SUBTOTAL</b>					<b>\$8,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$500.00	\$500.00
2	Rip Rap Outlet Protection	30	CY	\$75.00	\$2,250.00
<b>SUBTOTAL</b>					<b>\$2,750.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	Remove ex. 30" RCP	100	LF	\$17.00	\$1,700.00
2	Remove ex. 15" RCP	50	LF	\$10.00	\$500.00
3	18" RCP	50	LF	\$45.00	\$2,250.00
4	42" RCP	100	LF	\$120.00	\$12,000.00
<b>SUBTOTAL</b>					<b>\$16,450.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Asphalt Pavement	100	SY	\$55.00	\$5,500.00
<b>SUBTOTAL</b>					<b>\$5,500.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$32,700.00</b>
<b>10% CONTINGENCY</b>					<b>\$3,270.00</b>
<b>ENGINEERING/SURVEY</b>					<b>\$7,500.00</b>
<b>PROJECT TOTAL</b>					<b>\$43,470.00</b>

**ID# 40 - Old Register Road at Monarch Apartments**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$1,000.00	\$1,000.00
3	Grading	JOB	LS	\$3,000.00	\$3,000.00
<b>SUBTOTAL</b>					<b>\$6,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$500.00	\$500.00
2	Rip Rap Outlet Protection	10	CY	\$75.00	\$750.00
<b>SUBTOTAL</b>					<b>\$1,250.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	Remove ex. 30" RCP	85	LF	\$17.00	\$1,445.00
2	42" RCP	85	LF	\$120.00	\$10,200.00
<b>SUBTOTAL</b>					<b>\$11,645.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Asphalt Pavement	40	SY	\$55.00	\$2,200.00
<b>SUBTOTAL</b>					<b>\$2,200.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$21,095.00</b>
<b>10% CONTINGENCY</b>					<b>\$2,109.50</b>
<b>ENGINEERING/SURVEY</b>					<b>\$7,500.00</b>
<b>PROJECT TOTAL</b>					<b>\$30,704.50</b>

**ID# 41 - Georgia Villas and Olympic Boulevard**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Survey	JOB	LS	\$20,000.00	\$20,000.00
2	Engineering--Drainage study	JOB	LS	\$30,000.00	\$30,000.00
<b>SUBTOTAL</b>					<b>\$50,000.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$50,000.00</b>
<b>10% CONTINGENCY</b>					<b>\$5,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$55,000.00</b>

**ID# 42 - Bland Avenue @ Georgia Avenue**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$500.00	\$500.00
3	Grading	JOB	LS	\$11,000.00	\$11,000.00
<b>SUBTOTAL</b>					<b>\$13,500.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$2,500.00	\$500.00
2	Inlet Sediment Trap	2	EA	\$250.00	\$500.00
<b>SUBTOTAL</b>					<b>\$1,000.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	18" RCP	60	LF	\$45.00	\$2,700.00
2	Ditch Inlet	2	EA	\$2,500.00	\$5,000.00
3	Storm Manhole	1	EA	\$2,500.00	\$2,500.00
4	Connect to Existing System	1	EA	\$1,000.00	\$1,000.00
<b>SUBTOTAL</b>					<b>\$11,200.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Asphalt Pavement	40	SY	\$55.00	\$2,200.00
<b>SUBTOTAL</b>					<b>\$2,200.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$27,900.00</b>
<b>10% CONTINGENCY</b>					<b>\$2,790.00</b>
<b>ENGINEERING/SURVEY</b>					<b>\$7,500.00</b>
<b>PROJECT TOTAL</b>					<b>\$38,190.00</b>

**ID# 43 - Bruce Drive @ RR**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$1,000.00	\$1,000.00
3	Grading	JOB	LS	\$1,000.00	\$1,000.00
<b>SUBTOTAL</b>					<b>\$4,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$500.00	\$500.00
2	Rip Rap Outlet Protection	10	CY	\$75.00	\$750.00
<b>SUBTOTAL</b>					<b>\$1,250.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	Remove ex. 15" RCP	80	LF	\$10.00	\$800.00
2	18" RCP	80	LF	\$45.00	\$3,600.00
3	18" FES	4	EA	\$750.00	\$3,000.00
<b>SUBTOTAL</b>					<b>\$7,400.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Asphalt Pavement	35	SY	\$55.00	\$1,925.00
<b>SUBTOTAL</b>					<b>\$1,925.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$14,575.00</b>
<b>10% CONTINGENCY</b>					<b>\$1,457.50</b>
<b>ENGINEERING/SURVEY</b>					<b>\$7,500.00</b>
<b>PROJECT TOTAL</b>					<b>\$23,532.50</b>

**ID# 44 - Cromartie Drive @ the Oval**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$1,000.00	\$1,000.00
3	Grading	JOB	LS	\$1,000.00	\$1,000.00
<b>SUBTOTAL</b>					<b>\$4,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$500.00	\$500.00
2	Rip Rap Outlet Protection	20	CY	\$75.00	\$1,500.00
<b>SUBTOTAL</b>					<b>\$2,000.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	Remove ex. 15" RCP	80	LF	\$10.00	\$800.00
2	18" FES	2	EA	\$750.00	\$1,500.00
3	18" RCP	40	LF	\$45.00	\$1,800.00
4	24" FES	4	EA	\$1,000.00	\$4,000.00
5	24" RCP	80	LF	\$55.00	\$4,400.00
<b>SUBTOTAL</b>					<b>\$12,500.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Asphalt Pavement	70	SY	\$55.00	\$3,850.00
<b>SUBTOTAL</b>					<b>\$3,850.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$22,350.00</b>
<b>10% CONTINGENCY</b>					<b>\$2,235.00</b>
<b>ENGINEERING/SURVEY</b>					<b>\$5,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$29,585.00</b>

**ID# 45 - Johnson Lane**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$1,000.00	\$1,000.00
3	Grading	JOB	LS	\$2,500.00	\$2,500.00
<b>SUBTOTAL</b>					<b>\$5,500.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$1,000.00	\$500.00
2	Rip Rap Outlet Protection	30	CY	\$75.00	\$2,250.00
<b>SUBTOTAL</b>					<b>\$2,750.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	Remove ex. 30" RCP	130	LF	\$17.00	\$2,210.00
2	48" RCP	130	LF	\$160.00	\$20,800.00
3	Concrete Headwall	2	EA	\$10,000.00	\$20,000.00
<b>SUBTOTAL</b>					<b>\$43,010.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Asphalt Pavement	40	SY	\$55.00	\$2,200.00
<b>SUBTOTAL</b>					<b>\$2,200.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$53,460.00</b>
<b>10% CONTINGENCY</b>					<b>\$5,346.00</b>
<b>DRAINAGE STUDY WITH SURVEY</b>					<b>\$10,000.00</b>
<b>ENGINEERING/SURVEY</b>					<b>\$7,500.00</b>
<b>PROJECT TOTAL</b>					<b>\$66,306.00</b>

**ID# 46 -Matthews Road @ East Parrish St**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$1,500.00	\$1,500.00
3	Grading	JOB	LS	\$3,500.00	\$3,500.00
<b>SUBTOTAL</b>					<b>\$7,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$1,000.00	\$500.00
2	Rip Rap Outlet Protection	30	CY	\$75.00	\$2,250.00
3	Inlet Sediment Trap	2	EA	\$250.00	\$500.00
<b>SUBTOTAL</b>					<b>\$3,250.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	Remove ex. 12" RCP	35	LF	\$10.00	\$350.00
2	Remove ex. 15" RCP	35	LF	\$10.00	\$350.00
3	Remove ex. 18" RCP	65	EA	\$12.00	\$780.00
4	24" RCP	135	EA	\$55.00	\$7,425.00
5	Ditch Inlet	2	EA	\$2,500.00	\$5,000.00
6	Concrete Headwall	1	EA	\$5,000.00	\$5,000.00
<b>SUBTOTAL</b>					<b>\$18,905.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Asphalt Pavement	40	SY	\$55.00	\$2,200.00
<b>SUBTOTAL</b>					<b>\$2,200.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$31,355.00</b>
<b>10% CONTINGENCY</b>					<b>\$3,135.50</b>
<b>ENGINEERING/SURVEY</b>					<b>\$7,500.00</b>
<b>PROJECT TOTAL</b>					<b>\$41,990.50</b>

**ID# 47 Archway and Brampton Avenue**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
<b>SUBTOTAL</b>					<b>\$2,000.00</b>
<b>SECTION II - STORM DRAINAGE</b>					
1	Clean out existing outfall	1	EA	\$3,000.00	\$3,000.00
<b>SUBTOTAL</b>					<b>\$3,000.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$5,000.00</b>
<b>10% CONTINGENCY</b>					<b>\$500.00</b>
<b>PROJECT TOTAL</b>					<b>\$5,500.00</b>

**ID# 48 - South College Street Drainage Canal**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$1,000.00	\$1,000.00
3	Clearing and Grubbing	JOB	LS	\$6,000.00	\$6,000.00
4	Grading	JOB	LS	\$19,000.00	\$19,000.00
<b>SUBTOTAL</b>					<b>\$28,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$3,500.00	\$3,500.00
2	Rip Rap Outlet Protection	30	SY	\$75.00	\$2,250.00
3	Stone Checkdams	4	EA	\$500.00	\$2,000.00
4	Silt Fence	1,400	LF	\$3.00	\$4,200.00
<b>SUBTOTAL</b>					<b>\$11,950.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	36" RCP	180	LF	\$90.00	\$16,200.00
2	36" FES	6	EA	\$1,750.00	\$10,500.00
<b>SUBTOTAL</b>					<b>\$26,700.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$66,650.00</b>
<b>10% CONTINGENCY</b>					<b>\$6,665.00</b>
<b>ENGINEERING/SURVEY/WETLANDS</b>					<b>\$50,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$123,315.00</b>

**ID# 49 - Canal at Church St and Donnie Simmons Rd**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$1,000.00	\$1,000.00
3	Clearing and Grubbing	JOB	LS	\$3,500.00	\$3,500.00
4	Grading	JOB	LS	\$18,000.00	\$18,000.00
<b>SUBTOTAL</b>					<b>\$24,500.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$3,000.00	\$3,000.00
2	Stone Checkdams	4	EA	\$500.00	\$2,000.00
3	Connection to existing drainage structure w/Concrete headwalls	3	EA	\$1,000.00	\$3,000.00
<b>SUBTOTAL</b>					<b>\$8,000.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	10' Gravel Access Road	1,300	SY	\$18.00	\$23,400.00
<b>SUBTOTAL</b>					<b>\$23,400.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$55,900.00</b>
<b>10% CONTINGENCY</b>					<b>\$5,590.00</b>
<b>ENGINEERING/SURVEY/WETLANDS</b>					<b>\$35,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$96,490.00</b>

**ID# 50 - Regional Detention at Zetterower and Jef Road**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$5,000.00	\$5,000.00
2	Traffic Control	JOB	LS	\$1,500.00	\$1,500.00
3	Clearing and Grubbing	JOB	LS	\$6,000.00	\$6,000.00
4	Grading	JOB	CY	\$220,000.00	\$220,000.00
<b>SUBTOTAL</b>					<b>\$232,500.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$7,000.00	\$500.00
2	Stone Checkdams	4	EA	\$500.00	\$2,000.00
3	Silt Fence	1,000	LF	\$3.00	\$3,000.00
4	Rip Rap Outlet Protection	30	SY	\$75.00	\$2,250.00
<b>SUBTOTAL</b>					<b>\$7,750.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	36" RCP	124	LF	\$90.00	\$11,160.00
2	Outfall Structure	1	EA	\$3,000.00	\$3,000.00
3	36" FES	6	EA	\$1,750.00	\$10,500.00
<b>SUBTOTAL</b>					<b>\$24,660.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Concrete Pavement	30	SY	\$55.00	\$1,650.00
<b>SUBTOTAL</b>					<b>\$1,650.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$266,560.00</b>
<b>10% CONTINGENCY</b>					<b>\$26,656.00</b>
<b>ENGINEERING/SURVEY/WETLANDS</b>					<b>\$45,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$338,216.00</b>

\* doesn't include cost of easement or property acquisition

**ID# 51 - Gentilly Canal**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$5,000.00	\$5,000.00
2	Traffic Control	JOB	LS	\$4,000.00	\$4,000.00
3	Clearing and Grubbing	JOB	LS	\$10,000.00	\$10,000.00
4	Grading	JOB	LS	\$330,000.00	\$330,000.00
<b>SUBTOTAL</b>					<b>\$349,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$22,000.00	\$22,000.00
2	Stone Checkdams	30	EA	\$500.00	\$15,000.00
3	Rip Rap	100	SY	\$75.00	\$7,500.00
4	Silt Fence	9,300	LF	\$3.00	\$27,900.00
<b>SUBTOTAL</b>					<b>\$72,400.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	Connect to Existing Drainage Structure (concrete headwalls)	15	EA	\$2,000.00	\$30,000.00
2	Fabriform Bank Stabilization	3,800	SY	\$70.00	\$266,000.00
<b>SUBTOTAL</b>					<b>\$296,000.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	10' Gravel Maintenance Road	8,500	SY	\$18.00	\$153,000.00
<b>SUBTOTAL</b>					<b>\$153,000.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$870,400.00</b>
<b>10% CONTINGENCY</b>					<b>\$87,040.00</b>
<b>ENGINEERING/SURVEY/ WETLANDS</b>					<b>\$68,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$1,025,440.00</b>

\*doesn't include cost of easement or property aquisition

**ID# 52 - West Main at College and Johnson St**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$2,000.00	\$2,000.00
2	Traffic Control	JOB	LS	\$2,500.00	\$2,500.00
3	Grading	JOB	LS	\$2,000.00	\$2,000.00
4	Demolition	JOB	LS	\$25,000.00	\$25,000.00
5	Striping	JOB	LS	\$1,200.00	\$1,200.00
<b>SUBTOTAL</b>					<b>\$32,700.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$1,200.00	\$1,200.00
2	Inlet Sediment Trap	3	EA	\$250.00	\$750.00
<b>SUBTOTAL</b>					<b>\$1,950.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	36" RCP	820	LF	\$90.00	\$73,800.00
2	Drop Inlet Type V-1	3	EA	\$2,500.00	\$7,500.00
3	Storm Manhole	2	EA	\$2,500.00	\$5,000.00
4	Connect to existing system	2	EA	\$1,000.00	\$2,000.00
<b>SUBTOTAL</b>					<b>\$88,300.00</b>
<b>SECTION IV - PAVEMENT</b>					
1	Cut and Patch Concrete Pavement	130	SY	\$45.00	\$5,850.00
2	Cut and Patch Asphalt Pavement	50	SY	\$55.00	\$2,750.00
3	18" Std. Curb and Gutter	200	LF	\$15.00	\$3,000.00
4	Concrete Sidewalk	250	SY	\$40.00	\$10,000.00
<b>SUBTOTAL</b>					<b>\$21,600.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$144,550.00</b>
<b>10% CONTINGENCY</b>					<b>\$14,455.00</b>
<b>ENGINEERING/SURVEY</b>					<b>\$17,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$176,005.00</b>

**ID# 53 - Gentilly Canal Regional Detention**  
**OPINION OF PROBABLE COST**

Item	Description	Est. Qty.	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	JOB	LS	\$5,000.00	\$5,000.00
2	Traffic Control	JOB	LS	\$1,000.00	\$1,000.00
3	Clearing and Grubbing	JOB	LS	\$5,500.00	\$5,500.00
4	Grading	JOB	LS	\$110,000.00	\$110,000.00
<b>SUBTOTAL</b>					<b>\$121,500.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	JOB	LS	\$4,000.00	\$4,000.00
2	Rip Rap	100	SY	\$75.00	\$7,500.00
3	Silt Fence	1,000	LF	\$3.00	\$3,000.00
<b>SUBTOTAL</b>					<b>\$14,500.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	36" RCP	1,000	LF	\$90.00	\$90,000.00
2	36" FES	20	EA	\$1,750.00	\$35,000.00
<b>SUBTOTAL</b>					<b>\$125,000.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$261,000.00</b>
<b>10% CONTINGENCY</b>					<b>\$26,100.00</b>
<b>ENGINEERING/SURVEY/WETLANDS</b>					<b>\$123,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$410,100.00</b>

\*doesn't include cost of easement or property acquisition

**ID #54 - 36-INCH RCP AT JAYCEE FIELD****OPINION OF PROBABLE COST****OPTION A - "RELINE 36-INCH RCP"**

Item	Description	Est. Quantity	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	Job	LS	\$ 6,000.00	\$ 6,000.00
<b>SUBTOTAL</b>					\$ 6,000.00
<b>SECTION II - STORM DRAINAGE</b>					
1	Clean 36-Inch RCP	500	LF	\$ 8.00	\$ 4,000.00
2	Cured In Place Liner	500	LF	\$ 205.00	\$ 102,500.00
3	Television Inspection	500	LF	\$ 3.00	\$ 1,500.00
<b>SUBTOTAL</b>					\$ 108,000.00
<b>CONSTRUCTION TOTAL</b>					\$ 114,000.00
<b>10% CONTINGENCY</b>					\$ 11,400.00
<b>ENGINEERING / SURVEY</b>					\$ 7,000.00
<b>PROJECT TOTAL</b>					\$ 132,400.00

**OPTION B - "DIG AND REPLACE"**

Item	Description	Est. Quantity	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization Job	Job	LS	\$ 1,000.00	\$ 1,000.00
2	Remove and Replace Chainlink Fence	Job	LS	\$ 1,000.00	\$ 1,000.00
<b>SUBTOTAL</b>					\$ 2,000.00
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	Job	LS	\$ 1,500.00	\$ 1,500.00
2	Inlet Protection	5	EA	\$ 250.00	\$ 1,250.00
<b>SUBTOTAL</b>					\$ 2,750.00
<b>SECTION III - STORM DRAINAGE</b>					
1	Remove Existing 36-inch RCP	500	LF	\$ 22.00	\$ 11,000.00
2	42-inch RCP (0'-6' Cut)	500	LF	\$ 120.00	\$ 60,000.00
3	Remove Existing Inlets	5	EA	\$ 500.00	\$ 2,500.00
4	Roof Inlets (0'-8' Cut)	5	EA	\$ 2,500.00	\$ 12,500.00
<b>SUBTOTAL</b>					\$ 86,000.00
<b>CONSTRUCTION TOTAL</b>					\$ 90,750.00
<b>10% CONTINGENCY</b>					\$ 9,075.00
<b>ENGINEERING / SURVEY</b>					\$ 7,000.00
<b>PROJECT TOTAL</b>					\$ 106,825.00

**ID #55 - CULVERTS AT 348 JOHNSON STREET****OPINION OF PROBABLE COST**

Item	Description	Est. Quantity	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Survey	Job	LS	\$ 7,000.00	\$ 7,000.00
2	Engineering - Drainage Study	Job	LS	\$ 10,000.00	\$ 10,000.00
<b>SUBTOTAL</b>					\$ 17,000.00
<b>PROJECT TOTAL</b>					\$ 17,000.00

**ID #56 - DISTRICT ATTORNEY'S ALLEY****OPINION OF PROBABLE COST**

Item	Description	Est. Quantity	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Camera Investigation	Job	LS	\$ 600.00	\$ 600.00
2	Mobilization	Job	LS	\$ 3,000.00	\$ 3,000.00
<b>SUBTOTAL</b>					\$ 3,600.00
<b>SECTION II - STORM DRAINAGE</b>					
1	Hooded Curb Inlet	1	EA	\$ 3,000.00	\$ 3,000.00
<b>SUBTOTAL</b>					\$ 3,000.00
<b>SECTION III - PAVEMENTS</b>					
1	Cut & Patch GDOT Asphalt	Job	LS	\$ 1,000.00	\$ 1,000.00
2	Cut & Replace Sidewalk	3	SY	\$ 55.00	\$ 165.00
<b>SUBTOTAL</b>					\$ 1,165.00
<b>CONSTRUCTION TOTAL</b>					\$ 7,765.00
<b>15% CONTINGENCY</b>					\$ 1,200.00
<b>PROJECT TOTAL</b>					\$ 8,965.00

**ID #57 - HENRY STREET AT W. MOORE STREET****OPINION OF PROBABLE COST**

Item	Description	Est. Quantity	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	Job	LS	\$ 3,000.00	\$ 3,000.00
2	Traffic Control	Job	LS	\$ 2,000.00	\$ 2,000.00
3	Grading Complete	Job	LS	\$ 3,000.00	\$ 3,000.00
<b>SUBTOTAL</b>					\$ 8,000.00
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	Job	LS	\$ 1,000.00	\$ 1,000.00
2	Inlet Protection	4	EA	\$ 250.00	\$ 1,000.00
<b>SUBTOTAL</b>					\$ 2,000.00
<b>SECTION III - STORM DRAINAGE</b>					
1	Drainage Inlets (0'-6' Cut)	4	EA	\$ 2,500.00	\$ 10,000.00
2	18-Inch RCP	377	LF	\$ 45.00	\$ 16,965.00
3	18-Inch Headwall	2	EA	\$ 1,200.00	\$ 2,400.00
<b>SUBTOTAL</b>					\$ 29,365.00
<b>SECTION IV - PAVEMENTS</b>					
1	Cut and Patch Asphalt	13	SY	\$ 55.00	\$ 715.00
<b>SUBTOTAL</b>					\$ 715.00
<b>CONSTRUCTION TOTAL</b>					\$ 40,080.00
<b>10% CONTINGENCY</b>					\$ 4,008.00
<b>ENGINEERING / SURVEY</b>					\$ 8,000.00
<b>PROJECT TOTAL</b>					\$ 52,088.00

<b>ID #58 - JAMES STREET</b>					
<b>OPINION OF PROBABLE COST</b>					
<b>Item</b>	<b>Description</b>	<b>Est. Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Total Price</b>
<b>SECTION I - GENERAL</b>					
1	Mobilization	Job	LS	\$ 2,000.00	\$ 2,000.00
2	Traffic Control	Job	LS	\$ 3,000.00	\$ 3,000.00
3	Grading Complete	Job	LS	\$ 15,000.00	\$ 15,000.00
4	Relocate Utility Conflits	Job	LS	\$ 15,000.00	\$ 15,000.00
<b>SUBTOTAL</b>					<b>\$ 35,000.00</b>
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	Job	LS	\$ 3,000.00	\$ 3,000.00
2	Inlet Protection	6	EA	\$ 250.00	\$ 1,500.00
3	Rip-Rap	Job	LS	\$ 1,000.00	\$ 1,000.00
4	Silt Fence	1000	LF	\$ 3.00	\$ 3,000.00
<b>SUBTOTAL</b>					<b>\$ 8,500.00</b>
<b>SECTION III - STORM DRAINAGE</b>					
1	18-inch RCP (0'-6' Cut)	500	LF	\$ 45.00	\$ 22,500.00
2	24-inch RCP (0'-6' Cut)	300	LF	\$ 55.00	\$ 16,500.00
3	Curb Inlets (0'-6' Cut)	6	EA	\$ 3,000.00	\$ 18,000.00
4	24-inch Headwall	1	EA	\$ 1,500.00	\$ 1,500.00
5	24-inch Rollover Curb & Gutter	2000	LF	\$ 20.00	\$ 40,000.00
6	Remove Existing Pipes (15-inch and 18-inch)	100	LF	\$ 10.00	\$ 1,000.00
<b>SUBTOTAL</b>					<b>\$ 99,500.00</b>
<b>SECTION IV - PAVEMENTS</b>					
1	Replace Dirt Drives with 4" GAB	170	SY	\$ 15.00	\$ 2,550.00
2	Cut & Patch 6" Concrete Drives	80	SY	\$ 45.00	\$ 3,600.00
3	Temporary GAB Drives	160	SY	\$ 15.00	\$ 2,400.00
4	165 lb/SY of 9.5 mm. Asphalt	202	TN	\$ 110.00	\$ 22,220.00
5	Bituminous Tack Coat	150	GL	\$ 5.00	\$ 750.00
6	24-Inch Thermoplastic Stop Bar	10	LF	\$ 20.00	\$ 200.00
7	5-Inch Yellow Thermoplastic Striping	2000	LF	\$ 1.00	\$ 2,000.00
8	Rework 10' Strip of Mortuary & Lodge Pavements	220	SY	\$ 55.00	\$ 12,100.00
<b>SUBTOTAL</b>					<b>\$ 45,820.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$ 188,820.00</b>
<b>10% CONTINGENCY</b>					<b>\$ 18,882.00</b>
<b>ENGINEERING / SURVEY</b>					<b>\$ 18,882.00</b>
<b>PROJECT TOTAL</b>					<b>\$ 226,584.00</b>

**ID #59 - JOHNSON STREET AT RAILROAD****OPINION OF PROBABLE COST**

Item	Description	Est. Quantity	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Clean 18" Pipes	Job	LS	\$ 1,500.00	\$ 1,500.00
2	Camera Investigation	Job	LS	\$ 700.00	\$ 700.00
<b>SUBTOTAL</b>					\$ 2,200.00
<b>CONSTRUCTION TOTAL</b>					\$ 2,200.00
<b>20% CONTINGENCY</b>					\$ 440.00
<b>PROJECT TOTAL</b>					\$ 2,640.00

**ID #60 - MARVIN AVENUE AT FAIR ROAD****OPINION OF PROBABLE COST**

Item	Description	Est. Quantity	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	1	LS	\$ 2,000.00	\$ 2,000.00
2	Grading Swale	1	LS	\$ 2,000.00	\$ 2,000.00
<b>SUBTOTAL</b>					\$ 4,000.00
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	1	LS	\$ 1,000.00	\$ 1,000.00
<b>SUBTOTAL</b>					\$ 1,000.00
<b>SECTION III - STORM DRAINAGE</b>					
1	Construct Inlet on Pipe	1	EA	\$ 2,500.00	\$ 2,500.00
<b>SUBTOTAL</b>					\$ 2,500.00
<b>CONSTRUCTION TOTAL</b>					\$ 7,500.00
<b>10% CONTINGENCY</b>					\$ 750.00
<b>PROJECT TOTAL</b>					\$ 8,250.00

**ID #61 - MLK AT PROCTOR AND ELM STREETS****OPINION OF PROBABLE COST**

Item	Description	Est. Quantity	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Surveying	1	LS	\$ 50,000.00	\$ 50,000.00
2	Engineering - Drainage Study	1	LS	\$ 100,000.00	\$ 100,000.00
<b>SUBTOTAL</b>					\$ 150,000.00
<b>PROJECT TOTAL</b>					\$ 150,000.00

**ID #62 - MORRIS STREET AT GREEN STREET****OPINION OF PROBABLE COST**

Item	Description	Est. Quantity	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	Job	LS	\$ 2,000.00	\$ 2,000.00
2	Traffic Control	Job	LS	\$ 3,000.00	\$ 3,000.00
3	Grading Complete	Job	LS	\$ 15,000.00	\$ 15,000.00
4	Relocate Existing Utilities	Job	LS	\$ 15,000.00	\$ 15,000.00
<b>SUBTOTAL</b>					\$ 35,000.00
<b>SECTION II - EROSION CONTROL</b>					
1	NPDES Permitting	Job	LS	\$ 3,000.00	\$ 3,000.00
2	Grassing	Job	LS	\$ 3,000.00	\$ 3,000.00
3	Silt Fence	100	LF	\$ 2.00	\$ 200.00
4	Inlet Protection	10	EA	\$ 250.00	\$ 2,500.00
<b>SUBTOTAL</b>					\$ 8,700.00
<b>SECTION III - STORM DRAINAGE</b>					
1	Remove Existing 18" RCP	400	LF	\$ 10.00	\$ 4,000.00
2	18-Inch RCP (0'-6' Cut)	400	LF	\$ 45.00	\$ 18,000.00
3	24-Inch RCP (0'-6' Cut)	300	LF	\$ 55.00	\$ 16,500.00
4	30-Inch RCP (0'-6' Cut)	700	LF	\$ 70.00	\$ 49,000.00
5	Curb Inlets (0'-6' Cut)	8	EA	\$ 3,000.00	\$ 24,000.00
6	Drainage Inlets ((0'-6' Cut)	2	EA	\$ 2,500.00	\$ 5,000.00
7	Connect to Existing System	1	EA	\$ 1,000.00	\$ 1,000.00
8	24-Inch Curb & Gutter	800	LF	\$ 20.00	\$ 16,000.00
9	30" FES	1	EA	\$ 1,250.00	\$ 1,250.00
<b>SUBTOTAL</b>					\$ 134,750.00
<b>SECTION IV - PAVEMENTS</b>					
1	Remove and Replace 4" Sidewalk	220	SY	\$ 50.00	\$ 11,000.00
2	Cut and Patch Asphalt	329	SY	\$ 55.00	\$ 18,095.00
3	Replace Driveways	119	SY	\$ 55.00	\$ 6,545.00
<b>SUBTOTAL</b>					\$ 35,640.00
<b>CONSTRUCTION TOTAL</b>					\$ 214,090.00
<b>10% CONTINGENCY</b>					\$ 21,409.00
<b>ENGINEERING / SURVEY</b>					\$ 21,409.00
<b>PROJECT TOTAL</b>					\$ 256,908.00

**ID #63 - CLEAN & EXPAND POND AT PARK ON W. JONES STREET****OPINION OF PROBABLE COST**

Item	Description	Est. Quantity	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Wetland Permitting	1	LS	\$ 4,000.00	\$ 4,000.00
2	Mobilization	1	LS	\$ 3,000.00	\$ 3,000.00
<b>SUBTOTAL</b>					\$ 7,000.00
<b>SECTION II - EROSION CONTROL</b>					
1	Grassing	1	LS	\$ 3,000.00	\$ 3,000.00
2	Silt Fence	300	LF	\$ 3.00	\$ 900.00
<b>SUBTOTAL</b>					\$ 3,900.00
<b>SECTION III - EARTHWORK</b>					
1	Clearing	1	LS	\$ 4,000.00	\$ 4,000.00
2	Excavation	2500	CY	\$ 18.00	\$ 45,000.00
<b>SUBTOTAL</b>					\$ 49,000.00
<b>CONSTRUCTION TOTAL</b>					\$ 59,900.00
<b>10% CONTINGENCY</b>					\$ 5,990.00
<b>ENGINEERING / SURVEY</b>					\$ 7,500.00
<b>PROJECT TOTAL</b>					\$ 73,390.00

**ID #64 - RELINE PIPES ON VINE STREET****OPINION OF PROBABLE COST**

Item	Description	Est. Quantity	Unit	Unit Price	Total Price
<b>SECTION I - GENERAL</b>					
1	Mobilization	Job	LS	\$ 3,000.00	\$ 3,000.00
<b>SUBTOTAL</b>					<b>\$ 3,000.00</b>
<b>SECTION II - STORMWATER</b>					
1	Clean 18-Inch and 24-Inch RCP	470	LF	\$ 7.00	\$ 3,290.00
2	Closed Circuit Television	470	LF	\$ 3.00	\$ 1,410.00
3	Reline 18-Inch RCP with cured in place liner	220	LF	\$ 90.00	\$ 19,800.00
4	Reline 24-Inch RCP with cured in place liner	250	LF	\$ 115.00	\$ 28,750.00
<b>SUBTOTAL</b>					<b>\$ 53,250.00</b>
<b>CONSTRUCTION TOTAL</b>					<b>\$ 56,250.00</b>
<b>10% CONTINGENCY</b>					<b>\$ 5,625.00</b>
<b>ENGINEERING / SURVEY</b>					<b>\$ 7,000.00</b>
<b>PROJECT TOTAL</b>					<b>\$ 68,875.00</b>

## APPENDIX C – CIP PROJECT INDEX

City of Statesboro, Georgia  
Stormwater Management Program  
Capital Project/Maintenance Project List

ID Number	Rank	WATERSHED	PROJECT NAME	City ROW/Easement	Structural Flooding	Street Flooding	Property Damage Potential	Public Runoff Influence	Ease of Construction	City Plan Compatability	Water Quality	Cost Analysis				PROBLEM/PROJECT DESCRIPTION	POSSIBLE SOLUTION	COST OPINION	EXISTING CITY BUDGET ALLOCATION					
			Weight / Value	10	10	10	10	5	5	5	3	3												
																				Public Runoff Influence	5	Documented major contributor to flooding or drainage problems from a public area		
																					3	Documented moderate contributor to flooding or drainage problems from a public area		
																					1	Documented minor contributor to flooding or drainage problems from a public area		
																					0	No drainage contribution at all from a public area		
																				-----				
																				Ease of Construction	5	Simplistic or straightforward construction process		
																					3	Difficult or extended effort construction process		
																					1	Complex/ time consuming construction process		
																				-----				
																				City Plan Compatibility	5	Project or problem area has been identified in City Plan or Report		
																					3	Project or problem area has been discussed/suggested but not formally indentified in a City Plan or Report		
																					1	Project or problem area has not been previously addressed		
																					0	Project is contrary to City goals/plans		
																				-----				
																				Water Quality	5	Project would improve water quality in an impaired waterway (on EPD's 303 (d) list of impaired waters)		
																					3	Project would improve water quality in receiving stream or achieves the goals of the City's Watershed Protection Plan		
																					1	Project would have no water quality impact		
																					0	Project could have potential negative water quaiity impact		
-----																								
Cost Analysis	5	Project would be cost effective in implementation																						
	3	Project would have a moderate cost for implementation																						
	1	Project would have an elevated cost for implementation																						
-----																								

## APPENDIX D – MEETING SUMMARIES

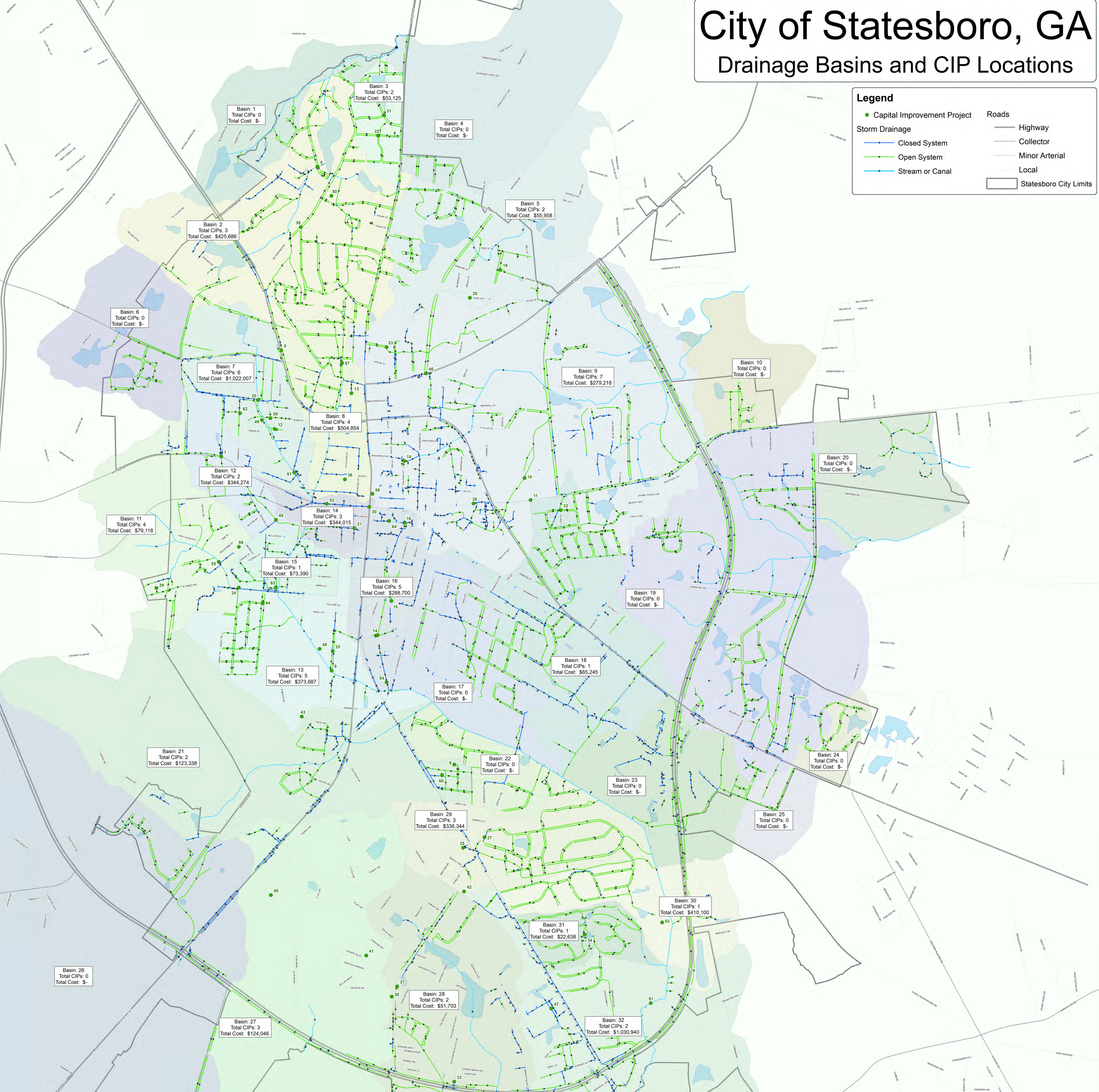
## APPENDIX E – PROJECT MAPS

# City of Statesboro, GA

## Drainage Basins and CIP Locations

### Legend

- Capital Improvement Project
- Storm Drainage
  - Closed System
  - Open System
  - Stream or Canal
- Roads
  - Highway
  - Collector
  - Minor Arterial
  - Local
- Statesboro City Limits



### Capital Improvment Projects

PK	Project Name	Project Cost	Project Type	CIP Index	CIP Rank	Project Description
1	W. Main St at Post St	\$237,968	Construction	117	107	Curb and gutter system proposed for W. Main Street between Post and Bay Streets, noted that stormwater jumps the street in this area.
2	Seaton/Turner/Lafayette/Thomas Street Area (PROJECT COMPLETED)	<N/A>	<N/A>	<N/A>	<N/A>	PROJECT COMPLETED
3	Corne Crescent St (PROJECT COMPLETED)	<N/A>	<N/A>	<N/A>	<N/A>	PROJECT COMPLETED
4	Cottrell on Richmond Dr	\$44,000	Drainage Study	237	2	Survey area and perform drainage study to alleviate drainage issues; drainage pipes under roads restrict flow causing poor drainage and erosion.
5	West Grady Street Headwall (PROJECT COMPLETED)	<N/A>	<N/A>	<N/A>	<N/A>	PROJECT COMPLETED
6	S. College St Infrastructure Repair	\$180,382	Construction	217	3	New headwall to be constructed in the field to prevent further erosion; engineering has been procured for this project.
7	Beasley Road Ditch Repair (PROJECT COMPLETED)	<N/A>	<N/A>	<N/A>	<N/A>	PROJECT COMPLETED
8	Hwy 80 Drainage Improvements	\$387,571	Construction	111	49	Ditches and piping along Hwy 80 are undersized, causing erosion and flooding of roadway; GDOT has construction plans but construction has been postponed.
9	W. Jones Rd Drainage Improvements	\$115,088	Construction	137	34	No drainage features in this area, so a roadside swale and storm piping are proposed.
10	Cemetery Ditch Improvements	\$97,250	Grading	155	35	Cemetery ditch is a major drainage outfall for city; banks are eroded and very steep; proposed widening of ditch and creating proper side slopes.
11	E. Main (SR 24) Near Lee Street	\$80,229	Construction	77	58	Pipe under SR 24 is undersized; drainage calculations should be performed first to no engineer down stream flooding.
12	Routine Street	\$200,282	Construction	117	46	Regrade ditch and remove vegetation to allow for water to freely flow.
13	N. College St. at the Summit	\$50,220	Construction	97	54	A storm inlet is needed to collect stormwater from motel parking lot.
14	Shannon Street at Lake Creek Tributary	\$38,300	Drainage Study	161	10	Pipes are undersized; conduct a drainage study first to ensure pipes are sized appropriately and will not impact down stream properties.
15	E. Jones Ave at Mulberry Avenue	\$33,800	Grading	113	48	Regrade ditch and remove vegetation to allow for water to freely flow.
16	E. Vine St at RR	\$40,700	Drainage Study	147	22	Headwall needs replacement and ditches grading; conduct a drainage study to ensure proposed pipes are sized appropriately to not impact down stream properties.
17	Curt Rd (PROJECT COMPLETED)	<N/A>	<N/A>	<N/A>	<N/A>	PROJECT COMPLETED
18	First Baptist Church - TBM	\$21,450	Drainage Study	149	21	Survey area, conduct drainage study, and develop construction plans; pipes are undersized and cross private property beneath a warehouse.
19	Lee St Street Headwall	\$22,958	Construction	138	32	Replace broken headwall at a ditch inlet and regrade ditch.
20	Dorris Simmons Way at Big Ditch	\$97,753	Construction	103	42	Investigate if ponding is due to low streambed elevation or being too deep after recent maintenance; replace pipes with box culvert with headwall at correct elevation.
21	South Walnut St at Cherry St	\$4,950	Repair	158	20	Existing inlet top crushed and fell into structure causing a blockage; replace top of inlet.
22	Lake Rd and Springdale Rd	\$20,000	Grading	89	36	Ditches lack size and sufficient slope; regrade ditches; outfall ditch if need easement for maintenance.
23	Tree Drive	\$30,363	Construction	138	32	Pipe size is too small and clogs easily; increase pipe size and add headwall abutment and section to reduce clogging potential.
24	W. Jones St at Harten Rd	\$33,978	Construction	139	30	Add inlet and pipe to connect to other side of road; 3 conflict manholes are observed; video locate manholes and raise to provide access.
25	College St at N. Building	\$6,892	Construction	N/A	N/A	End of pipe damaged; replace with final end section to help stabilize area.
26	E. Main at Gordon St	\$4,950	Repair	143	27	Top of inlet crushed and caused clogging; replace top of structure.
27	Gentry From Subdivision	\$50,284	Construction	163	9	Erosion evident; proposed to replace existing pipes with properly sized RCP and stabilize connections into large ditch.
28	Whitville Community	\$33,000	Drainage Study	119	44	Roadways in neighborhood have small or no drainage swales and small pipes; evaluate drainage, clean out pipes, regrade ditches, and upgrade drains and ditches.
29	Sugar Hill Community	\$27,500	Drainage Study	119	44	Roadways in neighborhood have small or no drainage swales and small pipes; evaluate drainage, clean out pipes, regrade ditches, and upgrade drains and ditches.
30	North and South Main St	\$180,080	Construction	108	33	Pipe resurfacing projects resulted in curb and gutter rising capacity; replace inlets with hooded drop inlets and grates and install storm piping with inlet to collect and convey water.
31	Westside Dr at Montgomery Dr	\$43,470	Construction	139	30	Erosion around end of pipe and in ditch; add headwall abutment and section to reduce clogging potential.
32	Lydia Street at Hart Street	\$66,240	Construction	107	51	Reroute storm drainage from back yard to road right-of-way and out to the outfall.
33	Statesboro Plaza Circle	\$40,517	Construction	137	39	Roadway was installed without proper grading; add curb inlets and piping to provide drainage relief in areas of ponding.
34	Hendley vs. Pennington Drainage Dispute	\$22,638	Construction	129	37	Drainage from private pond overflow to a roadside ditch; install a permanent concrete pond overflow and low regrade ditch and drive way pipe grades to outfall point.
35	Chandler Road Drainage	\$238,870	Construction	161	15	Pipes are undersized and raised lids off of curb inlets; increase pipe size.
36	College Street near Elm Street	\$34,975	Construction	109	36	Curb and gutter drain poorly; conduct a drainage study to ensure proposed pipes are sized appropriately to not impact down stream properties.
37	Lamar Drive at Stadium Walk	\$6,188	Grading	129	37	Pipe outlet is clogged with sediment and covered with soil; clean out pipe, regrade ditch; may need additional easement.
38	Stadium Entrance at Chandler Road	\$38,341	Construction	133	35	Lack of ditch or storm drainage causes area to hold water; grade a shallow swale and install storm piping with inlet to collect and convey water.
39	Cottrell on Road at Mallett Avenue	\$43,470	Construction	107	51	Roadside ditches flood the road; regrade roadside ditches and update cross drain pipes.
40	OK Register Road at Mbaroch Apartments	\$30,705	Construction	163	13	Roadside ditches and detention pond flood the road; update cross drain pipes to alleviate flooding.
41	Chandler Street at Georgia Villa	\$50,000	Drainage Study	134	41	Apartment flood; likely due to undersized infrastructure down stream on private property; survey and study drainage system to come up with solution to alleviate issue.
42	Brand Avenue near Georgia Avenue	\$38,190	Construction	123	42	Road floods due to no ditches or storm drainage in area; grade shallow swale on either side of road and install storm drain piping with inlet to collect and convey water.
43	Brice Drive at RR	\$23,533	Construction	83	57	Existing pipes are failing and causing pavement to fail; in railroad right-of-way; contact railroad first; replace and update cross drain pipes to alleviate problem.
44	Constance Drive at the Oval	\$29,565	Construction	147	22	Existing pipe is failing and causing pavement to fail; in railroad right-of-way; contact railroad first; replace and update cross drain pipes to alleviate problem.
45	Johnson Street near Johnson Avenue	\$66,306	Drainage Study	203	6	Existing pipes clog easily, causing flooding and extensive erosion; conduct drainage study to determine proper size of pipes, address erosion, and stream restoration.
46	Mathews Road at East Fernhill St	\$41,991	Construction	97	54	Existing pipes are undersized, causing flooding and erosion; update drainage pipes and add inlets; in GDOT ROW, so contact them first.
47	Archway and Brampton Avenue	\$6,500	Maintenance	159	19	Flooding potentially due to poorly maintained private detention pond; inspect and clean out outfall structure and ditch.
48	South College St Drainage Canal	\$123,315	Maintenance	143	27	City owns a 5.76 acre adjacent to drainage canal; drainage swales; where possible, improve connections to low-lying areas and provide additional storage.
49	Canal at Church St and Dorris Simmons Rd	\$96,490	Maintenance	143	27	Canal and maintenance road are overgrown and eroded; streambank stabilization is recommended, along with vegetation removal and road improvements.
50	Regional Detention at Zellerow w and Jeff Rd	\$338,216	Regional Maintenance	161	15	Drainage concerns in vicinity of Lake St; investigate regional detention and flood storage in this area (rock into 4.3-acre, privately-owned parcel).
51	Gentry Canal	\$1,025,440	Maintenance	107	51	Drainage canal has severe bank erosion; reconstruct and stabilize streambank and improve maintenance road.
52	West Main at College and Johnson St	\$175,000	Maintenance	147	22	A 24-in RCP pipe shows a cracking and joint separation, so pipe needs replacement.
53	Gentry Canal Regional Detention	\$410,100	Regional Maintenance	127	39	The City owns a large portion of this area; wetland delineations are needed; where possible, improve connections to low-lying areas and provide additional storage.
54	Repar 36-inch RCP at Joyce Field	\$180,825	Construction	147	22	Shimbles are present and soil is getting into pipe; proposed trenchless relining of pipe with HDPE liner. It is understood too, so replace with larger pipe is also an option.
55	Calverly at 348 Johnson Street	\$17,000	Drainage Study	163	13	A embankment has formed; investigate pipe to determine where soil is entering; conduct drainage study to address erosion issues and to properly size culverts for 25+ years.
56	District Attorney's Alley	\$8,865	Construction	203	6	Flooding in alley caused by gutter filled and no drainage inlet; video inspection is suggested to determine if drainage pipe is present in alley to connect with a new inlet.
57	Herry Street at W. Moore Street	\$52,088	Construction	117	46	Existing pipe has poor joint, causing piping and soil formation; replace pipe is preferred option as it will address an undersized portion too.
58	Jones Street	\$226,584	Construction	161	15	Lack of drainage features cause street flooding; roll-over curb and gutter system is proposed.
59	Johnson Street at Railroad	\$2,640	Maintenance	243	1	Erosion is present under sidewalk and building; clean out pipe and conduct video inspection.
60	Marvin Avenue at Fair Street	\$8,293	Construction	173	10	Water ponds on road; causing asphalt failure; construct grade next over existing pipe.
61	MLK at Proctor and Elm Streets	\$160,000	Drainage Study	237	2	Area floods, but increasing pipe capacity will not solve issue; drainage study of drainage canals should be completed based on as-built conditions.
62	Marion Street at Green Street	\$250,908	Construction	223	4	Undersized pipe causes water to jump across road; updated pipe is preferred but required major underpinning, a curb and gutter is proposed to alleviate front yard ponding.
63	Chen and Grand Road at Perkins W. Jones Street	\$73,390	Maintenance	173	10	Soil adjacent to pond at park on W. Jones Street could be removed to increase capacity; clear overgrowth of vegetation.
64	Rehine Pipes on Vine Street with a Cured-in-place liner	\$66,875	Construction	147	22	Rehine pipes on Vine Street with a cured-in-place liner.