
Priority Areas Sewer Assessment and Rehabilitation Program

DeKalb County Department of Watershed
Management (DWM)



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ACRONYMS

ASCE	American Society of Civil Engineers
AWTF	Advanced Wastewater Treatment Facility
CCTV	Closed Circuit Television
CERP	Contingency and Emergency Response Plan
CIPP	Cured in Place Pipe Lining
C&M	DeKalb County Department of Watershed Management Construction and Maintenance Division
CMMS	Computerized Maintenance Management System
CMOM	Capacity, Management, Operations, and Maintenance
DWM	DeKalb County Department of Watershed Management
FOG	Fats, Oil, and Grease
EPA	U.S. Environmental Protection Agency
EPD	Georgia Environmental Protection Division
GAWP	Georgia Association of Water Professionals
GIS	Geographical Information System
GWEF	Georgia Water Environment Federation
I/I	Infiltration/Inflow
KPI	Key Performance Indicators
MACP	Manhole Assessment and Certification Program
NPDES	National Pollutant Discharge Elimination System
NACWA	National Association of Clean Water Agencies
NASSCO	National Association of Sewer Service Companies
O&M	Operation and Maintenance
OSARP	Ongoing Sewer Assessment and Rehabilitation Program
PACP	Pipeline Assessment and Certification Program
PASARP	Priority Areas Sewer Assessment and Rehabilitation Program
RDI/I	Rainfall Dependent Infiltration/Inflow

ROW	Rights-of Way
SSES	Sewer System Evaluation Survey
SOP	Standard Operating Procedures
SSOS	Sanitary Sewer Overflows
WCTS	Wastewater Collection and Transmission System

1 INTRODUCTION

1.1 Overview

This Priority Areas Sewer Assessment and Rehabilitation Program (PASARP) has been prepared in accordance with the requirements of Section VI.B(x).35 of the Consent Decree - DeKalb County, Civil Action File No. 1:10-CV-4039-WSD. Section VI.B(x).35 of the Consent Decree requires the County to submit the PASARP to the U.S. Environmental Protection Agency (EPA) and the Georgia Environmental Protection Division (EPD), for review and comment, within one (1) year of the Date of Entry of the Consent Decree. The Consent Decree was entered on December 20, 2011.

The main purpose of the PASARP is to provide for the identification, delineation, assessment, prioritization, and rehabilitation of Priority Areas (both Initial Priority Areas and Additional Priority Areas as explained in the Consent Decree) within the DeKalb County Wastewater Collection and Transmission System (WCTS). The Initial and Additional Priority Areas total approximately 776 miles of sewers (approximately 29.5 % of the WCTS). In implementing the PASARP, the County will undertake certain condition, structural, and hydraulic assessments within the Priority Areas, and identify, prioritize, and complete appropriate rehabilitation measures within those areas. As part of the implementation process, the County will track and inventory rehabilitation measures completed within the Priority Areas and determine the effectiveness of those measures, using selected key performance indicators (KPIs). The County will complete implementation of the PASARP within eight and one-half (8½) years from the Date of Entry of the Consent Decree. The County has hired an outside contractor experienced in managing the implementation of Consent Decree sewer system improvement programs to assist it in the implementation of the PASARP in the capacity of a Program Manager.

This document contains the following key elements in compliance with the requirements of Section VI.B(x).35 of the Consent Decree:

- List and map of the Initial Priority Areas identified in the Consent Decree.
- Schedule for completing sewer assessment and for identifying, prioritizing, and completing rehabilitation projects within the Initial Priority Areas.
- List and map of Additional Priority Areas identified after the Date of Entry of the Consent Decree, including an explanation of how the County identified, delineated, and prioritized the Additional Priority Areas.
- Specifications, guidelines, and procedures, as appropriate, for the following evaluative tools and programs that will be used during the assessment of the Initial and Additional Priority Areas:
 - Private Lateral Investigations.
 - Dyed Water Flooding.

- Corrosion Defect Identifications.
 - Manhole Condition Assessment.
 - Flow Monitoring.
 - Closed Circuit Television (“CCTV”) Inspection.
 - Gravity Sewer Line and Force Main Defect Analysis.
 - Smoke Testing.
- Criteria for identifying and prioritizing rehabilitation measures to be implemented within the Priority Areas.
 - Procedures for tracking and inventorying completed rehabilitation measures completed within the Priority Areas, including key performance indicators (KPIs).
 - List of currently scheduled rehabilitation measures within the Priority Areas.

1.2 Description of the DeKalb County WCTS

The DeKalb County WCTS (defined to include all pipes, lift stations, force mains, gravity sewer lines, manholes and other appurtenances) consists of an estimated 2,600 miles of sewers, 66 lift stations, and an estimated 61,500 manholes. The County is divided into three (3) sewer basins (Intergovernmental, Snapfinger, and Pole Bridge) containing a total of thirty-five (35) sewersheds, two (2) of which do not currently contain any sewers. The following are summary descriptions of the three (3) sewer basins:

- *Inter-Governmental Basin:* The Intergovernmental Basin is divided into the following nine (9) sewersheds: Ball Mill Creek, Camp Creek, Lucky Shoals Creek, Marsh Creek, Northeast Creek, Nancy Creek, North Fork Creek, South Fork Creek, and Peavine Creek. This basin contains an estimated 1,136 miles of sanitary sewers and an estimated 25,800 manholes.

The approximately thirty-six (36) million gallons per day (MGD) of wastewater generated within the Intergovernmental Basin is collected, transmitted, and treated at the City of Atlanta R. M. Clayton Water Reclamation Facility under an intergovernmental agreement with the City of Atlanta. Sewers located within the City of Atlanta, through which wastewater from the Intergovernmental Basin flows, are owned and maintained by the City of Atlanta under the above-mentioned intergovernmental agreement with the City of Atlanta.

- *Snapfinger Basin:* This basin is divided into the following fifteen (15) sewersheds: Barbashela Creek, Blue Creek, Cobb Fowler Creek, Conley Creek, Constitution Area, Corn Creek, Doolittle Creek, Indian Creek, Intrenchment Creek, Lower Snapfinger Creek, Shoal Creek, South River, Sugar Creek, Upper Snapfinger Creek, and Upper Stone Mountain. This basin contains an estimated 1,098 miles of sanitary sewers and an estimated 25,100 manholes.

There are two (2) areas served by septic tanks only in the Snapfinger Basin. These areas include approximately one-third ($\frac{1}{3}$) of the Cobb Fowler Creek sewershed and the entire Upper Stone Mountain sewershed.

- *Pole Bridge Basin:* The Pole Bridge Basin is divided into the following eleven (11) sewersheds: Crooked Creek, Honey Creek, Johnson Creek, Lower Crooked Creek, Lower Stone Mountain, Pine Mountain Creek, Plunket Creek, Polebridge Creek, Swift Creek, Upper Crooked Creek, and Yellow River. This basin includes an estimated 398 miles of sanitary sewer and an estimated 10,600 manholes.

1.3 WCTS Condition and Context of the PASARP

In order to promote effective operation and longevity of its WCTS, the County maintains an assortment of equipment and a diverse group of personnel to perform both proactive and reactive maintenance work twenty-four (24) hours per day. In addition to its inventory of equipment and personnel resources, the County has developed and continues to improve and implement Capacity, Management, Operations, and Maintenance (CMOM) programs countywide. Specifically, and as a part of its Consent Decree obligations, the County is implementing the following CMOM programs:

- Contingency and Emergency Response Plan.
- Fats, Oils, and Grease Management Program.
- Sewer Mapping Program.
- Maintenance Management Systems Program.
- Collection and Transmission System Training Program.
- System-Wide Flow and Rainfall Monitoring Program.
- System-Wide Hydraulic Model.
- Financial Analysis Program.
- Infrastructure Acquisitions Program.

In addition to the above programs, and also separate from the PASARP, the County is required to implement an Ongoing Sewer Assessment and Rehabilitation Program ("OSARP") that will ensure continuous assessment and rehabilitation of the County's WCTS. The OSARP will begin its focus on areas outside the Initial and Additional Priority Areas. However, this program is intended to be maintained on a permanent basis by the County. In effect, the entire WCTS will be continuously assessed and rehabilitated.

The PASARP focuses on a subset of the WCTS, the areas potentially needing more urgent attention, hence the term Priority Areas. As noted, these Priority Areas are estimated to be about 30.2% of the WCTS based on the updated Priority Area boundary delineation surveys required by the Consent Decree. Because of the relatively young age of the County's WCTS (84% of the WCTS is less than 50 years old), the extent of the County's ongoing proactive and reactive maintenance program, and the CMOM Programs, the County's WCTS is in

relatively good condition. For instance, for the last several years, the County has been assessing the condition of its manholes (Manhole Condition Assessment) and ranking observed manhole structural defects using the assessment contractor's own list of defect codes... The PASARP manhole condition assessments now require the assessment contractor's defect coding to be based on the National Association of Sewer Service Companies (NASSCO) Manhole Assessment and Certification Program (MACP) and a NASSCO compliant standard exchange database with the coding results to be submitted to the County. Based on the results of the Manhole Condition Assessment performed to date, more than ninety percent (90%) had no structural defects. Similarly, in 2010, the County evaluated a representative portion of its WCTS for Excessive infiltration and inflow (I/I) and found that the average "R-Value" for all the meters analyzed was approximately 1.7%; indicating that the County's WCTS experiences a relatively insignificant amount of I/I during periods of wet weather. Nonetheless, the CMOM Programs, the PASARP, and the OSARP, while individually addressing different aspects of the WCTS, will together ensure the long-term viability of the WCTS and eliminate SSOs.

2 PRIORITY AREAS IDENTIFICATION, DELINEATION, AND PRIORITIZATION

2.1 Initial Priority Areas Identification

As part of the Consent Decree, the County identified twenty-three (23) Initial Priority Areas within its WCTS for further assessment and rehabilitation. The Initial Priority Areas consists of areas determined by the County as having sewers that are estimated to be older than fifty (50) years; areas with calculated “R-Values” greater than three (3) percent; and areas determined by the County, through its ongoing sewer system maintenance program, as needing additional assessment and/or prioritized rehabilitation. The Initial Priority Areas constitute approximately 463 miles of sewers, which is approximately eighteen percent (18%) of the County’s WCTS. Table 2-1 presents a list of the Initial Priority Areas including summary descriptions of each numbered Initial Priority Area, estimated length of each Initial Priority Area, and the name of the basin where each Initial Priority Area is located. Appendix A presents a map showing the locations of each numbered Initial Priority Area. It should be noted that a new numbering system for the Priority Areas has been adopted by the County. The first letter in the Priority Areas numbers identifies whether the Priority Area is an Initial Priority Area (I) or an Additional Priority Area (A). The second two letters identifies the sewer basin where the Priority Area is located (IG for the Intergovernmental Basin, SF for the Snapfinger Basin, and PB for the Pole Bridge)

**Table 2-1
List of Initial Priority Areas**

Consent Decree Number	New Priority Area Number	Area Description	Length of Sewers (LF)
<i>INTER-GOVERNMENTAL BASIN</i>			
2	I-IG1	Winters Chapel Rd at Homeland Drive	7,387
3	I-IG2	Carver Circle	12,401
1	I-IG3	Ashford Dunwoody-Nancy Creek	16,399
4	I-IG4	North Peachtree-North Shallowford	20,104
5	I-IG5	Oakcliff Road	23,232
6	I-IG6	City of Chamblee	144,915
16	I-IG7	Embry Circle Pipe Bursting	6,713
17	I-IG8	Embry Circle Relining	15,916
7	I-IG9	Windsor Parkway	22,557
9	I-IG10	Drew Valley Road subdivisions	52,231
8	I-IG11	Skyland Road	3,712
18	I-IG12	Henderson Mill Rd	83,783
23	I-IG13	Area contributing to TSFORK 5 monitor	188,775
19	I-IG14	Briarcliff Rd	90,215
11	I-IG15	Lavista - Oak Grove area	39,197
10	I-IG16	Lavista Rd-Clairmont Rd-Houston Mill Rd	176,260
12	I-IG17	North DeKalb Mall area	57,669
13	I-IG18	Scott Blvd-Clairmont Rd	37,969
14	I-IG19	Old Rockbridge Rd-Avondale (partial)	19,698
<i>SUBTOTAL:</i>			<i>1,019,133</i>
<i>SNAPFINGER BASIN</i>			
	I-SF1	Old Rockbridge Rd-Avondale (partial)	46,897
15	I-SF2	Cobb Fowler Basin	733,145
20	I-SF3	Shoal Creek Basin	608,920
22	I-SF4	Covington Hwy at Kensington Rd	12,203
<i>SUBTOTAL:</i>			<i>1,401,165</i>
<i>POLE BRIDGE BASIN</i>			
21	I-PB1	Lithonia Industrial Pkwy	22,773
<i>SUBTOTAL:</i>			<i>22,773</i>

2.2 Additional Priority Areas Identification, Delineation, and Prioritization

Subparagraphs 35(b) and 35(c) of Section VI.B(x) of the Consent Decree requires the County to identify Additional Priority Areas within the County's WCTS for further assessment and rehabilitation and to provide an explanation of how the Additional Priority Areas were identified, delineated, and prioritized. Subparagraph 35(d) of Section VI.B.(x) of the Consent Decree lists the criteria for identifying, delineating, and prioritizing the Additional Priority Areas. Section 2.2.1 of this document provides summary descriptions of the criteria used to identify, delineate, and prioritize Additional Priority Areas. Section 2.2.2 provides a summary of the process followed during the identification, delineation, and prioritization of the Additional Priority Areas. The details regarding the Additional Priority Areas identification, delineation, and prioritization process, including how the criteria were applied, are included in a report titled "DeKalb County Department of Watershed Management Wastewater Collection and Transmission System (WCTS) Additional Priority Areas Identification, Delineation, and Prioritization Process", which is included in Appendix B of this document. The Additional Priority Areas constitute approximately 313 miles of sewers, which is approximately 12% of the County's WCTS.

2.2.1 Description of the Criteria Used to Identify, Delineate, and Prioritize Additional Priority Areas

The following are summary descriptions of the criteria used to identify, delineate, and prioritize Additional Priority Areas:

- *Relative Age of the WCTS Infrastructure:* Three (3) age categories were identified and delineated in the County's GIS: (1) sewers installed prior to and including the year 1960, sewers installed between the time period of 1961 through 1984, and sewers installed after 1984.

Generally, the condition of sewers deteriorates with time. The rate and extent of sewer degradation is dependent upon several factors including age, pipe material, soundness of original construction, concentration of wastewater constituents, type and duration of external loading, and types of surrounding soils. During the identification, delineation, and prioritization of Additional Priority Areas, the County made the reasonable assumption that sewers constructed before 1960 have passed half their usable life and are probably in need of inspection to determine if they are in need of rehabilitation; sewers constructed during the time period of 1961 through 1984 would not be expected to have undergone significant deterioration and, for the most part, may not need any rehabilitation but may need assessment to determine their condition; and sewers constructed after 1984 are structurally sound and should not need any rehabilitation based on age alone.

- *Estimated Rainfall Dependent Infiltration/Inflow ("RDI/I") Into the System:* RDI/I is defined as the portion of I/I that is directly influenced by the intensity and duration of a storm event. Two indicators of RDI/I include the peaking factor and the "R-

Value". The peaking factor is the ratio of the maximum flow to the average flow for a selected period of time (hour or day). The "R-Value" is defined as the fraction (generally expressed as a percentage) of rainfall entering a sewer system as RDI/I. Extraneous water enters the sewer system in direct response to rainfall through storm drains and other sources such as defective manhole and sewers.

Both the peaking factors and R-Values are important in evaluating the quantity and type of RDI/I. For example, whereas relatively high peaking factors and "R-Values" may indicate a significant inflow problem, relatively low peaking factors and high "R-Values" may suggest a significant infiltration problem.

- *Proactive and Reactive Maintenance Records, Including Results from Lift Station Inspections:* The County regularly performs both proactive and reactive maintenance throughout its WCTS. Records of proactive and reactive maintenance are maintained in the County's work order system. Sanitary sewer service calls are tracked and recorded by the date, time, address, cause, and action taken for each incident within the WCTS. The most common sanitary sewer complaint codes logged by the County's Construction and Maintenance Division (C&M) are recorded in the following categories: manhole/pipe clean or inspect, vacuum, root cut, and SSOs. The frequency and type of maintenance activity performed on a sewer, or a sewer appurtenance is a good indicator of the overall condition of a sewer.
- *SSO Records:* The County tracks and monitors all reported spills that occur within the County's WCTS. Each spill is classified as either a structural-related defect spill or a service-related spill. Structural-related defect spills include cracked and broken sewers, offset joints, and root intrusion. Service-related spills primarily occur because of solidified fats, oils, and grease (FOG) or debris blockages. Less common service-related spills occur when equipment fails or the sanitary sewer system is vandalized. Structural-related defect spills provide a good indication of the overall condition of a sewer.
- *Known Structural Defects Including Known Manholes Defects:* Over the last several years, the County has been performing Manhole Condition Assessment to identify the types and locations of manhole defects. The County has also been performing targeted sewer line condition assessment, either proactively or reactively, using various sewer system assessment tools including smoke testing and CCTV. In addition, the County performs routine lift stations inspections as part of its lift stations proactive maintenance program. As part of these programs, the County maintains an inventory of the types and locations of known manhole and pipe defects and utilizes this information to schedule and to implement manhole and pipe rehabilitation work either internally or through annual contracts. Known sewer system structural defects provide the most accurate information on the condition of a sewer system.
- *Relative Risk that SSOs are Likely to Reach Surface Waters:* Discharges of untreated wastewater into surface waters pose a risk to human health and the environment. Wastewater can either enter surface waters directly from overflowing manholes and/or defective sewers, and/or through stormwater outfalls when overflowing

manholes and/or defective sewers discharge into a storm drainage structure that conveys the wastewater into the receiving stream. The closer a sanitary sewer is to a surface water body (e.g. interceptor sewers and sewer stream crossings), the greater the relative potential for wastewater overflows to enter the water body that is in close proximity to the sanitary sewer. The County maintains GIS shapefiles of its WCTS and shapefiles of water bodies within the County. In evaluating this criterion, the County made the reasonable assumption that there exists a direct correlation between the sum of the length of streams and the perimeters of water bodies within a Ranking Area and the potential risk associated with spills in that Ranking Area.

- *Relative Risk that SSOs are Likely to Present Public Health and Welfare Concerns Based on Proximity and Access to Population Centers and Water Bodies:* SSOs can occur in close proximity to public places such as streams, parks, schools, and buildings. The County maintains shapefiles of its WCTS as well as shapefiles of public places. In evaluating this criterion, the County made the reasonable assumption that the greater the density of public places, the greater the potential for SSOs to present public health and welfare concerns.
- *Information Obtained from Maintenance Personnel Knowledgeable of the Conditions of the WCTS Based on Actual Experience and Historic Investigations:* The County's computerized maintenance management system (CMMS) is used to track customer/public complaints, to create work orders, and to track corrective actions associated with sewer problems. In addition to the computerized records, the County's personnel have first-hand individual and collective knowledge of the condition of the WCTS. This first-hand knowledge provides a good indication of the condition of various segments of the WCTS.
- *Standard Industry Practices as Documented in Industry Manuals, Engineering Textbooks, EPA Publications, and Lessons Learned:* The sewer system assessment and rehabilitation processes have advanced tremendously over the last twenty (20) years. Numerous sewer assessment and rehabilitation programs have been implemented throughout the world with various degrees of success. In addition to the readily available information regarding sewer systems assessment and rehabilitation programs, various entities, including the EPA, have published several documents regarding effective sewer system assessment and rehabilitation techniques. This information provided the County with a wealth of knowledge regarding how to identify, delineate, and prioritize the Additional Priority Areas including how to assign weights and scores to various criteria.
- *Professional Judgment:* Professional judgment can be defined as: The process of forming an opinion by discerning and comparing various alternatives. Sound professional judgment is characterized by, and conforms to, established technical, industry, and ethical standards and requires specialized knowledge and experience in the relevant professional field. The science of applying technical criteria, especially in determining the relative weights and relative scores to assign to various criteria and criteria categories (respectively) requires the superior ability to

recognize the relative potential for various criteria to advance the goals and objectives of a sewer system assessment and rehabilitation program. During the identification, delineation, and prioritization of Additional Priority Areas, the County thoughtfully and realistically applied individual and collective professional judgment. Although professional judgment is sometimes difficult to quantify or explain, the professional industry has realized that, in the majority of cases, the results of professional judgment, when applied correctly supersedes those obtained through the application of technical facts and technology alone. This is indeed the case in the field of sewer system assessment and rehabilitation.

2.2.2 Additional Priority Areas Identification, Delineation, and Prioritization Process

As indicated previously in this document, the details regarding the Additional Priority Areas identification, delineation, and prioritization process are included in a report titled “DeKalb County Department of Watershed Management Wastewater Collection and Transmission System (WCTS) Additional Priority Areas Identification, Delineation, and Prioritization Process”, which is included in Appendix B of this document.

During the early stages of the Additional Priority Areas identification, delineation, and prioritization process, the County determined that it would be prudent to rank and to prioritize the Additional Priority Areas on a sewer basin by sewer basin basis, whereby each of the County’s three (3) sewer basins would be treated as a separate sewer system. This approach allowed the leveraging of each basin’s unique characteristics, took into account the data that was available for each of the sewer basins, advanced the potential to protect impaired [303(d)] streams throughout the County, and ensured the advancement environmental justice concerns within the County. The differentiating characteristics for each basin include the following:

- The three basins are hydraulically independent of each other and discharge to different wastewater treatment plants.
- Manhole condition assessment data was not available for the Inter-Governmental Basin, but was available for most of the manholes within the Snapfinger and the Pole Bridge basins.
- The Snapfinger Basin has some of the oldest pipes in the system. Root intrusion issues are more prevalent as a result of the presence of mature trees. Moreover, development within this basin has been individually planned and implemented over a period of time, rather than being developed using a master plan. As a result, some of the sewers within this basin do not flow as smoothly as sewer systems that follow a master plan.

The following is a summary of the Additional Priority Areas identification, delineation, and prioritization process:

- *Data Gathering:* The initial phase of this process involved gathering available relevant data that support the criteria used to identify, delineate, and prioritize the Additional Priority Areas. Whenever possible, data were gathered in electronic format but when electronic data were not available, hard copy data were gathered. Gathered data were cataloged and archived in formats deemed most efficient for evaluation and analysis.
- *Delineation of Ranking Areas:* Following data gathering, the County divided its entire WCTS into 171 areas for evaluation, ranking, and prioritization. These areas were designated as “Ranking Areas” for purposes of this project. The areas were delineated based on the sewer pipe networks flowing to the corresponding downstream flow meters. The 171 Ranking Areas were selected because they were deemed to be of appropriate size; have readily identifiable boundaries; and data are available to support the application of the technical criteria selected for identifying, delineating, and prioritizing Additional Priority Areas.
- *Identification of Criteria Data Categories:* During the review and analysis of available data, it was determined that some of the technical criteria were supported by two (2) types of data categories and that the application of criteria having two (2) available data categories required consideration of the two (2) available data categories supporting such criteria. The criteria having two (2) types of supporting data categories included (1) Estimated Rainfall Dependent Infiltration/Inflow (RDI/I) into the System, where both the Peaking Factors and the “R-Values” are available; (2) Proactive and Reactive Maintenance Records, including results from lift station inspections, where both proactive and reactive maintenance data are available; (3) SSO Records, where both structural-related defect spills and service-related spills are available; and (4) Known Structural Defects Including Known Manholes Defects, where both manhole structural-related defects and manhole service-related defects are available.
- *Assigned Weights to Various Criteria:* In order to facilitate the application of the technical criteria to the Ranking Areas, weights were assigned to the various technical criteria based on their professionally perceived potential to advance the objectives of the Consent Decree. In assigning weights to various technical criteria, the County made the reasonable assumption that the available data supporting the universal set of the technical criteria, included in the Consent Decree and summarized above; coupled with professional judgment, are sufficient to predict the need and indeed the priority of the rehabilitation of various Ranking Areas within each sewer basin. Therefore, the total of all the weights assigned to the technical criteria was made to equal 100%. The spread among the weights assigned to various technical criteria was made sufficiently large to enable the mathematical discrimination between possible outcomes. A three-tier approach was used to divide the criteria into low, medium, and high, with weights of 5%, 10%, and 15%, respectively. The weights assigned to various criteria are shown in Table 2-2 below.

Table 2-2: Weights Assigned to Various Criteria	
Criteria	Percentage Weight
Relative Age of WCTS	15%
Estimated RDI/I into System: Peaking Factor	5%
Estimated RDI/I into System: R-Value	5%
Proactive Maintenance	10%
Reactive Maintenance	15%
Structural-Related Defect Spills	15%
Service-Related Defect Spills	5%
Known Structural Defects: Manhole Structural-Related Defects	15%
Known Structural Defects: Manhole Service-Related Defects	5%
Relative Risk that SSOs Reach Surface Waters	5%
Relative Risk that SSOs Present Public Health and Welfare Concerns	5%

- Developed Three (3) Raw Data Spreadsheets, One for Each of the Three (3) Sewer Basins, Showing the Available Raw Data for Each Ranking Area:* To facilitate the ranking process, three (3) Excel raw data spreadsheets were developed (one for each sewer basin). Each of the three (3) spreadsheets included the names of the sewersheds within the basin, the Ranking Areas within the basin, the ranking criteria, and the available data for each Ranking Area. To ensure that data was independent of the length of sewers in the Ranking Areas, some of the raw data were divided by the lengths of sewers within the associated Ranking Area, as appropriate. Following the data entry, three (3) data scoring spreadsheets were developed, one for each sewer basin. The data scoring spreadsheets were developed by assigning scores to each data item in the raw data spreadsheets. In order to compare data equally across various criteria, scores assigned to various data items were normalized on a scale of 1 to 10 with the highest score in each column receiving a score of 10. All other scores were adjusted linearly on a scale of 1 to 10. For example, if the largest value was 30, it was assigned a score of 10; a value of 15 in the same category was assigned a score of 5.

- *Developed Ranking Areas Prioritization Matrices:* Following the development of the raw data spreadsheets and the normalization of data within each criteria data categories, three Ranking Areas Prioritization Matrices were developed (one for each sewer basin in the County's WCTS). The Ranking Areas Prioritization Matrices were developed by multiplying the scores in each criterion category by the weight assigned to the corresponding criterion to obtain the Weighted Scores. In cases where categories of data were missing within a basin, (for example, manhole condition assessment data was not available for the Intergovernmental Basin), the weight associated with that criterion was redistributed to the other criteria. The Weighted Scores for each Ranking Area were then summed up to obtain the Total Weighted Score. The Ranking Areas within each sewer basin were then ranked in order of priority based on the Total Weighted Scores, with the Ranking Area having the highest Total Weighted Score obtaining a rank of 1.
- *Performed a "Knee of the Curve" Analysis on Prioritization Results:* Following the ranking of the Ranking Areas within each sewer basin, as explained above, a "Knee of the Curve" analysis was performed. The "Knee of the Curve" analysis is a mathematical tool that is used in several applications to determine the point at which performance improvements start to level off as a function of one or more tunable parameters. The "Knee of a Curve" is mathematically the point on a curve with maximum curvature. In cost benefit analysis, the "Knee of the Curve" is the point on the curve beyond which the relative effort to increase some tunable parameter is not cost effective.

The "Knee of the Curve" was performed to aid the County in determining the number of Ranking Areas, and hence the length and percentage of sewers within each sewer basin, where additional assessment and/or the implementation of rehabilitation measures would realize the optimum benefits cost effectively. In deciding to use the "Knee of the Curve" analysis, the County made the reasonable assumption that the assessment and/or the implementation of rehabilitation measures will be directed towards the elimination of Non-FOG Spills and that there exists a correlation between Non-FOG Spills and the length of sewers in each Ranking Area.

- *Identified Additional Ranking Areas for Further Assessment and Rehabilitation:* Following the "Knee of the Curve" analysis, the Ranking Areas below the point of greatest curvature (Knee of the Curve) were selected for further assessment and/or prioritized rehabilitation. Some overlap was found to exist between the areas selected through the "Knee of the Curve" analysis and the Initial Priority Areas. The areas outside the Initial Priority Areas but within the areas selected for further assessment and/or rehabilitation, through the "Knee of the Curve" analysis, were identified as the Additional Priority Areas. Table 2-3 Presents a list with estimated lengths of the Additional Priority Areas selected for further assessment and/or prioritized rehabilitation. Appendix C presents two maps. The first one shows the locations of the Additional Priority Areas. The second shows the combined Initial Priority Areas and the Additional Priority Areas.

TABLE 2-3
List of Additional Priority Areas

Priority Area Number	Area Description	Length of Sewers (LF)
<i>INTER-GOVERNMENTAL BASIN</i>		
A-IG1	Ranking Area MARSH-FUL (Marsh Creek)	56,651
A-IG2	Ranking Area TAZTEC5 (Aztec)	41,324
A-IG3	Ranking Area TNANCY2 (Nancy Creek)	50,937
A-IG4	Ranking Area TNANCY5 (Nancy Creek)	57,976
A-IG5	Ranking Area TNFORK1 (North Fork Peachtree Creek)	527,354
A-IG6	Ranking Area TSFORK4 (South Fork Peachtree Creek)	46,778
A-IG7	Ranking Area TSFORK3 (South Fork Peachtree Creek)	31,582
<i>SUBTOTAL:</i>		812,602
<i>SNAPFINGER BASIN</i>		
A-SF1	Ranking Area TUSF14 (Upper Snapfinger Creek)	58,415
A-SF2	Ranking Area BAR5 (Barbashela Creek)	60,730
A-SF3	Ranking Area IND1 (Indian Creek)	46,221
A-SF4	Ranking Area USF4 (Upper Snapfinger Creek)	11,531
A-SF5	Ranking Area USF2 (Upper Snapfinger Creek)	75,491
A-SF6	Ranking Area ITMC-ATL (Intrenchment Creek)	41,344
A-SF7	Ranking Area TDOL5 (Doolittle Creek)	28,390
A-SF8	Ranking Area TDOL6 (Doolittle Creek)	46,241
A-SF9	Ranking Area SUG5 (Sugar Creek)	22,461
A-SF10	Ranking Area CON-CLAY (Conley Creek)	17,005
<i>SUBTOTAL:</i>		407,829
<i>POLE BRIDGE BASIN</i>		
A-PB1	Ranking Area UCKC2 (Upper Crooked Creek)	146,424
A-PB2	Ranking Area LCKC1 (Lower Crooked Creek)	59,278
A-PB3	Ranking Area TJSC1 (Johnson Creek)	41,156
A-PB4	Ranking Area THON4 (Honey Creek)	37,563
A-PB5	Ranking Area PINEM2 (Pine Mountain)	46,939
A-PB6	Ranking Area PB1 (Pole Bridge Creek)	90,167
A-PB7	Ranking Area PBPLNT1 (Pole Bridge Wastewater Treatment Plant)	11,450
<i>SUBTOTAL:</i>		432,977

3 SPECIFICATIONS, GUIDELINES, AND PROCEDURES FOR EVALUATIVE TOOLS AND PROGRAMS

The following evaluative tools and programs, identified in the Consent Decree Section VI.B(x).35, will be used during the implementation of the PASARP:

- Private Lateral Investigations Specifications, Guidelines, and Procedures (Appendix D).
- Dyed Water Flooding Specifications, Guidelines, and Procedures (Appendix E).
- Corrosion Defect Identifications Specifications, Guidelines, and Procedures (Appendix F).
- Manhole Condition Assessment Specifications, Guidelines, and Procedures (Appendix G).
- Flow Monitoring. Guidelines Specifications, Guidelines, and Procedures (Appendix H).
- Closed Circuit Television (“CCTV”) Inspection Specifications, Guidelines, and Procedures (Appendix I).
- Gravity Sewer Line and Force Main Defect Analysis Specifications, Guidelines, and Procedures (Appendix J).
- Smoke Testing Specifications, Guidelines, and Procedures (Appendix K).

3.1 Overview of WCTS Evaluative Tools and Programs and their Applicability to the PASARP

As indicated in Section 2 of this document, the WCTS infrastructure degrades with time based on several factors including age, pipe material, soundness of original construction, concentrations of wastewater constituents, type and duration of external loading, and types of surrounding soils. WCTS degradation can affect the structural integrity and/or hydraulic performance of the infrastructure. The level of degradation is determined by using several of the above-listed evaluative tools to determine the current condition and/or performance compared with the design or expected level or performance. The assessment of the Priority Areas will be performed in a manner so as to provide the information needed to identify and to prioritize rehabilitation measures based on consequence and likelihood of failure (risk) and cost effectiveness. The following are summary descriptions of the evaluative tools and programs that will be used to assess the Initial and Additional Priority Areas.

- *Private Lateral Investigations:* Private laterals can be inspected using a combination of technologies, the selection of which depends on site conditions and access. Access onto private property to confirm or gather defect data is a voluntary program and requires the property owner's permission in DeKalb County.
- *Dyed Water Flooding:* Dyed water testing is used in conjunction with smoke testing and CCTV to determine whether or not a smoke exit point is directly or indirectly connected to the sewer system. Dyed water testing is also used to investigate building sewer system connectivity.
- *Corrosion Defect Identification:* For gravity sewers, the simplest method to identify corrosion is by direct visual observation or CCTV inspection. For force mains, direct and indirect technologies may or may not be easy to apply depending on the force main's access. Combinations or tiered (levels of equipment and/or access to force mains) technologies are usually employed.
- *Manhole Condition Assessment:* Manhole condition assessment technologies are primarily by visual or camera imaging and can be performed from the surface or by physical entry depending on the desired level of precision of the collected data.
- *Flow Monitoring:* Flow monitoring is used to measure hydraulic performance. It helps identify areas of the system with excessive I/I. It is also used to determine the effectiveness of rehabilitation measures.
- *CCTV:* CCTV is used to provide a visual assessment of the interior of a manhole or pipe asset. The visual assessment is converted to a condition score. The asset is sometimes cleaned in advance of the inspection to provide a clearer structural image.
- *Gravity Sewer Line & Force Main Defect Analysis:* Gravity sewer and force main sewer (as well as other infrastructure assets) defects are given a code and score that, when aggregated, produce an asset condition score. When sewer line and force main defect data is properly linked to software and hardware applications, the analysis can enable subsequent selection and prioritization of rehabilitation measures.
- *Smoke Testing:* Smoke testing is used to identify potential locations of defects allowing the entry of I/I and, therefore, to prioritize CCTV Inspection and other assessment activities. Smoke testing is effective on both public and private property (laterals) and can locate cross connections or other illicit connections.

In traditional Sewer System Evaluation Surveys (SSES) the evaluative tools and programs are generally applied in the following sequence:

- Flow Monitoring.
- Smoke Testing.

- Dyed Water Testing.
- Manhole Condition Assessment.
- Closed circuit Television Inspection (CCTV).
- Private Lateral Investigation.
- Corrosion Defect Identification.
- Gravity Sewer Line and Force Main Defect Analysis.

Some combination of these evaluative tools and programs are utilized simultaneously based on the system size and needs. The most efficient combination of evaluative tools and programs will be used to assess the Initial and Additional Priority Areas. The selection of the most effective tools and programs, or combinations thereof, will ultimately be made on a case by case basis, based on Priority Area specific conditions and data available at the time additional assessment is performed. Detailed specifications, guidelines, and procedures for these assessment tools and programs are included in Appendices D through K. It should be noted that the specifications, guidelines, and procedures included in Appendices D through K are subject to change based on advancement in technology, effectiveness, and site specific conditions. The County has used the detailed specifications, guidelines, and procedures included in Appendices D through K as guides to help facilitate development of contract documents for assessment and rehabilitation implementation. The County used the information in the Appendices to develop condition assessment “master” specifications to comply with the County’s Purchasing and Contracting Departments formats for entering into legal agreements between the County and the contractor. As specific PASARP condition assessment contract documents were prepared the technical specifications were updated, as necessary, to include enhancements to the specifications, such as allowing high resolution digital CCTV side scanning cameras to conduct CCTV inspections. The County will update its master specifications as frequently as necessary and continue to utilize the same or modified contract documents that effectively produce the desired assessment performance and reflect current practices. Whenever revisions are made to the specifications, guidelines, and procedures, the revision date will be identified on the electronic and hard copy versions. Previous versions will also be maintained.

4 CRITERIA FOR IDENTIFYING AND PRIORITIZING REHABILITATION MEASURES

This section presents the criteria that the County will use to identify and prioritize rehabilitation measures that will be implemented in the Initial and Additional Priority Areas. Conditions associated with the occurrence of SSOs can generally be grouped into three (3) major categories: (1) capacity limitations, (2) structural defects, and (3) maintenance problems. The criteria presented in this document will be used to identify and prioritize rehabilitation measures that predominantly address capacity limitations and structural defects that are causing, or have the potential to cause, SSOs within and/or down gradient of the Initial and Additional Priority Areas. Although some of the rehabilitation measures may address maintenance problems that are causing or have the potential to cause SSOs, the County believes that CMOM Programs will more effectively address maintenance problems that are causing or have the potential to cause SSOs. In general, the County will identify and prioritize rehabilitation measures within the Priority Areas based on the following criteria:

- Likelihood and consequence of failure (risk).
- Hydraulic Modeling Analysis.
- Cost effectiveness analysis (to be performed on the whole or parts of each Priority Area).
- The frequencies and volumes of Non-FOG sanitary sewer overflows (SSOs) with specific emphases on those caused by capacity limitations and structural defects.
- Professional judgment of County personnel knowledgeable of the performance and maintenance requirements of the WCTS.
- SSO potential to impact human health and the environment.

It should be noted that some assessment and/or rehabilitation work has already been completed within some of the Initial and Additional Priority Areas. Therefore, the extent to which various Priority Areas will be assessed and/or rehabilitated will vary from Priority Area to Priority Area depending on the level of previous assessment and the effectiveness of completed rehabilitation measures.

4.1 Identification and Prioritization of Rehabilitation Measures

The process of identifying rehabilitation measures for a specific Priority Area will be initiated following the completion of the condition assessment within that Priority Area (or

a portion thereof). As indicated in the guidelines for the various condition assessment techniques, the data obtained during sewer system condition assessment will be documented and archived in formats compatible with the County's mapping and work order systems. This approach will promote intelligent interface of various condition assessment data and the sewer system locational data (GIS). The condition assessment data will effectively become an attribute of the sewer system assets for which rehabilitation measures will be identified and prioritized. This will ensure reasonable data accuracy by eliminating multiple data entries, facilitate data analysis, and reduce duplication of effort; and therefore, advance cost effectiveness in data analysis, identification and prioritization of rehabilitation measures, and rehabilitation measures design and construction processes.

The Gravity Line and Force Main Defect Analysis Guidelines included in Appendix J of this document summarizes the process the County may use to analyze the defects identified during the sewer system condition assessment phase of the PASARP. Certain defects will be scheduled for rehabilitation immediately upon their discovery during the sewer system condition assessment. Such defects will include those that pose immediate or foreseeable danger to human health and welfare and those determined to be contributing to the occurrence of SSO, based on their severity. The determination as to whether a defect should be scheduled for rehabilitation will be made based on professional judgment and experience.

As discussed in the DeKalb County *System-Wide Hydraulic Model Program* document the County is implementing a phased model development strategy for the three hydrological sewer basins; Snapfinger, Pole Bridge, and Intergovernmental. A key result of implementing this strategy is that it will better meet the intent of the PASARP Program. The County will be able to build the sewer network and assess it more quickly in order to identify the sewer segments with capacity concerns and expeditiously integrate them with segments with observed significant sewer structural and infiltration/inflow deficiencies. This approach is appropriate since the County's data published herein indicates the County does not have a serious system-wide capacity issue. The quicker integration of capacity and structural information also means the County can advance the system improvements using the protocols presented in the modeling program's System Capacity Assessment and Capacity Assurance. Sewer segments identified with significant structural or infiltration/inflow defects from the condition assessment activities will only be considered for rehabilitation or replacement design after the segments are compared with the hydraulic modeling results. The condition assessment data and analysis decision logic will consider costs, risk components, and applicable rehabilitation technology alternatives using assessment and rehabilitation software as much as practical in order to process the large amounts of data that will be generated.

One or more of the types of rehabilitation measures listed below will be utilized by the County. The listed rehabilitation measures have been tested and implemented extensively and effectively throughout the world and their applicability, effectiveness, and durability are well documented.

- Cured-in-place liner.
- Pipe bursting.

- Manhole lining.
- Manhole replacement.
- Open cut pipe replacement method.
- Point repairs.
- Manhole raising.
- Manhole ring and cover replacement.
- Service lateral rehabilitation.
- Installation of cleanouts.
- Disconnection of unauthorized connections.

The most cost effective combination or rehabilitation measures will be selected for implementation.

4.2 Procedures for Tracking and Inventorying Completed Rehabilitation Measures

The procedures discussed in this section will be used to track and inventory the rehabilitation measures completed as part of the PASARP. Ongoing and completed rehabilitation projects will be tracked and inventoried. The following asset rehabilitation projects will be tracked during the implementation of the PASARP:

- Sewer gravity pipe rehabilitation (to be tracked in linear feet and type of rehabilitation project).
- Force mains and air release valves rehabilitation (based on the type of rehabilitation measure).
- Manhole rehabilitation (to be tracked by manhole identification number (ID), date started/date completed, type of manhole rehabilitation, and location).
- Lift station replacement and rehabilitation projects (to be based on the type of rehabilitation).

Once a rehabilitation project is completed, information regarding the project will be provided by the project manager to Geographic Information System (GIS) personnel for input into the ESRI ArcGIS database. This will allow for the tracking and inventorying of completed rehabilitation measures for the purpose of updating work on system assets and establishing a graphical representation of completed rehabilitation measures.

The County's work order system will be used for work activities performed in the field such as reactive maintenance and system repairs. A project will be defined as a collection of work orders assigned to a project number to track the cost and work involved. Service requests and work orders will be tracked in the Oracle *Utilities Work and Asset Management*

(WAM) system. Data from the work order system that is related to or considered a rehabilitation type project will be summarized and submitted to the County’s Department of Watershed Management personnel for entry and recording in the County’s information management system.

4.3 Key Performance Indicators (KPIs) for Determining the Effectiveness of Completed Rehabilitation Measures within Priority Areas

TABLE 4-1 Initial and Additional Priority Areas KPIs			
KPI	Formula	Desired Result	Data Interval
SSOs per 100 miles of WCTS within the Priority Areas per year	(# SSOs in all the Priority Areas/ WCTS total miles within the Priority Areas) x 100	5% reduction per year beginning in 2014	Annual
SSOs per 100 miles of WCTS within the Priority Areas per year per inch of rain within the Priority Areas	(# SSOs in all the Priority Areas/ WCTS total miles within the Priority Areas / estimated total rainfall in inches per year) x 100	Monitor	Annual
Total volume of spills per 100 miles of WCTS within the Priority Areas	(Estimated total volume of spills within the Priority Areas/ WCTS total miles within the Priority Areas) x 100	5% reduction per year beginning in 2014	Annual
Total volume of spills per 100 miles per inch of rain within the Priority Areas	(Estimated total volume of spills within the Priority Areas/WCTS total miles within the Priority Areas/estimated total rainfall in inches per year) x 100	Monitor	Annual
# of dry weather SSOs within the Priority Areas	Total # of dry weather SSOs within the Priority Areas	10% reduction per year beginning in 2014	Annual

Table 4-1 presents the KPIs selected by the County to determine the effectiveness of completed rehabilitation measures. Consistent with the Consent Decree, these KPIs will focus on the Priority Areas. Data associated with these KPIs will be collected between, during, and after rehabilitation measures are implemented.

5 SCHEDULE FOR COMPLETING REHABILITATION MEASURES WITHIN THE INITIAL AND ADDITIONAL PRIORITY AREAS

The Consent Decree requires that the PASARP include the following information: (1) currently scheduled rehabilitation measures within the Initial and Additional Priority Areas; (2) schedules for completing any remaining sewer assessments and for identifying, prioritizing, and completing rehabilitation projects within the Initial Priority Areas; and (3) provide for the identification, delineation, assessment, and rehabilitation of all the Initial and Additional Priority Areas within eight and one-half (8½) years from the Date of Entry of the Consent Decree. Appendix L presents the scheduled (i.e., completed, ongoing, and scheduled) assessment and rehabilitation measures within the Initial and Additional Priority Areas using best available information. Some of these measures were completed during and since the Consent Decree negotiations, but some are not yet completed.

Appendix M presents a General Schedule for Completing Additional Assessment and/or Prioritized Rehabilitation Measures within the Initial and Additional Priority Areas. The General Schedule presented in Appendix M includes the time frames within which the County anticipates to complete the major tasks associated with the assessment and completion of prioritized rehabilitation measures within the Initial and Additional Priority Areas. Following the EPA/EPD approval of the PASARP, the County will develop a Priority Areas Assessment and Rehabilitation Master Schedule as discussed in Section 5.1 below. As rehabilitation measures are identified and prioritized within the Initial and Additional Priority Areas, Project Schedules will be developed for specific assessment and rehabilitation projects as discussed in Section 5.2 below. The County has hired an outside contractor experienced in managing the implementation of Consent Decree sewer system improvement programs to assist it in the implementation of the PASARP in the capacity of a Program Manager.

5.1 Priority Areas Assessment and Rehabilitation Master Schedule

The Priority Areas Assessment and Rehabilitation Master Schedule will be developed using commercially available software selected by the County. The Master Schedule will include the beginning and ending dates for anticipated major tasks and subtasks that the County will undertake during the assessment and rehabilitation of the Initial and Additional Priority Areas. The Master Schedule will be developed in such a manner so as to enable progress planning, progress reporting, and the identification of schedule variances for major tasks as the assessment and rehabilitation of the Initial and Additional Priority Areas progresses. The Master Schedule will be updated monthly to reflect work completed, work in progress, schedule variances, and any other changes encountered during the previous

month. It should be noted that, as is the case with projects of this nature, intermediate task and subtask start and finish dates may change with time, but the Consent Decree deadline will stay the same.

5.2 Project Schedules

As specific assessment and rehabilitation projects are identified, the County will prepare project schedules. Project schedules will be developed using commercially available software selected by the County. The project schedules will be compatible with the Master Schedule to facilitate effective reporting of assessment and/or rehabilitation activities and to ensure accurate updates of the Master Schedule. The Project Schedules will include specific start and completion dates for specific projects by task and subtask and the critical path for the project. As indicated in Section 4 of this document, some of the defects identified during the assessment of the Initial and Additional Priority Areas will be scheduled for rehabilitation immediately upon their discovery. Such defects will include those that pose immediate or foreseeable danger to human health and welfare and those determined to be contributing to the occurrence of SSO, based on their severity. The County does not intend to develop schedules for the completion of projects associated with the rehabilitation of defects scheduled for rehabilitation immediately following their discovery. However, the work completed under such projects will be included in the subsequent update of the Master Schedule.

5.3 General Schedule

The time frame within which the additional assessment will be completed is shown in the General Schedule included in Appendix M and as updated in subsequent Master Schedules or compliance reports.

The following are summary descriptions of the activities identified in the General Schedule for Completing the Assessment and Rehabilitation Measures within the Initial and Additional Priority Areas:

- Assessment of Priority Areas:
 - *Establish the Physical Boundaries of the Priority Areas:* This task will involve reviewing the GIS maps in the field and establishing the physical boundaries of the Initial and Additional Priority Areas. A reconnaissance of the Priority Areas boundaries will be performed to accomplish this effort. The establishment of physical boundaries will involve identifying physical land marks, road intersections, building addresses, manhole numbers, and other readily identifiable permanent physical features around the perimeter of each Priority Area. If any variances between the GIS maps and ground conditions are observed, the GIS maps will be revised to reconcile the variances. The physical boundaries, once established, will guide field personnel in ensuring that the assessment and rehabilitation work covers all sewers within the Priority Areas.

- *Determine Optimization of Flow Monitors and Rain Gauges as Needed:* As indicated in the Flow Monitoring Specifications, Guidelines, and Procedures included in Appendix H of this document, additional flow and rainfall monitoring data, beyond that obtained through the System-Wide Flow and Rainfall Monitoring Program, may be needed to characterize flows (including I/I), to prioritize other assessment activities, and to assess the effectiveness of rehabilitation measures completed within the Initial and Additional Priority Areas. During the early stages of the assessment phase, the County will review the System-Wide Flow and Rainfall Monitoring Program to determine the need and locations of additional flow monitors and/or rain gauges. The determination regarding the need and locations of additional flow monitors and/or rain gauges, beyond those available through the System-Wide Flow and Rainfall Monitoring Program, will be accomplished on a Priority Area by Priority Area basis.
- *Relocate or Install Additional Flow Monitors and Rain Gauges as Needed:* This task will involve the relocation of existing flow monitors and/or rain gauges or the installation of additional flow monitors and/or rain gauges in the field as determined at the initial stages of the assessment phase.
- *Perform the Assessment of Priority Areas:* This task will involve the completion of additional assessment of the Initial and Additional Priority Areas utilizing the evaluative tools and programs discussed in Section 3 of this document. It is anticipated that this task will start several months before rehabilitation starts and be completed at least one (1) year ahead of the completion of rehabilitation activities.
- *Analyze Assessment Data and Identify and Prioritize Rehabilitation Measures:* This task will involve the analysis of condition assessment data and the identification and prioritization of rehabilitation measures to be implemented within the Priority Areas.
- Implement Rehabilitation Measures:
 - *Rehabilitate Severe Defects:* As indicated in Section 4 of this document, severe defects will be scheduled for rehabilitation immediately upon their discovery during the sewer system condition assessment. Such defects will include those that pose immediate or foreseeable danger to human health and welfare and those determined to be contributing to the occurrence of SSO, based on their severity. The determination as to whether a defect should be scheduled for rehabilitation will be made based on professional judgment and experience. This task will continue throughout the implementation of the PASARP.
 - *Complete Scheduled Rehabilitation Measures:* This task will involve the completion of currently scheduled rehabilitation measures within the Initial and Additional Priority Areas. The County anticipates bundling up one or more rehabilitation measures into individual rehabilitation projects to be completed either by County personnel or private contractors. The size and

scope of various rehabilitation projects will be determined on a case by case basis.

- *Implement Prioritized Rehabilitation Measures:* This task will involve the completion of prioritized rehabilitation measures within the Initial and Additional Priority Areas. The County anticipates bundling up one or more rehabilitation measures into individual rehabilitation projects to be completed either by County personnel or private contractors. The size and scope of various rehabilitation projects will be determined on a case by case basis. This task is expected to continue throughout the implementation of the PASARP.
- *Track and Inventory Completed Rehabilitation Measures:* This task will involve tracking and inventorying the effectiveness of completed rehabilitation measures as discussed in Section 4 of this document. This activity is expected to start at the beginning of the implementation of the PASARP and continue throughout the PASARP implementation period.

PASARP APPENDIX L - COMPLETED, ONGOING, AND SCHEDULED ASSESSMENTS AND REHABILITATION MEASURES WITHIN THE INITIAL AND ADDITIONAL PRIORITY AREAS

Consent Decree Priority Area Number	New Priority Area Number	Project Name	Project Description	Total Quantity	Quantity in Priority Area	Date Started	Completion Date	
2	I-IG1	Nancy Creek - Winters Chapel Rd.	Cleaning & CCTV	21447.2 LF	2200 LF	11/12/08	07/06/09	
3	I-IG2	Winters Chapel	Cleaning & CCTV	3583 LF	2000 LF	8/1/10	10/29/10	
			Cured-in-Place Liner Rehabilitation	3583 LF	2000 LF	8/1/10	10/29/10	
5	I-IG5	Manhole Assessment	Manhole Assessment	103 MHs	103 MHs	2009	2011	
		Oakcliff-Pleasantdale Road	Cleaning & CCTV	3262.8 LF	300 LF	3/20/2012	4/17/2012	
6	I-IG6	London Drive	Cleaning, CCTV, Pipe Bursting Rehabilitation	273 LF	273 LF	8/29/2011	9/21/2011	
		Manhole Assessment	Manhole Assessment	430 MHs	430 MHs	2009	2011	
		Munday Drive	Cleaning & CCTV	10673.3 LF	10673.3 LF	2/1/2012	2/29/2012	
		Munday Drive - Burk Drive	Sewer Point Repair	353 LF	353 LF	10/22/2012	10/24/2012	
		Munday Drive - Hood Avenue	Sewer Point Repair	316 LF	316 LF	10/15/2012	10/18/2012	
		Munday Drive	Cleaning & CCTV	10673 LF	10673 LF	2/1/2012	2/29/2012	
		Johnson Ferry	Cleaning & CCTV	14471.4 LF	14471.4 LF	5/2/2011	12/31/2013	
8	I-IG11	Manhole Assessment	Manhole Assessment	21 MHs	21 MHs	2009	2011	
9	I-IG10	Buford Highway	CCTV, Cured-in-Place Liner Rehabilitation	16118 LF	15137 LF	12/01/07	03/17/09	
			Manhole Assessment	283 MHs	283 MHs	2009	2011	
			Sewer Point Repair	1 Point Repair	1 Point Repair	12/01/07	03/17/09	
10	I-IG16	Alderbrook Rd	Relining, CCTV & Cleaning of Lower Snapfinger Basin	1490 LF	1490 LF	10/30/2010	6/1/2012	
		Manhole Assessment	Manhole Rehabilitation	449 MHs	449 MHs	2009	2011	
10,12, 23	I-IG13, I-IG16, I-IG17	Southfork Peachtree Creek Basin Improvements	Engineering Study	1543180 LF	422704 LF	10/1/2012	6/30/2013	
11	I-IG15	Manhole Assessment	Manhole Assessment	122 MHs	122 MHs	2009	2011	
14	I-IG19	Northern Ave.	Manhole Assessment	237 MHs	237 MHs	2009	2011	
			Cleaning & CCTV	8565.3 LF	3300 LF	12/02/08	01/09/09	
15	I-SF1	Farnham Court	Cleaning & CCTV	21000 LF	21000 LF	11/26/2012	2013	
		Columbia Drive	Lift Station Rehabilitation	1 Lift Station	1 Lift Station	2012	2016*	
	I-SF2	Cobb Fowler Basin	Manhole Rehabilitation	27 MHs	27 MHs	5/23/2012	10/5/2012	
			Manhole Rehabilitation	15 MHs	15 MHs	10/29/2012	12/15/2012	
15 & 20	I-SF2, I-SF3	Cobb Fowler and Shoal Creek	Cleaning & CCTV	45059.5 LF	45059.5 LF	6/10/2011	8/30/2011	
17	I-IG8	Embry Circle	Manhole Assessment	90 MHs	90 MHs	2009	2011	
			Chamblee Tucker Road	Sewer Point Repair	122 LF	122 LF	06/01/09	06/03/09
			Cleaning & CCTV	65052.11 LF	15916 LF	04/13/09	07/17/09	
			Cleaning, pre CIPP CCTV inspection	12000.2 LF	12000.2 LF	6/12/2012	7/20/2012	
			Cleaning, CCTV, Cured-in-Place Liner Rehabilitation	12000.2 LF	12000.2 LF	7/30/2012	2012	
18	I-IG12	Manhole Assessment	Manhole Assessment	130 MHs	130 MHs	2009	2011	
19	I-IG14	Manhole Assessment	Manhole Assessment	395 MHs	395 MHs	2009	2011	
		Braircliff Road	Cleaning & CCTV	12260.9 LF	12260.9 LF	3/1/2011	7/6/2011	
20	I-SF3	Manhole Assessment	Manhole Assessment	12 MHs	12 MHs	2009	2011	
		Miriam Lane	Creek Crossing Repair	14 LF	14 LF	10/06/09	10/06/09	
		Miriam Lane	Cleaning & CCTV	19430.5 LF	19430.5 LF	9/22/2011	12/13/2011	
		Miriam Lane - Welika Drive Location 1	Sewer Point Repair	74 LF	74 LF	6/18/2012	6/20/2012	
		Miriam Lane - Welika Drive Location 2	Sewer Point Repair	35 LF	35 LF	11/7/2012	11/30/2012	
		Shoal Creek Basin Manhole Rehabilitation	Manhole Rehabilitation	40 MHs	40 MHs	2013	2013	
21	I-PB1	Manhole Assessment	Manhole Assessment	1 MH	1 MH	2009	2011	
22	I-SF4	Manhole Assessment	Manhole Assessment	60 MHs	60 MHs	2009	2011	
NA	A-IG2	Manhole Assessment	Manhole Assessment	169 MHs	169 MHs	2009	2011	
NA	A-IG3	Will Ross Court	Sanitary Sewer Re-routing	400 LF	400 LF	2013	2015	

PASARP APPENDIX L - COMPLETED, ONGOING, AND SCHEDULED ASSESSMENTS AND REHABILITATION MEASURES WITHIN THE INITIAL AND ADDITIONAL PRIORITY AREAS - CONT'D

Consent Decree Priority Area Number	New Priority Area Number	Project Name	Project Description	Total Quantity	Quantity in Priority Area	Date Started	Completion Date
		Manhole Assessment	Manhole Assessment	1824 MHs	1824 MHs	2009	2011
		Drew Valley (Briar Wood Pool)	Pipe Bursting Rehabilitation	240 LF	240 LF	4/12/2012	5/14/2012
		Caladium Drive	Cured-in-Place Liner Rehabilitation	600 LF	600 LF	1/1/2013	3/31/2012
			Cured-in-Place Liner Rehabilitation	700 LF	700 LF	11/26/2012	3/31/2013
NA	A-IG5	Skyland Drive	Relining, CCTV & Cleaning	700 LF	700 LF	11/26/2012	3/31/2013
NA	A-IG6	Caladium Drive	Relining, CCTV & Cleaning	600 LF	600 LF	2013	2015
NA	A-SF3	Manhole Assessment	Manhole Assessment	240 MHs	240 MHs	2009	2011
NA	A-SF4	Rowland Rd (Aerial Creek Crossing)	Sewer Point Repair	1 Point Repair	1 Point Repair	2/1/2010	2/1/2010
NA	A-SF9	Manhole Assessment	Manhole Assessment	14 MHs	14 MHs	2009	2011
NA	A-PB3	Manhole Assessment	Manhole Assessment	17 MHs	17 MHs	2009	2011
		Lithonia I Pump station	Constuction of the new pump station. Demolition of existing Lithonia I & II pump stations	1 Lift Station	1 Lift Station	2013	2016*
		Manhole Assessment	Manhole Assessment	23 MHs	23 MHs	2009	2011
NA	A-PB4	Stonecrest Sanitary Sewer and Force Mains	Pipeline Replacement	Gravity: 15,400 LF Force Main: 5,900 LF	Gravity: 15,400 LF Force Main: 5,900 LF	2013	2015
NA	A-PB5	Manhole Assessment	Manhole Assessment	70 MHs	70 MHs	2009	2011
		Manhole Assessment	Manhole Assessment	4 MHs	4 MHs	2009	2011
NA	A-PB6	Fairington	Future Lift Station Project	1 Lift Station	1 Lift Station	2012	2015*