Infrastructure Acquisitions Program

Department of Watershed Management (DWM) Capacity, Management, Operations, and Maintenance (CMOM) Program

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Acronyms

AWWTF	advanced wastewater treatment facility
BOC	board of commissioners
CCTV	closed circuit television
CEO	chief executive officer
CMOM	capacity, management, operations, and maintenance
DWM	Department of Watershed Management
ERP	enterprise resource planning software
FOG	fats, oil, and grease
GAEPD	Georgia Environmental Protection Division
GAWP	Georgia Association of Water Professionals
GIS	geographical information system
I/I	infiltration/inflow
LDP	Land Disturbance Permit
MNGWPD	Metropolitan North Georgia Water Planning District
NPDES	National Pollutant Discharge Elimination Systems
P&S	Department of Planning and Sustainability
PVC	polyvinyl chloride
ROW	right-of-way
USEPA	United States Environmental Protection Agency
WCTS	wastewater collection and transmission system

1. Infrastructure Acquisitions Program Overview

1.1 Introduction

DeKalb County (the County), Department of Watershed Management (DWM), evaluates prospective additions to its wastewater collection and transmission system (WCTS) [including public (collection system expansion) or private (developer construction) projects and/or connections]. The County currently maintains its Infrastructure Acquisitions Program to allow for the following:

1. Defined coordination of various functions between the DWM and other County departments
2. The infrastructure accepted for maintenance is constructed to National (industry standard) and County standards
3. The accepted infrastructure is mapped accurately and incorporated into the Sanitary Sewer mapping program
4. The acquired infrastructure is capable of handling (receiving and transmitting) the permitted sewer flow

The Capacity, Management, Operations, and Maintenance (CMOM) Infrastructure Acquisitions Program builds on the County's pre-existing program. This document details the CMOM Infrastructure Acquisitions Program and is divided into six sections (including procedures) to allow new infrastructure to be evaluated before being incorporated into the County's system. The document is presented in the following major sections:

Section 1.1 Introduction (provides an overview of the program document)

Section 1.2 Purpose and Goals (defines program direction)

Section 1.3 Regulatory Drivers (provides a summary of the regulations, policies and guidance for the program)

Section 1.4 Program Resources (details the County staffing and material resources that are available in implementing and maintaining the program)

Section 1.5 Program Activities (describes the process of incorporating new infrastructure into the County's sewer system)

Section 2 Program Procedures (provides procedures and flow charts to outline the steps followed in the implementation of the program)

Section 3 Attachments (provides checklists and information for program areas)

Section 4 References

1.2 Purpose and Goals

Infrastructure acquisitions provide an opportunity to strengthen operational and financial resources to the County's enterprise. The County has a viable Infrastructure Acquisitions Program that is managed by DWM in coordination with the Department of Planning and Sustainability (P&S), with the following purpose:

- Provide for effective and efficient interdepartmental coordination and communication regarding sewer infrastructure acquisition consideration.
- Comply with DeKalb County Design Standards by:
  - Participating in plan review and approval process for new acquisitions to verify that *County Design Standards* are met for new sanitary sewer infrastructure.
  - Evaluating prospective new and existing infrastructure
  - Performing inspections of proposed acquisitions to identify defects and non-compliance with *County Design Standards*.
- Provide for capacity management by assessing flow/load impacts to the sewer system.
- Properly transfer infrastructure (and access) ownership with no financial burden to the County.
- Provide procedures for managing processes to review design plans, inspect construction, and certify infrastructure before assuming ownership.
- Comply with State and Federal regulations

The goal of the Infrastructure Acquisitions Program is to acquire infrastructure that meets County standards for design, construction, capacity, and efficiency and to maintain a program that properly monitors the acquisition process, encourages input, and is efficient for contractors/developers/property owners/County.

1.3 Regulatory Drivers

The CMOM Infrastructure Acquisitions Program is a formally structured program that incorporates criteria that are set forth in the Consent Decree – DeKalb County, Civil Action File No. 1:10-cv-4039-WSD, which states:

(ix). Infrastructure Acquisitions Program
32. The County currently has in place a program to address prospective additions to the County's WCTS (the Infrastructure Acquisitions Program) focused on the evaluation of infrastructure prior to acquisition. No later than eight (8) months from the Date of Entry, the County shall re-evaluate and submit to U.S. Environmental Protection Agency (USEPA) and Georgia Environmental Protection Division (GAEPD), for review and comment, its Infrastructure Acquisitions Program to ensure consistency with the following criteria:

(a) A program to ensure all prospective infrastructure acquisitions are inspected and evaluated for compliance with the County's standard design and construction criteria before being acquired by the County from a secondary party.

(b) Written standard procedures for conducting the evaluation of prospective infrastructure acquisitions against the County's standard design and construction criteria, and approving or denying the prospective acquisitions.

(c) Written standard procedures for estimating the cost/time requirements to bring prospective additions into compliance with the County's standard design and construction criteria.

(d) Specification of, and written standard procedures for performing, the physical tests the County shall require as part of its evaluations.

In addition, guidance documents and materials were consulted in the formulation of the Program, such as the following:

- U.S. Environmental Protection Agency (USEPA) *Guide for Evaluating Capacity, Management, Operations, and Maintenance(CMOM) Programs at Sanitary Sewer Collection Systems,* 2005; *USEPA Region 4 Guide to Collection and Transmission System Management, Operation, and Maintenance Programs,* 2003.
- Metropolitan North Georgia Water Planning District (MNGWPD) *Wastewater Management Plan*, 2009.
- DeKalb County, Georgia – Code of Ordinances (revised 1988) ; (or current version/update); Chapter 25 – *Water, Sewers, and Sewage Disposal, Article IV, Division 2, Sewer Construction and Assessments and Division 3, Building Sewers and Connections*. Referred to as County Code of Ordinances throughout this document.
- DeKalb County, *DWM Potable Water Main, Gravity Sanitary Sewer, and Sanitary Sewer and Force Main Design Standards* (2009 Edition Version 1.0); (or current version/update). Referred to as County Design Standards throughout this document
- DWM National Pollutant Discharge Elimination Systems (NPDES) permits for Pole Bridge Advanced Wastewater Treatment Facility (AWWTF) (NPDES - GA0026816) and Snapfinger AWWTF (NPDES - GA0024147).

1.4 Program Resources

The Infrastructure Acquisitions Program is supported primarily by approximately 18 staff in the DWM. The Engineering Supervisor coordinates DWM activities related to infrastructure acquisitions under the supervision of DWM. In addition, multiple DeKalb County departments are involved in the Infrastructure Acquisitions Program.

Current DWM Staffing Resources

- Program Manager: Assistant Director, Engineering and Asset Management
- Engineering Supervisor (1)
- Senior Engineer (1)
- Engineer (1)
- Production Control Manager (1)
- Geographical information system (GIS) Specialists (7)
- Contract personnel that conduct non-design and construction inspections associated with assets

DeKalb County Interdepartmental Resources

- P&S
- Law Department
- Chief Executive Officer (CEO) Office
- Board of Commissioners
- Construction Inspectors (7)
- Engineering Services

1.5 Program Activities

The Infrastructure Acquisitions Program is a formal process to address prospective additions to the County's wastewater collection and transmission systems. The process focuses on the evaluation of infrastructure, prior to acquisition, to provide a full understanding of the current condition and performance status of the infrastructure system proposed for acquisition. All acquisitions must be approved by the DWM, County Attorney, CEO's Office, and Board of Commissioners (BOC). Specific details regarding County policy and requirements regarding acquisitions are documented in the County Code of Ordinances.

The Infrastructure Acquisitions Program includes a description of each program element. In addition, the Program includes procedures for inspection and compliance with the *County Design Standards*.

The following elements comprise the DWM Infrastructure Acquisitions Program:

- Acceptance of Existing Infrastructure within DeKalb County
- Capacity Allotment
- New Construction and Connections within DeKalb County
- Documentation of Compliance Requirements
- Project Tracking
- Standard Operating Procedures

Specifically, the following items are included in this Program document, where appropriate:

- Descriptions of the policies and processes the County uses to implement the Infrastructure Acquisitions Program to properly inspect and determine compliance with *County Design Standards*.
  - Section 1.5.1 details the process the County follows when accepting private existing infrastructure. Also see Section 2.1.

  - Section 1.5.2 provides a summary of how capacity is allotted in the system.
  - Section 1.5.3 details the process the County follows when there are proposed new developments or construction projects in the county.
  - Section 1.5.4 details the process for performing physical tests the County requires as part of its evaluations.
  - Section 1.5.5 details the requirements (including costs and time) to bring a proposed addition into compliance with the County's standards.
  - Section 1.5.6 details the computerized mechanism used to track each proposed acquisition through each stage of the evaluation process.
- Written Standard Operating Procedures and Flow Charts in Section 2 detail:
  - Procedures for conducting the evaluation of prospective infrastructure acquisitions to ensure that all proposed infrastructure acquisitions comply with *County Design Standards*.
  - Procedures for approving or denying the prospective acquisitions.
  - Procedure and specifications for performing the physical tests the County shall require as part of its evaluations.
  - Procedures for contractors, developers, property owners and other governments to follow in estimating the cost and time requirements to bring infrastructure proposed for acquisition into compliance with the *County Design Standards*.

DWM maintains comprehensive written standards (*County Design Standards*) to guide engineers, developers and contractors during the design and construction phases of a project. These standards are the basis for design, construction, and inspection activities. In addition, P&S maintains comprehensive plan review checklists for use by developers, contractors and engineers. These checklists (refer to Section 3, Attachments) are available from P&S and DWM.

1.5.1 Acceptance of Private and Existing Infrastructure within DeKalb County

Existing private systems within the County are considered for acquisition when requested by the owner of the infrastructure if the acquisition will serve the public interest. Existing private system acquisition generally includes pump station and collection system infrastructure. Currently, private package plants are not present within the County. To date, issues associated with acquisition of systems with no funds and/or because of State requests have not been encountered by DWM.

The following steps summarize the process for acquisition of existing sewer infrastructure (private systems) within the County:

1. The owner of a private sanitary sewer system may petition the County to accept ownership of the system in accordance with current the County policies and procedures for acceptance.

2. Requests are evaluated on a case-by-case basis by the County, in coordination with the DWM, P&S, and other coordinating departments, and must be to the benefit of the public interest.
3. Existing infrastructure is evaluated using the same DeKalb County codes, design standards, procedures, and measures as for new infrastructure acquisitions.
4. The County may require the developer/owner fund and conduct an assessment of the existing infrastructure by a professional engineer, licensed in the State of Georgia for compliance with its existing standards and ordinance for infrastructure acquisition. The County may assist with funding of existing infrastructure acquisition, based on availability of funding.
5. A written and sealed report of the results of the infrastructure evaluation prepared by the infrastructure owner and professional engineer must be submitted to the County.
6. Deficiencies must be corrected at the developer/owner's expense and certified by a professional engineer, licensed in the State of Georgia, that the infrastructure complies with current DeKalb County standards.
7. In addition, the developer/owner must have the legal right to dedicate to the County the appropriate access to the infrastructure through easements, right-of-way, and the dedication of property that allows the County sufficient access to operate and maintain the infrastructure, as accepted.
8. The BOC authorizes the infrastructure acquisition including the acceptance of easements, rights-of-way (ROW) and property.

Other key elements included in negotiation of acquiring existing private systems within the County include, but are not limited to, the following:

- The Program Manager's Engineering Supervisor is assigned the project for coordination and oversight.
- Compliance, as needed, with DeKalb County CMOM, Fats, Oil, and Grease Management Program and System-Wide Flow Monitoring Programs.
- Access to system through easement (minimum active width and/or construction widths) and/or ROW establishment through coordination with appropriate County departments.

1.5.2 Capacity Allotment

Capacity allotment by DWM is applicable to all DeKalb County DWM infrastructure acquisitions requests (refer to Section 1.5.3). DWM conducts a capacity analysis after the application and prior to the plan review process. This analysis results in a sewer system capacity allotment authorization by DWM. Capacity allotment for a project is certified by a registered professional engineer prior to owner application of a building permit application or other sewer connection applications. Subsequent changes require re-submittal and approval by DWM.

The limiting factors include the carrying capacity of the receiving WCTS and the plant capacity. Capacity allotment is only conducted as requested by a developer and determined based on density (i.e., density increase in a dense urban area may have a more detrimental effect that in a rural area). DWM determines if an increase in density will increase flow in the sewer in receiving sewer lines and at the plants.

Other considerations that are included in the analysis are:

- The integrity of the infrastructure along the course of the WCTS including the trunk line, manholes, and the treatment plant.
- Treatment plant capacity to accommodate additional flow.

Capacity analysis for prospective new sewer connections includes evaluation of adequate capacities to collect, transmit, and treat additional sewage expected as a result the acquisition under consideration. DWM is currently developing a hydraulic model that will be used by the Infrastructure Acquisitions Program for capacity analysis purposes.

A written procedure for Capacity Allotment is provided in Section 2, Program Procedures (Procedure 2.3, page 2-14).

1.5.3 New Construction and Connections within DeKalb County

DWM reviews and approves the water and sewer infrastructure for proposed new developments or construction projects from conception to implementation by proper communication and coordination with other County departments and agencies. DWM is committed to provide oversight as the developer and/or contractor completes the project in accordance with design standards and procedures that have been established by the County for quality of construction and consistency. Prospective additions are approved for acceptance after a well-defined process which includes sketch plat review, roundtable meetings, design approval phases, pre-construction meeting(s), site inspections, pressure testing of sewer lines, manhole inspections, closed circuit television (CCTV) inspections of sewer lines , pump station inspections, pump station start-up check lists, and pump station performance testing.

County policies, requirements, and procedures regarding infrastructure acquisitions are defined in the *County Code of Ordinances* and in the current *County Design Standards*.

DWM's basic elements, for review, approval and acceptance of new sanitary sewer systems, consist of, but not limited to, the following:

- The owner develops a preliminary plan for the project and submits to the County P&S. Plans are distributed to related County departments and agencies including DWM for awareness and evaluation for the proposed plan. The Engineering Supervisor is assigned the project for coordination and oversight.
- A request for sewer availability must be submitted by the owner. DWM assesses the request to determine if a sanitary sewer line is accessible and generates a Sewer Availability Letter showing the physical location of existing sanitary sewer lines, if available.

- Upon approval of the preliminary development plan and receipt of a Sewer Availability Certification, the developer /owner then submits written design standards and design documents for the proposed connection to DeKalb's sanitary sewer system with the location clearly identified. The developer /owner must adhere to *County Design Standards*. Design drawings are then submitted for engineering review. DWM submits comments on engineering plans to P&S. This process is re-iterated until the plans are approved for construction. When construction plans are approved, a pre-construction meeting is conducted with representatives from DWM and P&S and the developer /owner and its engineer and contractor. Any changes to the approved drawings must be submitted to DWM for re-evaluation and approval. The developer also applies for the required permits (DWM is involved in permit approval process).
- Acquisition approvals are entered into a Construction Project Log, which is used to guide the engineers and the DWM Director to approve final plats. Once final plats are approved, the BOC accepts the proposed additions contingent upon the developer posting a 1-year warranty bond and maintenance guarantee for new construction/development sewer system assets. Warranty Bond requirements are determined on case-by-case basis for County operation and maintenance of the system.
- If construction of a development approved by the County is not started within 90 days of the date of the County's approval, the developer must re-submit the plans and supporting documents to P&S for review and new approval.
- When construction of the new infrastructure commences, County construction inspectors monitor and inspect the new construction activity. DWM inspection personnel conduct periodic compliance inspections to ensure quality is maintained and the connection to existing sewer collection and conveyance system is completed as designed and in accordance with DWM Design Standards. County inspectors are involved and conduct construction standard inspections for the duration of construction.
- During the infrastructure construction phase, the owner/developer conducts testing and inspections for all piping, lift stations, manholes and performs testing including, but not limited to, structural testing, pipe pressure testing, CCTV inspections of sewer lines, pump station inspections, pump station start-up check lists, and pump station performance testing. Independent testing is also completed by licensed contractors, and certified test results are submitted to the County. All physical testing and inspections are completed in accordance with *County Design Standards*.
- Other areas to consider include meeting current county standards for new development connections (such as adequate size, alignment, and grade for new house connections to existing infrastructure). In addition, allow adequate taps to be incorporated in subdivision lots and size-reduced lots.

After the construction is completed, the infrastructure is cleaned and CCTV inspected by a contractor hired by the developer and witnessed by the County prior to initiation of service. Data are finalized and submitted to the DWM Record Center to be included in the sewer mapping system.

In addition, sewer easements are established to permit DWM staff to maintain the new sewer infrastructure. Easement legal forms /applications for (1) temporary construction, (2) permanent water and sewer (installed by developer or County) and (3) permanent sewer easement (installed by developer or County) are available from County Engineering Services.

Construction close-out requirements prior to acceptance of new construction and sewer system assets include:

- "As-built" sanitary sewer plans and profiles are sealed and signed by a professional engineer registered in the State of Georgia and submitted to DWM.
- Sewer CCTV notes and tapes are reviewed by staff, under the direction of a registered professional engineer and witnessed at the 11th month of warranty period so needed repairs can be identified.
- Adequate bonding and warranty are provided by the owner to maintain the sanitary sewer system for one calendar year after construction is completed and approved by DWM, before County acceptance of the infrastructure.
- Power costs paid by owner/developer during the 1-year warranty period prior to County acceptance of system.
- The Construction Project Log(s) are completed prior to review of final record drawings.
- Final record drawings for the sanitary sewer system are reviewed by DWM staff, including a registered professional engineer's signature and seal prior to the Director's approval.

The owner/developer is responsible for issues that are identified by inspectors during the 1-year bond warranty. The system, including lift stations if present, is legally owned by the owner/developer for the 1-year warranty time, including payments to the appropriate power company. At the 11th month of the 1-year warranty, DWM inspectors/contractors conduct a thorough inspection of the prospective acquisition to identify any deficiencies or failures in the system. Inspection items need to be corrected before DWM can accept the infrastructure additions permanently and release cost/time requirement bonds, as appropriate. Inspection results such as CCTV recordings, completed by a contractor, are submitted as part of the close out package submitted. In addition, at the end of the warranty period and close-out package approval, the BOC accepts the new sewer system and assets are tracked and maintained through County GIS.

A written procedure is provided in Section 2.1, New Construction/Development (page 2-2).

1.5.4 Evaluation Process – Physical Tests

Before accepting infrastructure into the County's system, DWM subjects the infrastructure to a series of tests. Testing requirements for Gravity Sewer systems include: (1) Visual Tests, (2) Air Tests, (3) CCTV Testing, (4) Inflow/Infiltration Tests, (5) Deflection Tests (for all polyvinyl chloride [PVC] Sewers) and (4) Manhole Tests. Testing requirements for Force Mains include: Pressure and Leakage Testing. Written procedures for carrying out these tests are included in Section 2.2, Physical Testing Procedures (page 2-10).

1.5.5 Documentation of Compliance Requirements

The cost and time required to bring a proposed addition into compliance with DWM's standards are developed by a professional engineer registered in the State of Georgia and hired by the owner of the proposed addition. A report prepared and sealed by the professional engineer setting forth the estimated cost and time requirements is submitted to the County.

The owner of private system (i.e. developer) then has the option to complete upgrades at its cost or to provide the amount of estimated funds to the County for DWM completion of system upgrades. Should the owner be unable to provide funds for upgrades (to be completed by the owner or the County), the County has the option to refuse to accept the sewer system/infrastructure for connection to the County and not authorize connections to the system. If the actual cost of the required system improvements is more than the Owner's estimate, the Owner must provide additional funds to the County that are required to complete the improvements. If the actual cost of the improvements is less than the amount provided to the County by the Owner, the County will return any excess funds to the Owner. Construction will be based on the availability of an approved contractor being available, purchasing processes to be completed, and the overall cost of the project. If the cost to be incurred by the County is above $100,000, the BOC approval and purchasing processes will have to be followed and can add additional time to the project.

Written procedures are included in Section 2.4, Cost and Time Requirements (page 2-15) and Section 2.5, DWM Bonds Procedure (page 2-16).

1.5.6 Project Tracking

P&S in coordination with DWM, uses financial enterprise resource planning (ERP) software for project data management. The software includes a tracking module that tracks project progress, status, paperwork and inspections. Project tracking is used for each step and stage of a proposed acquisition until the system is deeded to the County (and accepted by the BOC) after the one year warranty and bond period, as applicable. P&S tracks each project from start to completion and interfaces with DWM in the process. DWM provides data input and can access the status of each project using financial ERP software. Once DWM takes ownership of a system/infrastructure, associated assets are then entered and activities and performance are tracked using the DWM GIS.

Specific asset acquisition location and specifications are submitted to DWM in a format for inclusion in the County's GIS mapping and modeling software system inventory.

This Program will include a mechanism for including capacity assurance information in the hydraulic model. This process includes a mechanism for integrating analysis from this program with information on infiltration/inflow (I/I) reduction activities. In the future, the DWM computerized maintenance management system and GIS will be linked to modeling software. A contract is currently in place to develop a hydraulic model of the sewer system using modeling software that will provide this information to DWM.

1.5.7 Future Hydraulic Model

The County is in the process of building hydraulic models for its WCTS. The calibrated hydraulic model will enable the County's sewer system flows to be simulated based on

known or hypothetical input conditions and on the controlling criteria established for the simulation. Hydraulic model simulations provide useful information about the sewer system's ability to properly convey flows according to the County's criteria.

Simulations can be evaluated for a portion or the complete network route from the point of interest all the way to the sewer system's furthest downstream location; for example, usually the AWWTF. Using the model as an accurate analysis tool to determine the impact of adding or eliminating flow into the system will depend on several factors inherent to how the sewer system network was developed, how comprehensive the calibration, and on the assumed conditions used in the model simulations.

Sensitivity analysis of the model to the different system flow inputs for various portions of the system would improve the County's confidence in the simulation results. The system's physical and operational performance will be dynamic and protocols need to be flexible to accommodate system conditions and enhanced technology.

1.5.8 Septic Tank to Sewer Service

As the County continues to upgrade treatment facilities and to extend trunk sewers into outlying sections, sanitary sewer is becoming available in many areas where only septic tanks are used. A program is in place that provides guidance in septic tank conversion that is regulated by the Georgia Department of Natural Resources Health Department. Refer to Attachment D, *Converting from Septic to County Sanitary Sewer System – Residential and Commercial* for information on the process of converting systems over.

2. Program Procedures

SCHEDULE
Schedule based on timeframe identified by the Department of P&S and DWM Staff of Infrastructure Acquisitions Program.
ACTIVITY DESCRIPTION
Procedure defines activities for acquisition of new construction/development to the sewer system.
ACTIVITY GOALS
To acquire new construction/development in accordance with County regulations and procedures.
RESOURCES
Program Manager: Assistant Director, Engineering and Asset Management
Engineering Supervisor
Senior Engineer
Engineer
Construction Inspectors
GIS Specialists
Contracted personnel that conduct non- design and construction inspections associated with assets
Financial Analyst

DWM procedures for the Infrastructure Acquisitions Program have been developed to ensure that infrastructure added to the ownership of the County is for public interest and benefit. The procedures have been developed to document a process by which DWM conducts specific program elements.

Infrastructure Acquisitions Program procedures are provided in this section and include:

2.1 New Construction/Development 2-2
New Construction/Development Procedure and Flow Chart
- Phase I – Land Disturbance Permit – Unincorporated DeKalb County 2-3
- Phase I – Land Disturbance Permit – City Review 2-5
- Phase II – Inspection Process in DWM 2-7
- Phase III – Final Plat in DWM 2-9

2.2 Physical Testing Procedures 2-10

2.3 Capacity Allotment Procedure 2-14

2.4 Cost and Time Requirements Procedure 2-15

2.5 DWM Bonds Procedure 2-16

2.1 New Construction / Development Procedure & Flow Charts

The DWM Infrastructure Acquisitions Procedure is based on the following steps and processes:

1. Capacity allotment – DWM will first determine if there is any water and sewer capacity for the new development connection to DWM water and sewer. If yes, go step 2. If there is not enough capacity, the application is denied (Refer to Capacity Allotment Procedure – Refer to Procedure 2.3, page 2-14).
2. New Construction/Development Acquisition procedure.
    a. Land Disturbance Permit Review and approval is based on Section 2.1, New Construction / Development Procedure & Flow Charts, and Phase I – Land Disturbance Permit Process. If approved, go to step 2.b.
    b. Lift Station, Force Mains, and Gravity Sewer Review and Approval
        i. Lift Stations and Force Mains – Review and approval processes for sanitary pumping stations and force main are detailed under this procedure and Phase II – Inspection Process in DWM (page 2-7). The review and approval will be based on the DeKalb County *Portable Water Main, Gravity Sanitary Sewer, and Sanitary Sewer and Force Main , Standards* [2009 Edition Version 1.0 (or current version] and Attachment – *Check List for Sanitary Sewer Lift/Pump Station Design Review & Approval*. The existing WCTS capacity at the connection point will be reviewed in detail again to ensure availability. If it is approved, go to Step 4.
        ii. Gravity Sewers - Review and Approval will be based on DeKalb County "Portable Water Main, Gravity Sanitary Sewer, and Sanitary Sewer and Force Main Design Standards (2009 Edition Version 1.0)" and Attachment –Gravity Sanitary Sewer System Plan Checklist. If approved, go to Step 4.
3. Existing *Construction/Development Acquisition Procedure*.
    a. Follow process 2.b.i for review and approval for existing lift stations and the DWM WCTS sewer capacity allotment process. If approved, go to step 4.
    b. Follow process 2.b.ii for review and approval for existing gravity Sewers and the DWM WCTS sewer capacity allotment process. If approved, go to step 4.
4. *Cost and Time Requirements Procedure*
    a. DWM will prepare the estimated costs and time requirements for the private infrastructure acquisition (refer to details listed in Section 2.4, Cost and Time Requirements Procedure [page 2-15], and Section 2.5, DWM Bonds Procedure [page 2-16]). If approved, go to step 5.
5. Physical Test Procedures.
    a. The Gravity Sewers, lift stations and force mains will be tested based on the procedures detailed in Section 2.2, Physical Testing Procedures (page 2-10). If approved, go to step 6.
6. Final Plat Process in DWM

Refer to Section 2.1, New Construction/Development Procedure & Flow Charts, Phase III– Final Plat Process, in DWM for final acceptance developer or County

2.1.1 Phase I – Land Disturbance Permit Review and Approval Process - Unincorporated DeKalb County

The Land Disturbance Permit (LDP) review and approval process for Unincorporated DeKalb County is provided in the following steps (also refer to Figure 1):

1. The P&S receives the preliminary sketch plat from Developer/Engineer.
2. Round-table meeting where DWM personnel review the sketch plat and make all necessary comments.
3. Sketch plat is returned to the developer to address comments and resubmitted to P&S. This process continues until the sketch plat meets DWM criteria.
4. Developer submits LDP plans to P&S after all the comments by DWM on the preliminary plat have been addressed.
5. P&S routes the LDP plans to DWM.
6. DWM staff reviews the LDP plans and approves or redlines them.
7. LDP Plan is returned to developer to address comments and resubmit to P&S. This process continues until the LDP Plan meets DWM standards.
8. LDP Plan approved and permit issued to developer.
9. Check status of dates of submittals, approvals/redlines, and returns: Call the DWM Engineering Division or P&S.
10. If construction of a development approved by the County is not started within 90 days of the date of the County's approval, the developer must re-submit the plans and supporting documents to P&S for review and new approval.

DEPARTMENT OF WATERSHED MANAGEMENT
NEW CONSTRUCTION / DEVELOPMENT PROCEDURE

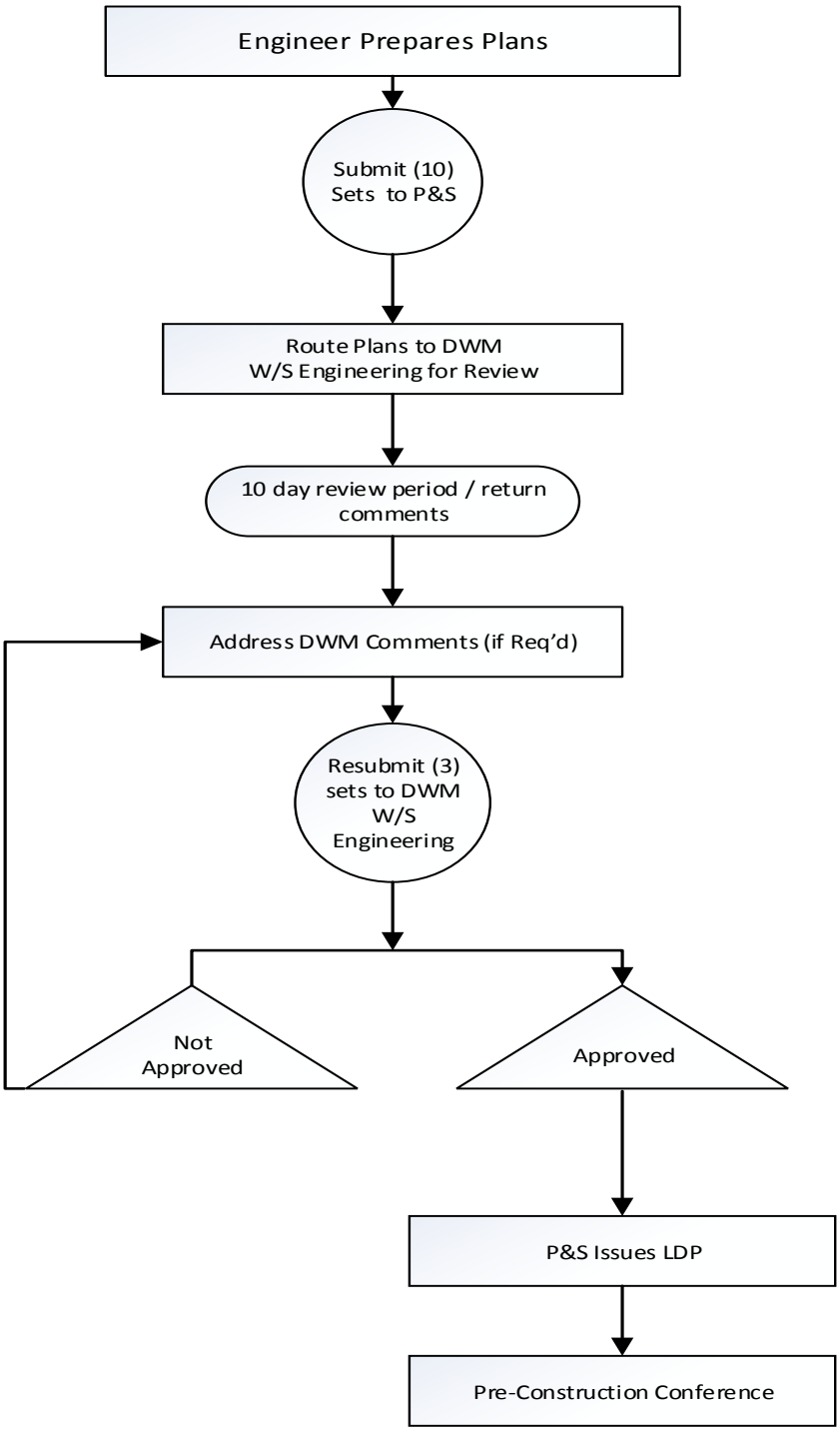

FIGURE 1
Phase I – Land Disturbance Permit Review and Approval Process Flow Chart
Note: If construction of a development approved by the County is not started within 90 days of the date of the County's approval, the developer must re-submit the plans and supporting documents to P&S for review and new approval.

2.1.2 Phase I – Land Disturbance Permit Process - City Review

The LDP review and approval process for City review is provided in the following steps (also refer to Figure 2):

Plans submitted to P&S for review

- Plans routed to DWM – DWM Engineering for review.
- DWM Engineering reviews redlines or approves.
- Plans returned to developer to address comments and resubmit to P&S until plans meet DWM standards.
- All water and sewer access fees must be paid prior to DWM approval of project.
- If construction of a development approved by the County is not started within 90 days of the date of the County's approval, the developer must re-submit the plans and supporting documents to P&S for review and new approval.

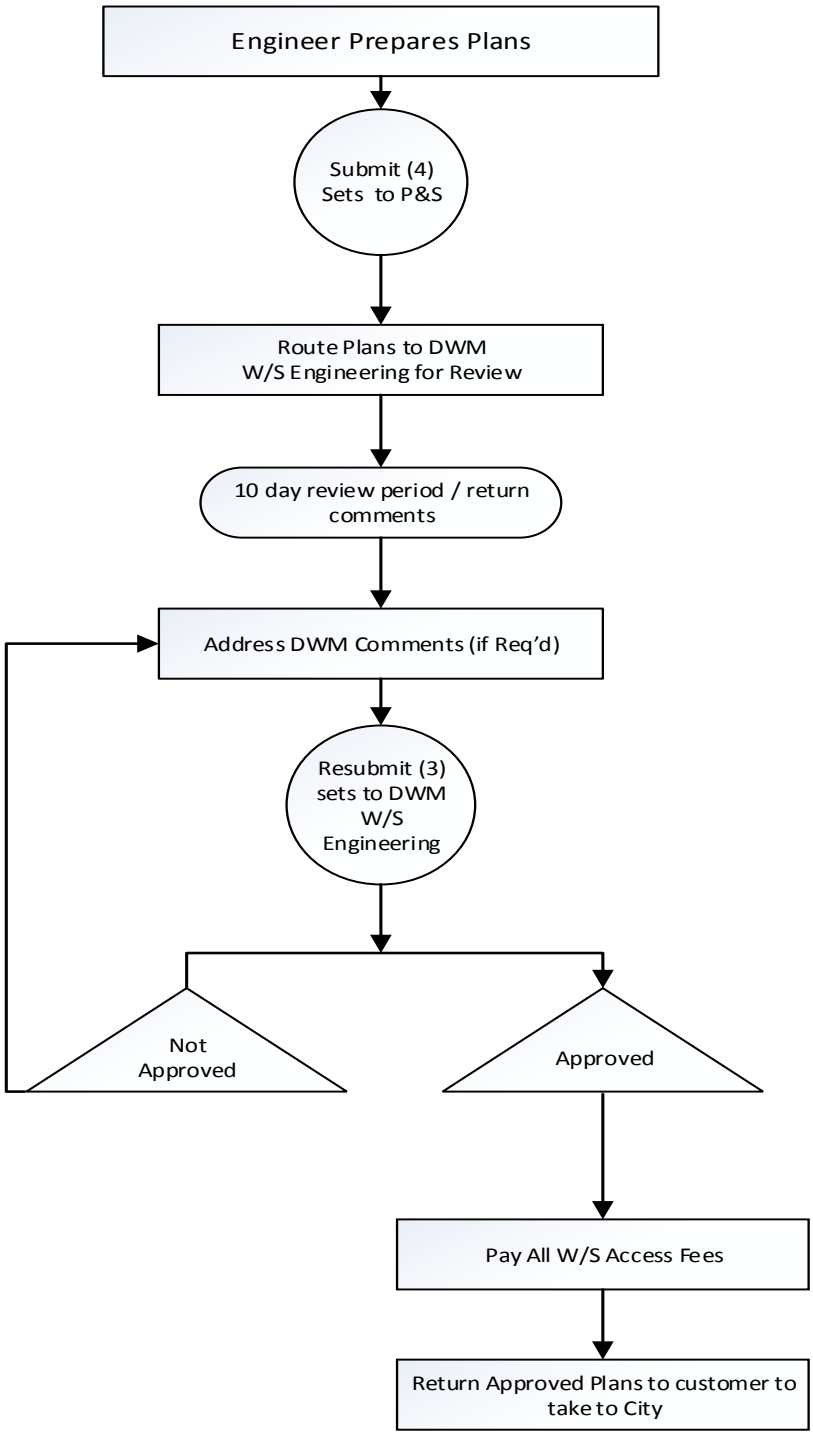

FIGURE 2
Phase I – Land Disturbance Permit Process - City Review Flow Chart
Note: If construction of a development approved by the County is not started within 90 days of the date of the County's approval, the developer must re-submit the plans and supporting documents to P&S for review and new approval.

2.1.3 Phase II — Inspection Process in DWM – After Construction

The inspection process is provided in the following steps:

- County inspectors assigned to the project receive the approved plans for sanitary sewer.
- Inspectors attend a preconstruction meeting with the P&S along with other appropriate department representatives to address in more details issues concerning the project such as materials, schedules of activities and inspections, tests, grease traps, required paper work, etc.
- Inspectors provide routine inspection and inspections at milestones to determine that the contractor is installing the sanitary sewer infrastructure in accordance with DWM standard specifications and details. DWM inspectors may exercise the right to stop work if deficiencies are noted during construction, until deficiencies are corrected.
- Site inspection and testing includes, but is not limited to, the following:
  - Pressure test and CCTV inspection of sanitary sewer lines and other assets
- Paper work required to release the final plat includes:
  - Sewer CCTV notes to be witnessed, reviewed, & approved for sewer lines
  - Sewer as-built review & approval
  - Completion of lift stations-including start-up and acceptance
- Post development inspections before the end of warranty and bond release.
- DWM maintains a list of inspectors and contact information.

Review and Approval Process /Guidelines for Sanitary Lift Stations and Force Mains (Rev: 1/2015)

Note: County Standard is subject to change. Refer to *County Design Standards* for details and current flow Chart.

The flow chart on Figure 3 depicts the review and approval process/guidelines for sanitary lift stations and force mains.

DEPARTMENT OF WATERSHED MANAGEMENT
NEW CONSTRUCTION / DEVELOPMENT PROCEDURE

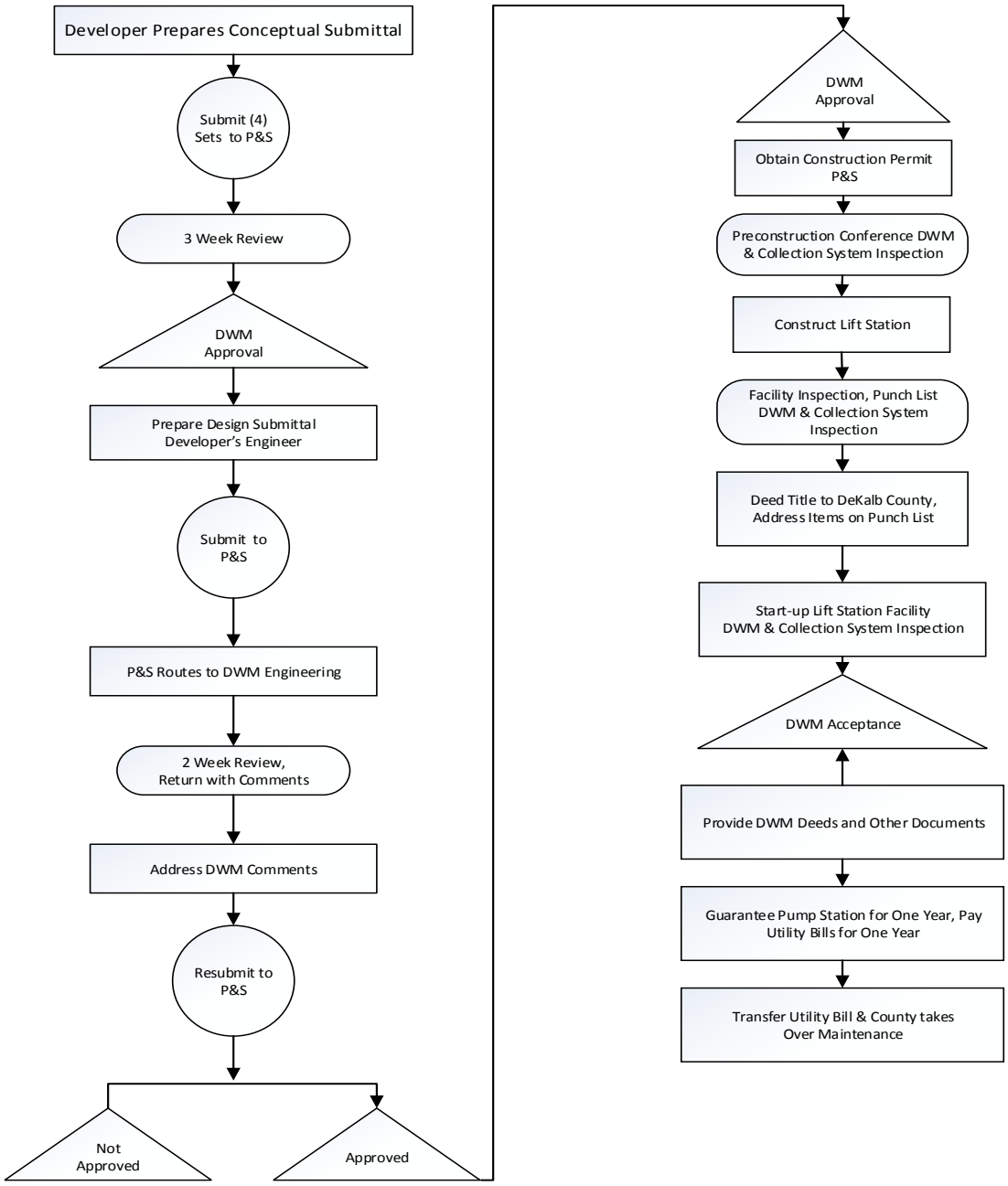

FIGURE 3
Phase II — Inspection Process in DWM – After Construction Flow Chart

2.1.4 Phase III - Final Plat Process in DWM

- The P&S receives the draft final plat from Developer/Engineer and routed to DWM Engineering.
- Round Table meeting where DWM reviews the plat and makes all necessary comments. Also, at this stage DWM reiterates the need to check the status of the submittal/approval of the final plat pre-requirements such as water and sewer as-builts, sewer CCTV inspection, and lift station acceptance (if applicable).
- P&S submits the Mylar and computer aided design (CAD) format to DWM when all the comments on the preliminary plat have been addressed as per DWM requirements.
- DWM reviews the pre-requirement items and approves or redlines them before sending them back to P&S. The pre-requirement items are:
  - CCTV inspection
  - Sewer as-builts
  - Lift station and other asset acceptance (if applicable)
- DWM reviews the Mylar for the pre-requirements and approves/signs it or makes comments on earlier redlines not addressed yet, and sends it back to P&S.

2.2 Physical Testing Procedures

2.2.1 Testing of Gravity Sewers

Visual Test

The Contractor shall install the new gravity sanitary sewer system as watertight as practical. It is the Contractor's responsibility to eliminate all visible points of groundwater infiltration and any other significant points of leakage which can be located regardless of test results obtained as hereinafter required. Sanitary sewer lines completed in place shall be inspected and tested with a method satisfactory to the DWM showing a clear and unobstructed line between manholes. Lines and manholes shall be flushed and washed down before inspection and testing. The Contractor, at his own expense, shall perform system infiltration tests and air tests as described below.

Air and Pressure Tests

All sanitary sewers shall be tested by Contractor for leakage using low-pressure air testing, according to latest revisions of ASTM C924 for RCP, ASTM F1417 for plastic pipe, and as specified herein. All pipes shall be backfilled prior to air testing. For pipes less than thirty-six (36) inches in diameter, the air test shall be performed by testing complete sections of pipe between manholes. For pipes thirty-six (36) inches in diameter and over, the air test may be performed by testing each joint connection individually using a joint tester similar to the Cherne Joint Tester.

The following procedure shall be used for air testing a sanitary sewer system: All pneumatic plugs shall be seal-tested before being used in the actual test installation. One length of pipe shall be laid in the ground and sealed at both ends with the pneumatic plugs. Air shall be introduced into the plugs until a pressure of twenty-five (25) psig is reached. The sealed pipe shall be pressurized until the internal air pressure reaches five (5) psig. The plugs shall hold against this pressure with bracing and with movement of the plugs out of the pipe. Plugs shall be readily removable to provide an unobstructed lateral house connection or extension. All wyes and/or stubs shall be plugged in a manner acceptable to the Inspector.

Where high ground water is known to exist, the pounds of pressure that will be added to the internal air pressure used for the test shall be the height in feet of ground water above the invert of the sanitary sewer divided by 2.31.

At least two (2) minutes will be allowed for air temperature in the test segment to stabilize, while internal air pressure remains no less than 3.5 psig above ground water pressure.

The elapsed time for the internal pressure to drop to 2.5 psig above ground water pressure will be accurately determined. If it is obvious to the inspector that no leakage is occurring, he may terminate the test early. The air test is deemed acceptable if the elapsed time for the internal pressure drop equates to or exceeds three (3) hours.

If the installation fails to meet the requirements of this test, the Contractor shall determine the source of the leakage. The Contractor shall repair or replace all defective materials and/or workmanship. The installation will then be retested for compliance with these Design Standards.

CCTV Testing

A television inspection of the sanitary sewer shall be performed at the Owner/Developer's expense during final inspection. DWM shall be provided with one copy of the TV inspection report and digital

media showing the entire length of the gravity sanitary sewer tested. A copy of the first page of the CCTV inspection form is provided in Appendix J. The report shall contain the condition of the pipe, name and location of the project including street name, manhole number, type of pipe, depth, location of services, length, type of joints, roundness, and distance between manholes. Any pipe found to be cracked, leaking, misaligned, bellied, or otherwise defective shall be removed and replaced. Record drawings certified and stamped by Owner/Developer's Engineer shall also be submitted to DWM. Owner/Developer shall give adequate notice to DWM so that an Inspector can be present during the CCTV testing.

Internal grouting to repair new lines will not be allowed, nor will a "re-rounding" process to repair excessive deflection be allowed.

Following corrections of discrepancies, the line will be re-inspected at no cost to DCDWM. All items must be approved and accepted by DWM prior to submittal of the final plat.

Inflow/Infiltration

Measure I/I into each major segment of sanitary sewer during wet weather, as requested by DWM. Use suitable temporary weirs and depth measuring devices, acceptable to DWM. These devices will be furnished, installed and removed by the Contractor.

For sanitary sewers sixteen (16) inches or less in diameter, no infiltration or leaks will be allowed. Any infiltration flowing at any section of the sanitary sewer project must be eliminated prior to final inspection and approval.

For sanitary sewers greater than sixteen (16) inches, take action necessary to permanently reduce infiltration from all water sources into all constructed work to the flow rate determined by tests witnessed by the DWM. Acceptable I/I shall not exceed 0.01 gallons per inch of nominal pipe diameter per foot of pipe per twenty-four (24) hours. **Repair methods must be approved by DWM.**

No visible or known leaks will be allowed regardless of infiltration test results.

Deflection Test (All PVC Sewers)

The Contractor shall test PVC gravity sanitary sewers for excessive deflection by passing a mandrel through the pipe. Deflection of the pipe shall not exceed five (5) percent.

The mandrel size shall be based upon the maximum possible inside diameter, taking into account the allowable manufacturing tolerances of the pipe. The mandrels shall have an odd number of legs, or vanes, with a quantity equal to or greater than nine (9). The legs of the mandrel shall be permanently attached to the mandrel. A mandrel with variable sizes shall not be allowed. The mandrel shall be constructed of steel, aluminum, or other material approved by the DWM and shall have sufficient rigidity so the legs will not deform when pulled through the pipe. The Contractor shall provide a proving ring for each size mandrel, with a tolerance of no more than 0.02-inch clearance. Before being used by the Contractor, the mandrel dimensions shall be checked by the DWM using the proving ring.

The Contractor shall excavate and install properly any section of pipe not passing this test and re-test until results are satisfactory.

This test shall be performed twice:

- Once within the first thirty (30) days of installation, and

- Once during final inspection, but no sooner than thirty (30) days after pavement backfill is completed

Manhole Testing

All manholes shall be vacuum tested. Manholes shall be tested in the presence of the DWM Inspector. The vacuum test shall consist of applying a vacuum to the manhole.

Each manhole shall be tested after the installation has been completed. If tested prior to backfill, the test shall conform to the latest revision of ASTM C1244. All pipes entering the manhole shall be plugged. Contractor shall take care to securely brace the plug from being drawn into the manhole. The test head shall be placed at the inside of the manhole cover frame and the seal inflated. Pump shut off shall occur once a vacuum of ten (10) inches of mercury is drawn. With the valves closed, the time shall be measured for the vacuum to drop to nine (9) inches of mercury. The manhole shall pass if the time is greater than or equal to the following:

- Sixty (60) seconds for forty-eight (48) inch diameter,
- Seventy-five (75) seconds for sixty (60) inch diameter,
- Ninety (90) seconds for seventy-two (72) inch diameter manholes.

For manholes deeper than twenty (20) feet, the test times shall increase by one (1) second per foot of additional manhole depth. If the manhole fails the initial test, necessary repairs shall be made. Retesting shall proceed until a satisfactory test is obtained.

If the test is performed after the manhole has been backfilled, the procedure shall be modified per NPCA guidelines.

2.2.2 Testing of Force Mains

Pressure and Leakage Testing

SCHEDULE
Schedule based on timeframe identified by Department of Planning and Sustainability and DWM Staff.
ACTIVITY DESCRIPTION
Procedure defines capacity allotment process for acquisitions to the sewer system.
ACTIVITY GOALS
To allot sufficient capacity to sewer system acquisitions.
RESOURCES
Assistant Director, Engineering and Asset Management Engineering Supervisor

Force mains shall be subject to a test pressure equal to 150 percent of the total dynamic head for a minimum of two hours. The test shall be performed using potable water. No leakage will be allowed. The entire test must be witnessed and approved by the DWM representative. To schedule a test the Developer/Contractor shall notify the DWM inspector a minimum of 48 hours in advance at (404) 371-2110.

The Developer/Contractor shall remove, valve off, or otherwise protect any equipment that might be damaged by the pressures used in the test. Pipe laid in trenches shall be back filled. Joints, fittings, and valves may be left exposed to be examined during the test. Before applying the test pressure, all air shall be expelled from the pipe.

If combination air release valves are not available at high points, the Developer/Contractor shall make necessary taps and insert plugs after the test has been completed. Prior approval must be obtained from the County before making the taps.

The DWM inspector's approval of the force main shall become a part of the overall pump station and force main system approval. The Developer/Contractor shall bear the complete cost of the pressure test including temporary plugging and blocking, and the repair of all leaks.

2.3 Capacity Allotment Procedure

DWM coordinates with the P&S when applications are submitted to the County for consideration of potential acquisitions. DWM's involvement is to provide input to the application and plan review process to assess whether the sanitary sewer collection and conveyance systems are acceptable to be owned by the County. Part of the process includes a sewer system capacity authorization by DWM.

The following steps summarize the Capacity Allotment process:

1. Following owner submittal of drawings and documentation necessary to accurately communicate the desired connection and additional flow load on the conveyance system, DWM evaluates and provides sewer capacity certifications for the proposed project/connection.
2. Capacity allotment requires certification by a DWM registered professional engineer, registered in the State of Georgia, that there is adequate capacity prior to owner submission of a building permit application or other sewer connection applications. The capacity certification shall confirm that the DWM standards for design of sanitary sewer system are satisfied and that the proposed connection will not exceed the capacity of the conveyance and treatment facilities. The analysis shall include downstream pipes, pump stations and treatment facilities.
3. Capacity evaluation for prospective new sewer connections includes evaluation of adequate capacities to collect, transmit, and treat additional sewage expected as a result of the addition of new flow from interconnections with intergovernmental agreements, and prospective flow from new construction, and/or development or expanded system. Capacity allotted for other developments is also considered.
4. Capacity assessment is based on evaluation of sewer flow data within the system and treatment plant capacity. Standardized design flow rate guidelines use pipe roughness, manhole head losses, accuracy of distance and slope on as-built drawings; water consumption records, engineering techniques to predict the impact of additional flow and flow metering to confirm mathematical estimates of existing peak flow. Refer to DWM CMOM *System-Wide Hydraulic Model Program* for further information.
5. Currently, flow meters, maps, and monitoring are the primary tools employed to assess flow increase to the system. In the future, capacity assessment will include the use of the System-Wide Hydraulic Model and GIS data by sub-basin to simulate flow scenarios that aid in determination of capacity allotment to be assigned to the applicant.
6. This assessment results in the determination of capacity allotment assigned to the applicant. Capacity allotment is provided in the Sewer Availability Letter by DWM.

2.4 Cost and Time Requirements Procedure

SCHEDULE Schedule based on timeframe identified by P&S and DWM Staff.
ACTIVITY DESCRIPTION Procedure defines cost and time requirements for acquisitions to the sewer system.
ACTIVITY GOALS To determine sufficient cost and time requirements for sewer system acquisitions.
RESOURCES Assistant Director, Engineering and Asset Management Engineering Supervisor

Cost and Time Requirements Procedure to bring a prospective addition into compliance with County's standards to achieve required capacity developed by a professional engineer registered in the State of Georgia and hired by the owner of the proposed addition.

A report prepared and sealed by the professional engineer setting forth the estimated cost and time requirements is submitted to the County.

The following steps summarize the Cost and Time Requirements process:

1. The estimated cost and time requirements are developed by a professional engineer using the most current cost data regarding site conditions, materials, and labor. Cost and time requirement estimates are provided to the County by the Owner to complete evaluation and upgrades to the system.
2. The owner then has the option to complete upgrades at its cost or to provide the amount of estimated funds to the County for DWM completion of system upgrades. Should the owner be unable to provide funds for upgrades (to be completed by the owner or the County), the County has the option to refuse to accept the sewer system/infrastructure for connection to the County and not authorize connections to the system. If the actual cost of the required system improvements is less than the Owner's estimate, the Owner must provide additional funds to the County that are required to complete the improvements. If the actual cost of the improvements is less than the amount provided to the County by the Owner, the County will return any excess funds to the Owner.
3. The system owner must also provide a bond for the infrastructure for 1 year as is the case of new infrastructure assessment. The P&S holds the bond. Bond funds are flagged as the project progresses for DWM to complete inspections, evaluations, and upgrades to the prospective acquisition.
4. There is also a required 1-year warranty bond for new construction/development regarding sewer system assets. The bond is to cover infrastructure improvements necessary during the warranty period due to deficient materials or construction. Bonds are determined to be based on the inventory of new infrastructure included in the acquisition consideration.

2.5 DWM Bonds Procedure

SCHEDULE Schedule based on timeframe identified by P&S and DWM Staff.
ACTIVITY DESCRIPTION Procedure defines bond process for acquisitions to the sewer system.
ACTIVITY GOALS To follow DWM and County procedures for bond process for sewer system acquisitions.
RESOURCES Assistant Director, Engineering and Asset Management Engineering Supervisor Financial Analyst

Note: Forms associated with this procedure are maintained by the P&S.

New Private Developments

After the DWM Construction Inspector has forwarded the sewer and lift station completion reports as well as acceptable record drawings for entry in the Construction Project Log to the Administrative Assistant of Engineering Asset Management Division, the Bond/Warranty process is administered by the P&S as follows:

- At the completion stage of a project the owner/applicant will be required to post a Performance Bond to ensure corrections are made to deficiencies discovered during the final inspection conducted prior to the end of 1 year.
- After these corrections are accomplished and the final plan presented, a Maintenance Bond of 10 percent of the sewer system construction cost is required and escrowed for a term of 12 months.
- Should emergency repairs be necessary and not made by the applicant within 30 days of notice, the County has the authority to repair the same and recover costs from the bond.
- Warranty inspections are conducted by respective departments beginning with the ninth month of the maintenance period.
- Uncorrected nonemergency deficiencies that persist after 30 days may prompt up to two certified mail warning notices requesting immediate remedial action.
- During the warranty period, if repairs are not made by the 12th month and the warranty period is not extended a summons may be issued to the developer by the court of jurisdiction and the developer ordered by the court to make required repairs.
- The bond amount could be forfeited to the County should the applicant be declared in default.

- After all required corrections identified during the warranty period are made, P&S will send a release letter to the applicant.

Sanitary Sewer Lift Stations

Refer to current County Design Standards

Projects having lift stations require that additional inspections be conducted at or before warranty expiration:

- The lift station property must have a physical address and be deeded over to the County, including adequate access for the site (as approved by DWM and in accordance with current design standards for lift stations and easements).
- The utilities must be verified as connected and transferred to the County (with a valid County GIS address).
- The entry gate keys and operations and maintenance manuals must be delivered to the County.
- Must have water meter and service transferred to County, and final bill paid.
- Backflow device checked and certified by DWM in the 11th month.

3. Attachments

The P&S maintains several plan review checklists for use by developers, contractors and engineers. The following example checklists are attached:

A Utility Plan – Water and Sewer Checklist

B Letter of Water and Sewer Location / Sewer Availability Letter

C Water and Sewer Access Fees

D Converting from Septic to County Sanitary Sewer System – Residential and Commercial / Sewer Connection Permit Application

E Sewer Lift/Pump Station Design Review Guidelines

Attachment A
Utility Plan – Water and Sewer Checklist

Utility Plan (Water & Sewer)

Date of Review: _____

Project Name: _____

A/P#: _____

_____ Show all utilities, existing, & proposed.

_____ Provide project description regarding existing & proposed Water/Sewer.

_____ Sanitary Sewer is available.

_____ Show septic tank and drain field location. (Sanitary sewer is not available)

_____ Show size, material type, location, and flow direction of existing sanitary sewer main. (Records available at 1580 Roadhaven Drive, Stone Mountain.) Must be field verified.

_____ Show, label & station proposed sewer lines, manholes, flow direction, type & size of line(s).

_____ Show deflection angles at manholes.

_____ Show SS Easement:

Main Diameter	Cover Depth	Min. Esmt. Width
15" or less	< 8 ft	15 ft
15" or less	8 - 16 ft	20 ft
15" or less	16 - 22 ft	25 ft
15" or less	23 - 30 ft	30 ft
16"to 30"	< 16 ft	25 ft
16"to 30"	16 - 22 ft	30 ft
16"to 30"	23 - 30 ft	40 ft
>30"	Any	50 ft

_____ Minimum Depth of Cover for Sanitary Sewer Mains:
7 ft within road right-of-way
4 ft in unpaved areas

_____ Manhole spacing:
Max distance between MHs for mains under 24" : 400 feet
Max distance between MHs for mains 24" to 36" : 500 feet
Max distance between MHs for mains over 36" : 800 feet

_____ Minimum slope for all sanitary sewer lines is 0.8 %, unless approved by Water/Sewer Engineer.

_____ Show Manhole number, station, top & invert elevations.

_____ Maintain 0.2 ft elevation drop through manhole.

_____ Label Sanitary Sewer lateral: 6" DIP @ min. 1% slope & min. 4 ft cover (TYP).

_____ Gravity Sewer Line material shall be PVC (SDR35) or DIP (Class 350).

_____ Show 20 ft permanent sanitary sewer easement to upstream property.

_____ Show all utility crossings on sanitary sewer profiles.

_____ Sanitary Sewer plans need clarification or are inadequate (see plans).

_____ Show size & location of existing water main(s).

_____ Water & Sewer Dept. requires that a backflow preventer device be installed (if currently existing) on each domestic or fire service line, and any other type of water service connection. Contact DWM Backflow Prevention Division.

_____ Water meter(s) must be located within the Right-of-way.

_____ Show minimum fifteen (15') feet water main easement for all County maintained lines not within right-of-way.

_____ Fire Hydrant Spacing:
Every 300 ft in Commercial Areas
Every 400 ft in Residential Areas

_____ Show/**Label** location of all proposed & existing fittings/appurtenances i.e. fire hydrants, valves, meters. Identify by name, size & type.

_____ Potable water mains shall maintain a ten (10') feet horizontal and eighteen (18) inch vertical clearance from non-potable pipelines.

_____ Water mains shall be located on the North and East side of streets.

_____ Water main size:
Residential: Minimum eight (8") inch diameter
Commercial: Minimum twelve (12") diameter

ADD NOTES:

NOTE All design & construction for water, sewer, fire lines, lift stations & backflow prevention shall comply with DeKalb County Department of Watershed Management Design Standards 2009 Edition, Version 1.0. Actual Field conditions may dictate more stringent requirements if deemed necessary by the construction inspector.

NOTE Developer shall provide record drawings "as-built plans " and "final plats" (if applicable) in hard copy and electronic format, as well as, record all easements that will be dedicated to DeKalb County in the court house, prior to approval of as-built plans.

NOTE F.O.G. Compliance (Grease Trap) review and approval required.
Contact DWM FOG Compliance Division

NOTE Projects involving construction of townhomes and/or condominiums are required to have individual meters for each unit.

NOTE Field changes during construction must be submitted for review and approval by the County Water & Sewer Engineer BEFORE changes are implemented.

NOTE For projects within cities, developer shall provide a maintenance bond to DeKalb County for DWM utilities prior to approval of as-built plans.

NOTE Contractor must jet clean and T.V. sanitary sewer lines after connections are made to the existing sewer tie-in points. Tracer wire to be installed for PVC pipes.

NOTE Contractor must notify the Water & Sewer Construction Inspector at least 72 hours prior to commencing construction activities.

District:	12 & 15	11 & 16	18 (West)	6 & 18 (East)
Inspector:	By District			
Phone:	Contact DWM			

NOTE Thrust blocks are required wherever pipe changes direction (tees, bends, etc.).

NOTE Gravity Sewer Line material shall be PVC (SDR35) or DIP (Class 350).

NOTE Provide easement plat & deed for review for all sanitary sewer and water easements. (after construction and with as-builts)

NOTE Water & Sewer Access Fees need to be paid under the following circumstances:
New Construction, Re-development, Additions, Change of Use, etc.
These fees are to be paid at 330 W. Ponce de Leon Ave, 2nd Floor.
Failure to settle these fees will result in delays for obtaining Water & Sewer Plan approval, as well as certificate of occupancy/completion.
Contact P&S for fee calculations or any questions.

NOTE Fire lines, F.O.G., Backflow Prevention, and Lift Stations require a separate review.

NOTE To purchase a copy of the Design Standards, Contact DWM Engineering and Asset Mgmt.

NOTE Add block for total proposed water/sanitary sewer infrastructure (on Utility Plan & Cover).

SS: # MHs: LF of SS:

Water: # FHs: LF of Water:

Additional Comments:

PLEASE ADDRESS ALL ITEMS WITH AN "X" AND IN "ADD'L COMMENTS" AREA.

PLEASE RETURN REDLINED PLANS & CHECKLIST WITH REVISION.

RETURN WITH (3) REVISED SETS.

Reviewer: Phone:

Attachment B
Letter of Water and Sewer Location
Sewer Availability Letter

LETTER OF WATER AND SEWER LOCATION

Date

Attention: Owner

Re: **Address**
Map Ref: _____

Dear **Owner(s):**

In response to your inquiry of [insert date], the DeKalb County Department of Watershed Management staff has reviewed our records and has identified water and sewer lines located near the above-referenced property. According to our records, there is accessible sanitary sewer located **(north/south/east/west)** of the proposed site. Also, there is an accessible ___inch water main (north/south/east/west) on _____(street). (See attached map for GIS locations). While these locations are based upon the best information available to us at this time, we cannot guarantee that the referenced locations are completely accurate.

Based on available information ascertained for the proposed development, sewer system infrastructure improvements will likely be required to accommodate the new flow contribution and ensure adequate sewer system capacity. The developer will be responsible for the cost associated with installing any improvements to the existing sewer system infrastructure that are necessitated in whole or in part by activities on the above-referenced property. Any such improvements must meet all applicable Federal, State and local requirements. Once installed and accepted by DeKalb County, all such improvements will be owned and maintained by DeKalb County.

Note: You should field verify this information for accuracy. If private property is crossed to access existing sewer, an easement will be required. The minimum size of pipe for a County maintained sanitary sewer is 8 inches in diameter.

This data is being supplied based on currently available data for informational purposes only. This letter should only be used to substantiate the location and potential availability of water and sewer services as of the date of this correspondence. All circumstances are subject to change and neither the location nor the potential availability indicated herein are in any way guaranteed. If additional information is required, please call our Engineering and Asset Management Division at (770) 621-7272.

Sincerely,

Rudolph A. Chen, P.E.
Assistant Director
Engineering and Asset Management

DSE/dee/ rev: 8/2014

LETTER SHOWING SEWER CAPACITY

Date

Attention: **Owner**

Re: **Property Address**
Map Ref: _____

Dear **Owner(s):**

The DeKalb County Department of Watershed Management ("DWM") has received your inquiry of **[insert date]** regarding the potential availability of sanitary sewer at the above-referenced location. In response to your inquiry, DWM staff has reviewed our records and can confirm that sanitary sewer capacity may be available for the subject property at this time (see attachment). Please note that the determination of available capacity expressed herein is not guaranteed as it is based upon the known conditions as of the date of this correspondence and on the anticipated capacity needs associated with your project.

In the event that sewer system infrastructure improvements are required to accommodate the new flow contribution and to ensure adequate sewer system capacity as a result of development on the referenced property, the developer will be responsible for the cost associated with installing any such improvements to the existing sewer system infrastructure. Any such improvements must meet all applicable Federal, State and local requirements. Once installed and accepted by DeKalb County, all such improvements will be owned and maintained by DeKalb County.

This data is being supplied based on currently available data and should only be used to substantiate the potential availability of sewer services as of the date of this correspondence. All circumstances are subject to change and the potential capacity indicated herein is in no way guaranteed. Should you have any questions or concerns in reference to this response, please do not hesitate to call Engineering and Asset Management at (770) 621-7272.

Sincerely,

Rudolph A. Chen, P.E.
Assistant Director
Engineering and Asset Management

DSE/dee rev: 8/2014

Attachment C
Water and Sewer Access Fees

Water and Sewer Access Fees:

Water Access Fees: Water access fees are charged for all ***new developments***. If a property has an account with DWM, the water access fee is not charged.
A flat fee of **$2,000** is charged for a customer requesting to access DeKalb County Water system.

Sewer Access Fees: Sewer access fees are charged based on the usage. All new developments, additions, and "change in use" are charged sewer access fee. When use change occurs, credit will be given to the previous use.
Note: Sewer access fees to be determined based on different factors such as change in use or type.

Residential

Development Type	Fee	Fee Calculation
Single-Family Residential	$1,811.93/house	_____ houses X $1811.93 = _____
Mobile Home Park	$1698.68/space	_____ spaces X $1698.68 = _____
Hotel/Motel	$566.23/ Room	_____ rooms X $566.23 = _____
Apartments & Condominiums	$1,811.93/unit	_____ units X $1811.93 = _____
Nursing Home	$707.78/bed ***PLUS*** $141.56/ employee	_____ beds X $707.78 = _____ ***PLUS*** _____ employees X $141.56 = _____

Non-Residential

Development Type	Fee	Fee Calculation
Auditorium, Assembly Hall/Convention Center	$56.62/ person	_____ persons X $56.62 = _____
Barber Shop/ Beauty Shop	$305.76/ chair $1885.54/ chair with sink	_____ chairs X $305.76 = _____ ***PLUS*** _____ chair w/sink X $1885.54 = _____
Bar/Tavern	$283.11/ seat ***PLUS*** $141.56/ employee	_____ seats X $283.11 = _____ ***PLUS*** _____ employees X $141.56 = _____
Bowling Alley	$707.78/ lane ***PLUS*** $141.56/ employee	_____ lanes X $707.78 = _____ ***PLUS*** _____ employees X $141.56 = _____

Non-Residential (cont.)

Development Type	Fee	Fee Calculation
Car Wash (Self Service w/ wand)	$2355.51/ bay	_____ bays X $2355.51 = _____
Car Wash (Automatic)	$23555.08/ unit	_____ units X $23555.08 = _____
Church	$141.56/ seat	_____ seats X $141.56 = _____
Convenience Store	$566.23/ 1000 SF	(_____SF X $566.23)/1000 = _____
Coin Laundries	$1,189.08/ machine	_____ machines X $1189.08 = _____
Garage	$566.23/ 1000 SF	(_____SF X $566.23)/1000 = _____
Hospital	$1132.46/ bed	_____ beds X $1132.46 = _____
Office	$990.90/ 1000 SF	(_____SF X $990.90)/1000 = _____
Office/Warehouse	$990.90/ 1000 SF(office) ***PLUS*** $141.56/ 1000 SF (warehouse)	(_____SF X $990.90)/1000 = _____ ***PLUS*** (_____SF X $141.56)/1000 = _____
Restaurant (Full Service)	$254.80/seat ***PLUS*** $141.56/empl ***PLUS*** $56.62/seat (if garbage disposal)	_____ seats X $254.80 = _____ ***PLUS*** _____ employees X $141.56 = _____ ***PLUS*** _____ seats X $56.62 = _____
Restaurant (Fast Food)	$126.84/seat ***PLUS*** $141.56/empl	_____ seats X $126.84 = _____ ***PLUS*** _____ employees X $141.56 = _____
Restaurant (Deli)	$126.84/seat	_____ seats X $126.84 = _____
Restaurant (Sandwich Shop)	$90.60/seat	_____ seats X $90.60 = _____

Non-Residential (cont.)

Development Type	Fee	Fee Calculation
Retail	$566.23/ 1000 SF	(_____SF X $566.23)/1000 = _____
Schools (if cafeteria) (if garbage disposal) (if gymnasium)	$67.95/student ***PLUS*** $22.65/student ***PLUS*** $5.66/student ***PLUS*** $22.65/student	_____students X $67.95 = _____ ***PLUS*** _____students X $22.65 = _____ ***PLUS*** _____students X $5.66 = _____ ***PLUS*** _____students X $22.65 = _____
Service Station	$141.56/ empl	_____ employees X $141.56 = _____
Theater (Regular)	$28.31/seat	_____ seats X $28.31 = _____
Theater (Drive-In)	$45.30/ car space	_____ car space X $45.30 = _____
Veterinarian	$990.90/ 1000 SF	(_____SF X $990.90)/1000 = _____
Warehouse	$141.56/ 1000 SF	(_____SF X $141.56)/1000 = _____
Manufacturing		Call (404) 371-4918

If you have questions, please contact the Water/Sewer Engineer at (404) 371-4918.

THESE FEES MUST BE CALCULATED AND PAID IN FULL TO DEKALB COUNTY FOR ACCEPTANCE OF ALL PROJECTS SUBMITTALS.

Attachment D
Converting from Septic to County Sanitary Sewer System – Residential and Commercial Sewer Connection Permit Application

RESIDENTIAL
Converting from Septic System to County Sanitary Sewer System

1. The customer should first call the DeKalb County, Department of Watershed Management (DWM) to ensure that sewerage is available in their area. The customer must give the address of the location when calling DWM, Engineering and Asset Management Division at 770-621-7272.

   Customer should ask for recommended location for tap into the County Line.

2. Once availability is confirmed, come to the Planning & Sustainability (P&S) Department on the 2nd floor ~ 330 W. Ponce de Leon Ave. in Decatur.

   A sewer tap fee of **$1811.93** is required to be paid. Once the fee is paid, a tap is allowed to be installed into DeKalb County's sanitary sewer system.

3. At this point, the customer must hire a licensed plumber to install the line that taps into

   DeKalb County's sanitary sewer system.

4. After tap installation and termination of the septic system usage, the customer MUST notify the DeKalb County, Environmental Health Department at 404-508-7900.

5. Completion of this process entitles the property owner to one free inspection from DWM. Contact the Chief Inspector at 770-724-7484 to schedule.

If you have questions, contact the DWM Engineer 404-371-4918.

COMMERCIAL
Converting from Septic System to County Sanitary Sewer System

1. The customer should first call the DeKalb County, Department of Watershed Management (DWM) to ensure that sewerage is available in their area. The customer must give the address of the location when calling DWM, Engineering and Asset Management Division at 770-621-7272.

   Customer should ask for recommended location for tap into the County Line.

2. Once availability is confirmed, come to the Planning & Sustainability (P&S) Department on the 2nd floor ~ 330 W. Ponce de Leon Ave. in Decatur.

   A sewer tap fee is required to be paid. **THIS FEE WILL BE CALCULATED BASED ON THE USE OF THE PROPERTY.** Once the fee is paid, a tap is allowed to be installed into DeKalb County's sanitary sewer system.

   At this point, the customer must hire a licensed plumber to install the line that taps into DeKalb County's sanitary sewer system.

3. After tap installation and termination of the septic system usage, the customer MUST notify the DeKalb County, Environmental Health Department at 404-508-7900.

4. Completion of this process entitles the property owner to one free inspection from DWM. Contact the Chief Inspector at 770-724-7484 to schedule.

If you have questions, contact the DWM Engineer 404-371-4918.

Lee

DeKalb County Department of Planning & Sustainability

May Andrew A. Baker, AICP Interim Chief Executive Officer Director

SEWER CONNECTION PERMIT APPLJCATION

APPROVAL AND ISSUANCE OF THIS PERMIT AUTHORIZES ONLY THE APPLICANT'S RIGHT TO TAP/CONNECT TO THE DEKALB COUNTY SEWER SYSTEM AT THEIR OWN EXPENSE. A PLUMBING PERMIT SHALL BE REQUIRED BY A LICENSED SEWER/PLUMBING CONTRACTOR PRIOR TO INSTALLATION OF THE PRIVATE SEWER LINE CONNECTION. THERE IS NO GUARANTEE OF A STUB ON THE LINE.

CUSTOMER SECTION

Application Date: _____ Sewer Tap Number: _____

Address of Sewer Connection: _____

Property Owner's Name: _____

Property Owner's Address: _____

City: _____ State: _____ Zip Code: _____

Map Reference Number: DIST:_____ LL: _____ BLK: _____ PARCEL:_____

Sewer/Plumbing Contractor: _____

Street Address: _____

City: _____ State: _____ Zip Code: _____

Applicant's Signature: _____

DEPARTMENT USE ONLY

___ New Building	_____Conversion	_____Additional Charge
____Assembly	____Medical Care	____Manufacturing
____Retail	____Retire/Nurse Home	____Warehouse
____Food/Beverage	____Personal Service	____SF Attached
____Laundry/Dry Clean	____Comm. Recreation	____SF Detached
____Auto Care/Repair	____Other_____	____Multi-Family
		No. of Units _____

If Personal Service/Beauty Salon/Barber Shop: No. of Shampoo Bowls _____ No. of Stations _____

Is Tap Available: (please check one) Yes _____ No _____

Floor Area: _____ GPD: _____ Seating Capacity: _____

____ NE Creek ____ Ball Mill Creek ____ Other

Sewer Connection Fee: _____

330 West Ponce de Leon Avenue — Suite 200— Decatur, Georgia — 30030
Phone: 404-371-4915 Fax: 404-371-2778 Web Address: http://www.planningdekalb.net

Attachment E
Sewer Lift/Pump Station Design Review Checklist

DEKALB COUNTY DEPARTMENT OF WATERSHED MANAGEMENT
GUIDELINES FOR SANITARY SEWER LIFT/PUMP STATION
DESIGN REVIEW & APPROVAL

Revision No: **1***	Project Name:
Reviewed By:	Street Address:
Date:	Engineer/Developer Name:
	Engineer/Developer Phone:

*Refer to DeKalb County, Department of Watershed Management (DWM). *Potable Water Main, Gravity Sanitary Sewer, and Sanitary Sewer and Force Main Design Standards*, for the current guideline. The Design Standards can be purchased at the following location:

Engineering & Asset Management Division
DeKalb County, Department of Watershed Management
1580 Roadhaven Drive
Stone Mountain, GA 30083
770-414-2383 or 770-621-7272

CHECK LIST PROCEDURE

1. **Address/incorporate comments marked in red.**
2. **Respond on check list in green to indicate comment was addressed.**
3. **Mention drawing number where comment was incorporated.**
4. **Place all lift station drawings in one location-preferably at the end, and include them in the index of drawings.**
5. **Return check list, red line plans and revised plans to the reviewer.**

***Note:* All design drawings and associated calculations, to be sealed, signed and dated by a Georgia Registered Professional Engineer.**

GENERAL

- Completed "Design Review and Approval Form" as well as "Pump Station Design Calculations Form" (see section 7 of lift station standards for sample forms).
- Location map depicting property lines, land lot lines, buildings, existing utilities, creeks, flood plains, stream buffers, and roads.
- Pump Station Service Area Map clearly showing basin delineation of the area draining to the pump station by gravity.
- Show all offsite areas that have the potential to discharge to the proposed pump station. Use Table 4.2 in the standards to calculate offsite flows. A future land use map is

available from DeKalb County Department of Planning and Sustainability [phone (404) 371-2155].

- Pump Station Driveway Plan & Profile.
- Pump Station Gravity Sewer Influent Profile.
- Pump Station to be located at the lowest point in the basin. Show ground contours and 100 year flood contour as well as 25 foot (State of Georgia requirements) & 75 foot (DeKalb County requirements) stream buffers (if applicable).
- Average Daily Flow (ADF) to be calculated based on Sanitary Flow Contribution numbers specified in Table 4.1 of the standards.
- Capacity Calculations for the receiving downstream sewer, to justify it is not capacity limited.
- Install Safety Placards for all pump station structures and equipment as per OSHA standards. Show details on standard detail drawings for contractor to follow.
- Reference the pump station standards for more details.

PUMPS

Needs to be open to ABS, KSB, ShinMaywa, Hydromatic and Smith & Loveless, above ground pump station facility (Current Program Managers to research and provide support).

- System Head Curve for different "C" values for new and aged pump conditions.
- Pump details, specifications and shop drawings as per standards. Explosion proof Submersible Constant Speed Pumps are to be used on all new pump stations. Variable Speed Pumps shall be approved on a case-by-case basis.
- Pump size and dimensions, as part of pump schedule.
- Lifting Hoist for the pumps to be designed as per DeKalb County Standards.
- Pump clearances between pump-to-pump and pump-to-sidewall as per manufacturer's recommendation. Show all dimensions on wet well cross section.
- Water Level Sensors shall be electronic sensors connected to a PLC.

WET WELL

- Walls shall be cylindrical with a minimum 6 foot diameter well.
- Minimum depth of wet well to be 8 feet.
- Indicate high & low ground water elevations. Provide sub-surface drainage around wet well base, such that the invert of the drain pipe day lights at an elevation at least 3 feet below the base of the wet well-to keep the ground water as low as possible around the wet well.
- Provide anti-flotation calculations to justify size of anti-flotation collar. The anti-flotation collar shall be an integral part of the wet well casting process.
- Interior of concrete wet well shall have a fully adhered HDPE lining system (minimum thickness 5 millimeters) installed at the foundry as an integral part of the concrete

casting process. Surface areas which cannot be covered by the 5 mm HDPE liner shall be coated with a 5 millimeter laminate build-up consisting of 25% fiber glass by mass and minimum 35% resin by mass.

- Apply three (3) coats of Coal Tar Epoxy to the exterior walls, in addition to the interior HDPE liner stated above-installed at the foundry as an integral part of the concrete casting process.
- Indicate Pump Control Elevations in the Wet Well for the following conditions: High Level Alarm, Lag Pump On, Lead Pump On, Pumps Off, and Low Level Alarm.
- Mark Storage Volume above the high-level alarm and up to the lowest point of overflow. This volume shall be greater than or equal to **three hours volume** at design flow (peak flow). Backflow of sewage into manholes upstream of the wet well is not permitted.
- Provide calculations to justify adequacy of storage volume provided in the wet well. Design should consider "critical response time" needed to respond to sanitary sewer overflows (SSOs). This is defined as the time interval between activation of the high wet well level alarm and the commencement of a SSO, under peak flow conditions.
- Entry hatch shall be large enough to remove pumps for servicing.
- No ladders shall be permitted in wet well.
- Provide hoist for equipment outside the wet well as per specs.
- Wet well floor shall have a minimum slope of 1:1 to the hopper bottom.
- Sump to be designed as per manufacturer's recommendation for a specific pump.
- Only one sewer line (having flat slope and minimum drop to prevent churning of sewage and air entrapment) to enter a wet well.
- Electric connections in the wet well shall be explosion proof.

VALVE VAULTS

- Valve details, specifications, and shop drawings.
- Valve Vault shall be below grade, but adjacent to the wet well, have a sloped concrete floor with sump, concrete sides walls and an aluminum hatch.
- Valve Vault sump to be connected to the wet well via a drainage pipe, check valve and gate valve to drain rain water. The valves shall prevent back flow of wastewater into the vault.
- Check Valves to be placed upstream of Shutoff Valves.
- Pressure Gauge Taps with diaphragm mounted seals shall be located on each pipe upstream of the check valve.

FLOW METER VAULTS

- Flow meter details, specifications, and shop drawings.
- Flow Meter Vault to be installed downstream of Valve Vaults on a straight length of force main.

- Flow Meter Vault shall be below grade, have a sloped concrete floor with sump, concrete sides walls and an aluminum hatch.
- Flow Meter Vault sump to be connected to the valve vault drain pipe.

GENERATOR

- Standby Generator (from **Cumins/Onan** only) details, specifications, and shop drawings.
- The standby generator shall have adequate capacity to run all pumps, equipment, lifting hoist, lighting, telemetry, etc. simultaneously. The engineer shall provide submittals to justify adequate capacity for review and approval by DeKalb County, DWM.
- Automatic Transfer Switch specifications and shop drawings.
- Automatic Transfer Switch to be rated for 100% of full load, and placed in a NEMA 4X enclosure.
- Generators shall meet all new USEPA air emission standards, and be equipped with auxiliary systems such as batteries, battery charger, block heater, etc.
- Generators are to be installed to operate on natural gas.
- Provide Generator Natural Gas Calculations.
- No underground fuel storage tanks will be permitted.

TELEMETRY

- Telemetry equipment details, specifications, and shop drawings.
- Telemetry system to be capable of sending signals to personnel 24 hours per day, 365 days per year.
- Human Machine Interface (HMI) requirements to be fulfilled employing current approved supplier.
- Submit Telemetry equipment details, specifications, and shop drawings
- Telemetry system must be capable of sending signals to plant operation at all hours and every day without interruption.
- Telemetry system is comprised of a complete Telog recorder setup, separate I/O NEMA 4X enclosure, conduit and labeled wiring between controls/instruments and the recorder I/O enclosure and the recorder itself, and other sensors such as a phase monitor for the utility power line to convey data that is not natively provided by the lift station. Contact DWM to obtain the complete list of current telemetry components required for a particular type of station and the recommended integrator, experienced with and/or knowledgeable about installing DeKalb County lift station telemetry units.
- Depending on the station configuration the Telog recorder is either model R-3330 or RU-33-MODBUS. R-3330 is used at stations that are not controlled via a MODBUS controlled PLC or at stations that do have a PLC but signals outside of PLC control need to be transmitted as part of the Telemetry Data. RU-33-MODBUS is used at

stations with MODBUS capable PLCs that receive all the pertinent Telemetry data via the PLC I/O modules.

- Depending on the location of the station relative to cellular towers, an external antenna may need to be supplies and erected at a height that ensures continuous signal availability to the station. Telog supplies various external antennas for their recorders.
- When stations are newly installed or modified in a way that affects telemetry, lift station SCADA server and client(s) as well as Telog server application must be modified to work with the new or modified station. Correct functioning of lift station SCADA and Telog Server with the newly installed or modified station must be demonstrated to the DWM staff. Contact DWM for information about the recommended integrator, experienced with and/or knowledgeable about adding and modifying stations in the SCADA software.

INSTRUMENTATION AND CONTROLS

Submit 3 duplicates of soft and hard copies of commented source programs, configuration parameters and setup details for all configurable and/or programmable components. These documents must match exactly the final version of what is utilized at the lift station when it goes into operation.

ELECTRICAL

- All Electrical Systems to comply with NFPA 70, "National Electric Code", NFPA 820 "Standard for Fire Protection in Wastewater Treatment & Collection Facilities", ANSI, as well as applicable federal, state and local codes.
- Include Electrical Legend on plans.
- Include Wiring Schedule on plans.
- Include the following warning sign in bold on plans:

  "Lock out all power while working on any equipment to avoid electrical shock or equipment activation".
- Main Power Feed to be above-grade, fused disconnect switch.
- Incoming Electrical Service to be equipped with Surge Protection installed in a NEMA-4X enclosure.
- Surge Suppressor shall be U.L. listed and labeled under UL 1449 and UL 1283. See section 5.8.D of specifications for details.
- Single Line Electrical Drawing showing power distribution for the proposed pump station, including pump control panel detail.
- Pump Station Power Riser Diagram.
- Electrical Conduits to be ¾ inch minimum. All conduit work shall be galvanized rigid conduit (Red2hot with PVC coating on the inside) or IMC with threaded couplings, and be water-tight and gas-tight.

- Electrical Conduits to contain two 10 conductor shielded cables with 8 feet slack in the pump station control panel and 4 feet of slack in the generator and transfer switch panels.
- Soft Starters are required for pumps greater than or equal to 30 horsepower.
- Electrical enclosures, Switching Gears, and Conduits shall be outside the Wet Well area, and protected from vehicular traffic and flooding.
- Provide for electrical control panels 8'W x 8'H x 24'L awning and trim, 8" to 10" base plates on vertical supports 4 vertical supports front side, 4 vertical supports back side.

INSTRUMENTATION AND CONTROLS

- Wastewater levels within wet wells to be detected through the use of submersible pressure level or ultrasonic level transducer.
- Pump Station Control & Instrumentation Riser Diagram.
- Phase monitor to be connected to the PLC for monitoring and remote indication of open phase/phase reversal condition.
- Allen Bradley Micro Logix Programmable Controller to control and monitor all pump station functions.
- Connect PLC to Telog using MODBUS.
- Connect Allen-Bradley HMI to PLC.
- PLC, Phase Monitor, HMI and Soft Starters to be installed in a single NEMA 4X enclosure.
- Refer Table 5.1 of the specifications for Submersible Pump Station I/O List.
- Electrical Grounding & Bonding Riser Diagram for all components as per National Electrical Code, local codes and ordinances.

LIGHTING

- Lighting plans to include location, type and power distribution.
- Outside Lighting Control Schematic.
- Install 120 Volt High Pressure Sodium Vapor Security Light on a 20 foot Break Down Pole with automatic eye and pole lowering winch. Pole to be painted architecturally brown and light to turn on automatically at night.

FORCE MAINS

- Force Main design showing size, plan, profile, valve details, thrust block locations and details.
- Force main shall be constructed of epoxy-lined Ductile Iron Pipe (DIP) to the first joint outside of Wet Well and then constructed of HDPE inside the Wet Well. Minimum pipe size of force main to be 4 inches in diameter.
- Provide Tracer Tape on HDPE pipes to facilitate accurate locating in future.
- Provide Flexible Couplings around valves and pump outlet.

- Provide air/vac relief valves in vaults as needed and show on plan set. Using the approved County ARV.
- Provide quick connect for a bypass pump (to be used in case of complete pump station failure); include isolation valves (per County Design Standards).
- Include calculations to demonstrate that velocity of flow in the force main is a minimum of 3 feet per second and maximum of 7 feet per second.
- Force mains cannot be installed in lieu of gravity sewers to convey flow downhill to an existing receiving sewer.
- Provide Isolation Valve on the force main just beyond the flow meter vault.
- Show details of receiving gravity sanitary sewer line, and connection of incoming force main. The connection details must include a cross section of the receiving structure as well as pertinent details such as inverts of all pipes, pipe sizes, pipe material, benching, ground elevation, top elevation, notes, etc.

STANDARD DETAILS

- Standard Detail Drawings to include all details (if applicable) and relevant notes outlined in the lift station standards. Additional details may be required based on engineer's comments.

ODOR CONTROL

- Odor Control equipment details, specifications, and shop drawings.
- Wet well vent to atmosphere to include an insect screen.
- Fall of wastewater from the inlet sewer to the wet well shall be limited to a maximum of 6 inches. Therefore, provide an outside drop to meet this requirement.

SITE DESIGN

- Pump Station Buffer Zone to be a minimum of 120x120 feet with the 41x41 feet pad at the center.
- Provide a 20-foot easement for force mains.
- Subgrade for pad, turnaround & access road, side slopes and any other features within the fence line must be compacted to a minimum of 95% Standard Proctor Compaction.
- Provide a 3-foot wide gravel walkway around the pump station pad.
- Access Road and Turn-a-round to be constructed of Portland Cement Concrete on a six-inch layer of compacted aggregate base course (minimum 95% Standard Proctor Compaction).
- Pump Station Pad to be a minimum of 6-inch thick (on a compacted subgrade & minimum 6 inch aggregate base course with 95% Standard Proctor Compaction)-41x41 foot reinforced concrete pad (40x40 foot fenced area) with at least 0.5% slope away from the center point. Provide curbing or footing around the pad to prevent runoff from eroding the underside of pad.

- Provide fences 8 foot high with #4 chain link wire fabric with top rails, bottom tension wires and 3 strands of barbed wire at the top on angled extension arms.
- Provide 20-foot wide (minimum) gate on 4-inch diameter posts plus a 4-foot wide walk through gate.
- Side Slopes steeper than 3H:1V to be protected with riprap.
- Minimum access road width to be 20-feet.
- Minimum turnaround radius to be 45-feet.
- Pump Station to be at least 2 feet above and 25 feet horizontally away from the 100-year flood line as determined by the most recent FEMA Flood Insurance Rate Map, or as established by acceptable modeling techniques.

CONTRACTOR NOTES (TO BE SHOWN ON PLANS)

- Contractor to ensure that Power Company notifies DeKalb County Water & Sewer Department or Snapfinger Advanced Wastewater Treatment Facility about the availability of 3-Phase Power and Voltage to the site. See section 5.8.E of the standards for details.
- Demonstrate pumps will not cavitate. Freewheeling (i.e. operating at pump run-out) or deadheading (i.e. operating at pump shut-off) of pumps shall not be allowed.
- Demonstrate minimum time between pump starts is ten minutes.
- Provide four sets of Operation & Maintenance Manuals to DeKalb County for the Generator and Automatic Transfer Switch.
- Demonstrate Generator is load tested at 100% full load on site for a period of 4 hours.
- Demonstrate generators are capable of shutting down and activating the audible/visual alarms and telemetry if a damaging operating condition develops.
- Provide Standby Generator (**Cumins/Onan** only) specifications and shop drawings.
- Provide Automatic Transfer Switch specifications and shop drawings.
- Provide a 60-month (from date of commissioning) comprehensive warranty.
- Provide Telemetry equipment details, specifications, and shop drawings.
- Demonstrate Low-Level Alarm, Pumps-Off, Lead Pump-On, Lead Pump-Off & High Level Alarm settings are functional.
- The Contractor shall install and provide all equipment as well as conduct tests in accordance with "DeKalb County Water, Sewer and Lift/Pump Station Standards".
- No underground fuel storage tanks will be permitted.
- Contractor to install Safety Placards & Warning Signs on all equipment as per OSHA standards.
- Contractor/Developer is responsible for complete wiring and programming of the PLC & RTU.

- Contractor to put in "Best Faith Effort" to obtain 480 Volts, 3 Phase Power at the lift station.
- Lifting Hoist for the pumps to be designed as per DeKalb County Standards.