Goodwyn Mills Cawood

801 Broad Street
Suite 900
Augusta, GA 30901

T (706) 303-3272
F (770) 955-1064

www.gmcnetwork.com

May 5, 2023

Mr. Mohamed Mahgoub
Principal Engineer
Augusta Engineering & Environmental Services Department
452 Walker Street, Suite 110
Augusta, GA 30901

RE: Greater Turpin Hill / Laney Walker Area Stormwater Inventory

Dear Mr. Mahgoub:

Thank you for providing Goodwyn Mills and Cawood (GMC) and Infrastructure Systems Management (ISM) the opportunity to assist the City of Augusta Engineering Department (AED) and its Asset Management Team (AEDAM) with the mapping and assessment of stormwater features in the Greater Turpin Hill / Laney Walker area (Turpin Hill). GMC has a long-standing history completing stormwater inventory work and data collection projects throughout the Southeast. In addition, GMC and ISM have a long-standing relationship with the City of Augusta and an in-depth understanding of the existing drainage network in the proposed pilot area.

The purpose of this letter is to present our scope of work to perform the mapping and condition assessment of stormwater features within the Turpin Hill pilot area consistent with AEDAM's recently updated Stormwater Management System geodatabase.

We appreciate your confidence in the GMC/ISM team, and we look forward to successfully working on this project. Please contact the undersigned should you have any questions, or if you need additional information.

Sincerely,

GOODWYN MILLS CAWOOD, INC.

Chris Tolleson, P.E.
Senior Engineer

Background

The GMC/ISM team have previously performed stormwater system inventory and condition assessment work within a portion of the Turpin Hill area. AEDAM has since developed standard operation procedures and a new geodatabase schema for mapping and collecting attribute data for its Stormwater Management System (SWMS). The ultimate goal of AEDAM is to have a SWMS geodatabase consisting of reliable data, developed in a consistent manner, with complete drainage system connectivity to facilitate stormwater modeling.

AEDAM has provided GMC with the updated stormwater geodatabase (Stormwater Geodatabase v2.0.0) of selected attributes for the SWMS within an expanded area of Turpin Hill. Additionally, AEDAM has provided GMC with the following:

- Stormwater Geodatabase Documentation & Standard Operating Procedures (SOP) (February 8, 2023)
- Boundary Assessment Maps including Percent Status/Completion for Storm Structures
- Catchment areas that include Turpin Hill stormwater infrastructure based on National Hydrography dataset including:
    - Phinizy Swamp
    - Oates Creek
    - Augusta Canal
    - Rocky Creek

Scope of Work

Task 1: Project Management

A Project Team that works well together will be paramount to the success of this project, which is why we propose the formation of a Project Team consisting of staff from the City, GMC and ISM. GMC will assign a Project Manager to coordinate and manage the implementation of the tasks listed below and coordinate with City staff as necessary throughout the duration of the project.

In order to facilitate this level of cooperation, we propose to have monthly coordination meetings/conference calls for the duration of this project. In our experience, nothing compares to the level of coordination that comes from in-person meetings, but virtual meetings will also allow our team to stay connected and can be used as needed throughout the process. Our Project Manager will provide the City with bi-weekly updates that discuss the progress made as well as maintenance issues identified in the field. Please note, GMC will notify AEDAM staff immediately if any issues that constitute an emergency or a safety risk are discovered during field work. Our team will provide a summary of maintenance needs and other findings along with the bi-weekly updates throughout the duration of the project.

Task 2: Pilot Study

To ensure SWMS data is collected in accordance with the SOP, GMC proposes to perform an inventory within a Pilot Study area. Following GMC's completion of the Pilot Study, the data will be submitted to AEDAM for review. GMC will then meet with AEDAM staff to review the data and obtain feedback from the City. GMC proposes to perform the Pilot Study in an area covering approximately 117 acres located within the Phinizy Swamp catchment area as shown in **Figure 1**.

FIGURE 1: PILOT STUDY AREA

Prior to beginning work, GMC and ISM staff will familiarize themselves with the AED's SOP to ensure stormwater data is collected in accordance with AEDAM guidelines. The inventory will include all stormwater structures, pipes, and ditches within the Pilot Study area. The assets currently included in the City's Stormwater Database are summarized in **Table 1** and subdivided based on whether or not they have previously been inspected by GMC/ISM.

Table 1 Pilot Study Mapped Assets in Stormwater Geodatabase

Feature	Previously Inspected by GMC	Not Inspected By GMC [1]	Feature Total
SW Structures	107	90	197
SW Pipes	100	80	180
Ditches	0	5	5
TOTAL	*207*	*175*	*382*

(1) Includes additional 20% to account for features not previously mapped

Field mapping will be performed using map grade equipment having sub-meter horizontal accuracy (vertical accuracy is not reliable). If AEDAM desires greater accuracy, GMC can perform mapping using its Trimble Catalyst DA2 GNSS System providing 1 cm horizontal and 2 cm vertical accuracy (the cost to perform inspections using this equipment is detailed in Budget section)

The collection of attributes will be completed to the greatest extent possible, but there will be circumstances where field conditions make it difficult to populate every field in the database. When/if this occurs, these features will be noted in the database as described in the SOP and will include justification and/or a recommendation for the type of action needed. This may include structures that could not be opened as well as features that could not be examined due to sediment, water, vegetation, or other obstructions. GMC will provide the City with a list of these features as part of the bi-weekly update correspondence. If the City addresses the recommended action, the feature could be tagged for re-inspection. GMC will also determine system connectivity as part of the data collection process. In areas where connectivity cannot be confirmed, GMC will recommend further investigation methods to assist with confirming pipe connections. This could include videoing of pipes via Closed-Circuit Television (CCTV) , smoke testing, and confined space entry (the cost to perform these services are summarized in the Budget section). Drainage system connectivity will be mapped to the outfall location.

Given the unique and extensive nature of this project, our Team will develop a process to ensure that data inputs and deliverables are consistent with the tasks and schedule defined within this proposal. All data and deliverables will go through an internal quality assurance (QA) and quality control (QC) procedure. Once various project tasks are completed, our team will initiate an internal QA/QC process to determine i) completeness, ii) accuracy, and iii) to ensure the deliverables meet the primary objective associated with each project task. Our team will coordinate with the AEDAM staff as needed for feedback or clarification. In our experience, the internal process, coupled with Project Team assistance is the most efficient manner to ensure that project deliverables are produced to the highest level of accuracy.

Our goal is to develop the most efficient process for mapping the stormwater system in a manner that best addresses the immediate needs of the City. Locations will be mapped and additional inspection data will be recorded using the ArcGIS Field Maps application. As an added value, GMC will develop a web application

that can be used by City staff throughout the duration of the project to track status and interact with the data real-time.

Following final approval by AEDAM for the work performed as part of the Pilot Study, GMC/ISM will prepare a proposal for completion of the inventory for the catchment areas within the remainder of Turpin Hill.

BUDGET

GMC proposes to complete the scope of work for the Pilot Study previously discussed based on a unit price fee as follows:

- $35 per structure/pipe/ditch for features not previously inventoried by GMC
- $22 per structure/pipe/ditch for features previously inventoried by GMC

Task	Total Fee
Task 1: Project Management	**$2,080.00**
13 hours x $160/hour	
Task 2: Pilot Study	
(207 structures at $22 each + 175 at $35 each = $10,686)	$10,686.00
Post Processing and QA/QC	$1,200.00
Trimble Catalyst DA2 GNSS System [1]	$1,500.00
Contingency if additional investigation is needed [2]	$10,000.00
Task 2: Pilot Study Sub-Total	**$23,386.00**
TOTAL	**$25,466.00**

(1) *For a higher degree of accuracy, GMC will utilize a Trimble Catalyst DA2 GNSS System (1 cm H / 2 cm V accuracy)*

(2) *Where further investigation is warranted, services will be provided by GMC's subcontractor Augusta Industrial Services, Inc for the following fees:*

a. *Confined Space Entry: **$288 per hour** for a four-hour minimum*
b. *Smoke Testing: **$4,370 per day***
c. *CCTV: **$3,278 per day***

SCHEDULE

GMC proposes to perform complete the Pilot Study within **two (2) months** of acceptance of this proposal.

ACCEPTANCE

If this scope of work and fee proposal are acceptable, please sign and date below and forward one copy as our agreement and authorization to proceed. Please contact our office if you have any questions. We look forward to working with you on this most important project.

ACCEPTED BY DATE