

To: Mayor and City Council
From: Carl Thomas, Stormwater Utility Manager
Re: Authorization for Annual Stormwater Inventory and Survey Contract
Date: October 16th, 2023

Action

Authorize the Mayor, City Manager, or designee to approve contract with TerraMark Land Surveying Incorporated to conduct stormwater structural inspections, surveying, and dry weather screenings (RFP 23-06).

Summary/Details

The National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater Permit requires the City of Dunwoody to reassess 100% of the stormwater infrastructure maintained by the City during the 2022-2027 reporting period. The data collected during these inspections is critical in assessing the current condition of the City's stormwater assets, prioritizing future maintenance projects, and identifying pollutants discharging into our waterways. The scope of services for this contract includes higher accuracy survey data and 20-second Closed Caption Television (CCTV) videos for high-priority pipes maintained by the City. The survey data will be used to study the capacity of the City's infrastructure to handle high-intensity rainfall events. The video will provide more information on the condition of pipes.

Proposals for RFP 23-06 were reviewed and scored based on qualifications, experience, cost, and project approach. The highest scoring firm was TerraMark Land Surveying, Incorporated.

Recommendation

Staff recommends the selection of TerraMark Land Surveying, Incorporated for an annual contract renewable for up to five years. The contract will be based on unit prices and the actual number of structures, conveyances, outfall and stormwater facilities inspected. If approved by Council, this project will be funded from the Stormwater Utility Budget for professional services contracts. The projected average annual cost over the contract term (plus 10% contingency) is \$62,466.58.

MS4 Inventory Proposal Evaluation Matrix

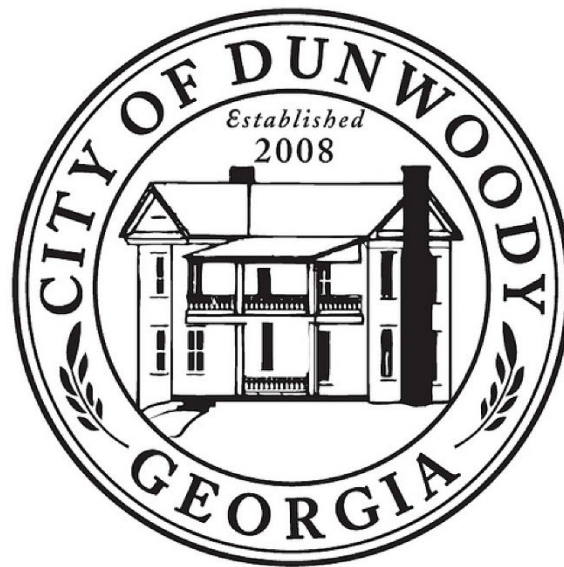
| Evaluation Criteria Breakdown | Points | MME | TerraMark | NOVA | GMC |
|---|-------------------|------------------------|-----------|-----------|-----------|
| Completeness of Response to RFP (Pass/Fail) | | | | | |
| ALL required schedules, forms and informational items have been submitted. Do not continue if proposal fails to meet the minimum requirement. | Pass/Fail | FAIL | PASS | PASS | PASS |
| A. Proposer Qualifications & Experience | | | | | |
| 25 Points | | | | | |
| Demonstrates ability to provide timely results for project and prior experience with stormwater infrastructure inspections. | 0-10 | N/A | 9.7 | 4.2 | 9.3 |
| Team (organizational) qualifications and strengths for all partners; company background and years in business. Strength of assigned team members years of prior experience in stormwater management, surveying, dryweather screening, and inventorying. | 0-10 | N/A | 9.3 | 5.5 | 9.0 |
| Strength and relevance of references per RFP submittal requirements for all project phases. Minimum 3 references for successfully completed projects of similar size. | 0-5 | N/A | 4.3 | 0.2 | 3.7 |
| B. Technical Proposal | | | | | |
| 25 Points | | | | | |
| Completeness and quality of technical documentation. Vendor demonstrates they possess the personnel, equipment, and clearly stated objectives to inventory/inspect 100% of infrastructure & outfalls <u>based on requirements stated in Scope of Services</u> . | 0-25 | N/A | 24.7 | 15.9 | 23.6 |
| C. Project Costs | | | | | |
| 50 Points | | | | | |
| Unit rate costs of 5-year inspection term for: stormwater structure, stormwater conveyance, outfall screening, GI/LID structure, Stormwater pond. Lowest bid: 50 points, within 10% of lowest bid: 40 points, 10-25%: 30 points, 25-50%: 20 points, Greater than 50%: 10 points | 0-50 | DID NOT QUALIFY | 50 | 40 | 40 |
| TOTAL | 100 Points | - | 98 | 66 | 86 |

RFP 23-06 BASE PRICE COMPARISON

| | # assets | GMC | | NOVA | | TERRAMARK | |
|----------------|----------|------------|--------------|------------|--------------|------------|--------------|
| | | UNIT PRICE | SUBTOTAL | UNIT PRICE | SUBTOTAL | UNIT PRICE | SUBTOTAL |
| Outfalls | 169 | \$132.61 | \$22,411.44 | \$146.03 | \$24,679.11 | \$143.00 | \$24,167.00 |
| Ponds | 77 | \$159.14 | \$12,253.54 | \$259.59 | \$19,988.45 | \$385.00 | \$29,645.00 |
| Structures | 5427 | \$27.05 | \$146,813.48 | \$27.49 | \$149,208.37 | \$33.00 | \$179,091.00 |
| Pipes / Dithes | 4253 | \$31.30 | \$133,113.29 | \$32.36 | \$137,636.54 | \$12.00 | \$51,036.00 |
| | | TOTAL | \$314,591.75 | TOTAL | \$331,512.47 | TOTAL | \$283,939.00 |

REQUEST FOR PROPOSALS

(RFP 23-06)



2023-2027 MS4 INSPECTIONS & DRYWEATHER SCREENINGS

REQUEST FOR PROPOSALS (RFP) 23-06 2023-2027 MS4 INSPECTIONS & DRYWEATER SCREENING

Sealed Proposals for Purchasing **RFP 23-06 2023-2027 MS4 INSPECTIONS & DRYWEATHER SCREENINGS** will be received by the City of Dunwoody, hereinafter called "City." Service contractors whose proposals meet the criteria established in the Request for Proposals, at the sole discretion of the City, may be considered for Contract award. The City may, by direct negotiation, finalize terms with the service contractor who is selected for award based on proposals. The City reserves the right to reject any or all responses for any reason. Clarification of information may be requested by the City.

The City, at its sole discretion, may short-list firms that are deemed to best meet the City's requirements, taking into consideration all criteria listed in the RFP. The City may, at its sole discretion, ask for formal presentations from all of the responsive and responsible proposers, or only from those firms that are short-listed, if short-listing is determined to be in the best interest of the City. Negotiations will be conducted and may take place in person or via telephone with the most qualified firm as identified by the City or, if short-listing occurs, with all of the short-listed proposers. Proposers that participate in the negotiations may be given an opportunity to submit their best and final offers. The City of Dunwoody requires pricing to remain firm for the duration of the contract. Failure to hold firm pricing for the duration of the contract will be sufficient cause for the City to declare a proposal non-responsive.

A technical proposal must be submitted in a sealed envelope which shall be clearly marked RFP 23-06. Three (3) printed and signed copies, and one (1) electronic copy of the **technical proposals shall be submitted no later than 2:00pm, September 21, 2023.** (Proposals will not be submitted by facsimile or e-mail). At which time noted, all proposals received will **NOT** be publicly opened and read. Any proposal received after the time and date specified for the opening of the proposals will not be considered but will be returned unopened. Each copy of the proposal should also include a cost estimate for the project.

Questions regarding proposals should be directed to: purchasing@dunwoodyga.gov no later than 2:00pm September 1, 2023. Proposals are legal and binding when submitted.

Proposal must be addressed as follows:

Purchasing Department
City of Dunwoody
4800 Ashford Dunwoody Road
Dunwoody, GA 30338

No Proposal may be withdrawn for a period of sixty (60) days after the time and date scheduled (or subsequently rescheduled) for proposal opening.

The City's staff will review all proposals submitted. After reviewing the proposals, staff may, at its discretion, request formal presentations from one or more of the proposers (at proposer's expense at the City's site) whose proposals appear to best meet the City's requirements.

The proposer awarded the Contract must provide proof of liability insurance in the amount of one million dollars (\$1,000,000.00), along with any other required insurance coverage and evidence of business or occupational license, as outlined in the Proposal Documents.

The City reserves the right to waive any informalities or irregularities of proposals, to request clarification or information submitted in any proposal, to request additional information from any proposer, or to reject any or all proposals, and to re-advertise for proposals. The City also reserves the right to extend the date or time scheduled for the opening of

proposals.

Award, if made, will be to the responsible and responsive proposer submitting the proposal which is deemed by the City, in the sole discretion, to be the most advantageous to the City, price and other factors being considered.

To ensure the proper and fair evaluation of proposals, the City discourages any communication initiated by a proposer or its agent to an employee of the City evaluating or considering the proposal during the period of time following the issuance of the RFP, the opening of proposals and prior to the time a decision has been made with respect to the Contract award. An appropriate Purchasing employee of the City may initiate communication with a proposer in order to obtain information or clarification needed to develop a proper and accurate evaluation of the proposal. Any communication initiated by proposer during evaluation should be submitted in writing and delivered to the City of Dunwoody, Purchasing Office, 4800 Ashford Dunwoody Road, Dunwoody, Georgia 30338, or by e-mail to purchasing@dunwoodyga.gov.

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PART ONE - BACKGROUND

1.1 Summary

The City of Dunwoody is obligated under the Phase II NPDES Municipal Separate Storm Sewer System (MS4) Permit to undertake an update, inventory, and inspection of 100% of its stormwater infrastructure within the 5-year reporting period (2023-2027). The purpose of this request for proposal is to solicit the services required to fulfill these requirements.

PART TWO - SCOPE OF SERVICES

2.1 General Scope of Service

The City of Dunwoody is obligated under the Phase II NPDES Municipal Separate Storm Sewer System (MS4) Permit to undertake an update, inventory, and inspection of 100% of its stormwater infrastructure within the 5-year reporting period (2023-2027). The purpose of this request for proposal is to solicit the services required to fulfill these obligations.

The Scope of Services involves a comprehensive assessment of the City's stormwater management inventory to comply with various regulatory standards and enhance water quality and flood control measures. The following key objectives and activities are outlined for the program:

- **Regulatory Compliance:** The program will ensure compliance with the requirements summarized in the NPDES Stormwater Permit# GAG610000, which includes Sections 4.2.3 (Illicit Discharge Detection & Elimination), 4.2.5 (Post-Construction Stormwater Management), and 4.2.6 (Pollution Prevention/ Good Housekeeping for Municipal Operations). Additionally, it will align with Section 5.4 (Watershed Management Action Items) of The Metropolitan North Georgia Water Planning District (MNGWPD) Water Resource Management Plan, which the City has adopted.
- **Pollution Elimination and Flood Impact Reduction:** The program's primary goal is to prevent pollutants from discharging into state waters and mitigate flooding impacts on assets owned and operated by the municipality. The consultant will achieve this task by systematically inspecting all City-maintained stormwater infrastructure within the City's boundaries.
- **Visual Inspection and Structural Integrity Assessment:** All publicly owned outfalls, ponds, Green Infrastructure/Low Impact Development (GI/LID) structures, and storm drain infrastructure, including inlets, outlets, and conveyances, will be visually inspected and assessed for structural integrity during the 2023-2027 reporting period.
- **Focus Areas:** For the 2023-2027 period, the reassessment will concentrate on stormwater management structures owned and operated by the City and stormwater infrastructure within, or directly connected to, the right of way. Based on current GIS data, the inventory includes **169 outfalls, 77 ponds (33 City-owned and 44 Private) ponds, 2,313 catch basins, 3,114 structures, and 68 miles of conveyances (channels & pipes).**
- **Inspection Schedule:** The City has modified the inspection schedule for the 2023-2027 reporting period to ensure timely assessments. All inspections must be completed by December 31, 2027. Additionally, by the end of each year, the consultant must inspect a minimum of 20% of the entire outfall and structural inventory must be checked.

- **Decision Support for Funding:** The assessment findings will assist City officials in making informed decisions regarding funding allocation for the stormwater program's Operations & Maintenance budget.
- **Educational and Outreach Opportunities:** The program will identify educational and outreach opportunities to raise awareness among the community about stormwater management and its impact on water quality and flood control.
- **Identification of Improvement Projects:** Potential candidates for water quality and flood control improvement projects will be detected based on the assessment results, enabling the City to prioritize and implement necessary improvements.

Appendix: Detailed outfall, and structural inventory maps will be included for reference and visualization of the stormwater management inventory. Overall, the revised Scope of Services aims to enhance the City's stormwater management practices, ensure regulatory compliance, and create a more resilient and sustainable water management system.

2.2 Scope of Service Tasks

The following list of tasks is provided to express the intent of the Scope of Service and is not provided to be all inclusive.

2.3 Drainage System Inventory

1. Since the City has completed mapping its inventory, the purpose of this assessment is to update and amend the database with information on the structure's current condition allowing the City to prioritize short & long-term maintenance projects.
2. GPS updates will be required only on instances where data on the structure was not successfully obtained in the original survey or if the drainage system was modified by a recent maintenance project. In these instances, structures and conveyances will be located including the structural data (ex. structure type, size, dimensions), X,Y,Z coordinates, and any other information to one (1) foot accuracy. Review, update, and correct the data to acceptable accuracy requirements.
3. Elevation data will be recorded at the top of each structure. Dropdown depths for each conveyance will be recorded from the top of each structure. The corrected elevation must be provided for the invert at the upstream and downstream of each conveyance.
4. The entire outfall & structural inventory within one inspection zone, at minimum, must be inspected each year. The applicant must consider the limited amount of time to complete this goal in 2023 and plan accordingly.
5. Weekly reports shall be provided by the service contractor showing all progress and an updated schedule for completion. This report shall be submitted no later than Thursday for the previous weeks work.
6. The service contractor will conduct dryweather outfall screenings when conditions are applicable (72 hours without rainfall). At minimum, the contractor should inspect 20% of the outfalls by the end of each year. If dryweather flow is detected, service contractor will conduct general water quality samples (temperature, pH, conductivity, etc.) and identify the source of the flow. If the source of the dryweather flow is a potential illicit discharge or illegal connection, the contractor will contact the City for further instructions. A list of all outfalls with dryweather flow and a summary of the outcome is to be provided with the weekly report.
7. For structural inspections, a visual assessment, along with photos, is required to determine if the system is in serviceable condition. At minimum, the contractor must inspect 20% of all

- structures by the end of each year. A scoring matrix will be used to assess each conveyance and each structure. It is based on criteria such as sediment/debris obstruction, stability (ex. erosion, sinkholes, undermining), vegetative growth, and/or structural integrity (ex. invert failure, cracks, and collapse). See the Appendix for additional information.
8. Service contractor will inspect 100% of all inventoried GI/LID and stormwater management structures (stormwater ponds, bioretention areas, permeable pavement, infiltration trenches, etc.) owned and operated by the City by December 31, 2027. At minimum, the contractor must inspect 20% of all GI/LID structures by the end of each year. Full details on inspection procedures and copies of inspection forms can be found in the *Operations & Maintenance Guidance Document* of the Georgia Stormwater Management Manual (GSMM).
 9. Submit the data in electronic format compatible with the City of Dunwoody Geographic Information System (GIS). Our stormwater data is in an ArcGIS for Server enterprise geodatabase. Our preference is to have inspections performed on that data in as direct a manner as possible, preferably through feature services or within in a replicated environment. Other comparable approaches may be considered.
 10. Contact the City with any structural issues requiring immediate maintenance (i.e. health or safety hazard). Provide a summary of these high-priority assets along with the weekly report.
 11. The City will provide all existing databases, maps, or any other available information requested by the service contractor to utilize in updating the inventory data.
 12. Images of structures will be taken of both the inside and the outside of the infrastructure. Flash photography should be used to record images of the inside of the structures. The make and model of the proposed camera must be included in the contractor's response. All images will be provided in JPEG format.
 13. Images with a HD pole camera will be required for all underground conveyances. These images will be recorded from a stationary position within the adjoining stormwater structure. When access is not limited, photos must be obtained from both the upstream and downstream adjoining structure. The images should be approximately 10 to 20 seconds of stabilized video that show the conveyance at multiple zooms. The pole camera must be equipped with lighting that will sufficiently illuminate culverts for a minimum of 200 feet. The make and model of the proposed pole camera equipment must be specified in the contractor's response. Photos must be provided in an JPG format.
 14. Images of above ground conveyances must be obtained. The make and model of the proposed camera must be included in the contractor's response. All images will be provided in JPEG format.
 15. The extent of structures and conveyances to be located in the inventory is all structures, both public and private, including ditches and streams. The intent is to have a totally connected system.
 16. Service contractor shall determine "Ownership" of all structures and conveyances by utilizing the existing database, recorded plats, and record drawings where available.
 17. The City will provide a pdf or image file format of all recorded plats according to Land Lot and District.
 18. An ESRI GIS geo-database, prepared by the City of Dunwoody has been developed to aid in the collection and storage of each feature. The service contractor and the City shall work together to refine and finalize the geo-database during the course of the project requirements.
 19. Virtual Structures: It is anticipated that some structures will be located but not be able to be accessed due to physical obstructions/limitations or may be buried or otherwise inaccessible for internal inspection. Structures meeting these requirements shall be classified as Virtual Structures. Virtual Structures shall be located with GPS coordinates, related to connecting features and attributed to the maximum extent possible.
 20. The service contractor shall determine, when available, the date of installation/construction for manmade structures and conveyances.

PART THREE - PROPOSAL FORMAT

- 3.1 A mandatory pre-bid meeting is not required for this proposal.
- 3.2 The Proposal shall be professional letter format identifying the Scope of Service, and exclusions.
- 3.3 All fees shall be **unit rates** and include all labor, material, equipment, and direct expenses. No allowances for reimbursable expenses such as mileage, printing, deliveries and etc.
- 3.5 Each proposal should include a cost estimate within the sealed package. Cost estimates should be provided on a unit basis for the following:
 - Stormwater Structure
 - Stormwater Conveyance
 - Outfall Screening
 - GI / LID
 - Stormwater Pond
- 3.6 More ponds other than the 77 public and private-owned structures may require inspections. Submit a unit cost per pond inspection along with cost estimate.
- 3.7 Each proposer shall document its staff, experience and qualifications by identifying the project manager and key technical team members and their roles on the project.
- 3.8 Each proposer may, but is not required to, include references, qualifications, resumes and any other materials deemed necessary but not provided otherwise (such as promotional literature, white papers, etc.)
- 3.8 The make and model of the contractors proposed equipment for all data collection must be included in responses. These following equipment must be specified:
 - HD Pole Camera
 - Camera for Still Images
 - Any proposed water quality analysis equipment
 - GPS Unit capable of sub 0.1 foot accuracy
 - Drop down measurement equipment

PART FOUR - EVALUATION OF PROPOSALS

The City's staff will review all proposals submitted. After reviewing the proposals, staff may, at its discretion, invite to interview and demonstrate performance (at proposer's expense at the City's site) one or more of the proposers whose proposals appear to best meet the City's requirements. The purpose of such an interview would be for all proposers to elaborate upon their proposal before a recommendation for ranking of the proposals is made. Interview responses, and performance, along with the written proposal and samples (if any), will become part of proposer's submission to be evaluated pursuant to the evaluation criteria. The City reserves the right to short-list proposers for further consideration. Proposals will be graded based on 50% cost and 50% Qualifications.

- 4.1 The City, in its discretion, may award the Contract to the responsible and responsive proposer submitting the proposal which is deemed to be the most advantageous to the City, price and other factors being considered. The following are the evaluation criteria the City will consider in determining which proposal is most advantageous to the City:
- 4.1.1 Project Understanding and Approach: Describe the consultant's understanding of the proposed project as described in the Request for Proposals. Demonstrate an understanding of the magnitude of the task, the constraints and the desired outcomes for the project.
 - 4.1.2 Scope of Work: Include sufficient detail to determine how each task shall be accomplished. The work plan will describe how the consultant proposes to complete the project. The work plan must be sufficiently detailed for staff to determine the effectiveness of the proposal and should spell out how this work can be performed in a cost effective manner.
 - 4.1.3 Schedule: Include a schedule for timely completion of the scope of work. Include information on the amount of time for each task. The Schedule indicated on the Appendix Inspection Map should be used as the primary guideline. Each year's re-inventory should be completed by December 15th of that year.
 - 4.1.4 Project Personnel: Provide information on personnel to be assigned to this project. Personnel should have experience from similar projects and in fields necessary to complete this proposed work.
 - 4.1.5 Similar Experience: List and describe your firm's projects worked on in the past five years that best match the scope and design of this project. Identify unique constraints or challenges associated with those projects and how you addressed those in order to deliver a successful project. The City may request samples of comparable work during the proposal review process.
 - 4.1.6 Pricing: After consideration of the above criteria, the value of each proposal will be compared against the other qualified proposals. The City is more interested in obtaining proposals that provide good value, demonstrate an understanding of the City's needs and provide a scope that meets or exceeds the requirements of this RFP than proposals that have scopes tailored to fit within a low budget.

PART FIVE - CONTRACT

- 5.1 A Standard City of Dunwoody Contract will be used for this service and will be provided to the selected service vendor.

PROPOSAL FORM
RFP 23-06 2023-2027 MS4 Inspections & Dryweather Screenings

The undersigned, as Proposer, hereby declares that this Proposal is in all respects fair and submitted in good faith without collusion or fraud. Proposer represents and warrants to the City that: (i) except as may be disclosed in writing to the City with its Proposal, no officer, employee or agent of the City has any interest, either directly or indirectly, in the business of the Proposer, and that no such person shall have any such interest at any time during the term of the Contract should it be awarded the Contract; and (ii) no gift, gratuity, promise, favor or anything else of value has been given or will be given to any employee or official of the City in connection with the submission of this Proposal or the City’s evaluation or consideration thereof.

The Proposer further represents that it has examined or investigated the site conditions if necessary, and informed itself fully in regard to all conditions pertaining to the place where the work is to be done; that it has examined the Contract Documents (available at <http://www.dunwoodyga.gov>) and has read all Addendum(s) furnished by the City prior to the opening of the Proposals, as acknowledged below, and that it has otherwise fully informed itself regarding the nature, extent, scope and details of the services to be furnished under the Contract.

The Proposer agrees, if this Proposal is accepted, to enter into the written Contract with the City in the form of Contract attached (properly completed in accordance with said Proposal Documents), and the Contract Documents for RFP 23-06 2023-2027 MS4 Inspections & Dryweather Screenings, at the City of Dunwoody, and to furnish the prescribed evidence of a valid business license, insurance, and all other documents required by these Contract Documents. The Proposer further agrees to commence work and to perform the work specified herein within the time limits set forth in the Contract Documents, which time limits Proposer acknowledges are reasonable.

The undersigned further agrees that, in the case of failure or refusal on its part to execute the said contract, provide evidence of specified insurance, a copy of a valid business or occupational license and all other documents required by these Contract Documents within ten (10) business days after being provided with Notice of Intent to Award the contract (or such earlier time as may be stated elsewhere in these Proposal Documents), the Proposal award may be offered by the City to the next ranked Proposer, or the city may re-advertise for Proposals, and in either case the City shall have the right to recover from the Proposer the City’s costs and damages including, without limitation, attorney’s fees, to the same extent that the City could recover its costs and expenses from the Proposer under section 10 of the Instructions to Proposers if the Proposer withdrew or attempted to withdraw its Proposal.

The Proposer further agrees, if it fails to complete the work according to the Specification within the scheduled time or any authorized extension thereof, that damages may be deducted from the Contract price otherwise payable to the Proposer.

Acknowledgement is hereby made of the following Addendum(s) received since issuance of the Solicitation Documents (identified by number)

| Addendum No. | Date | Addendum No. | Date | Addendum No. | Date |
|--------------|-------|--------------|-------|--------------|-------|
| _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ |

RFP 23-06

It shall be the responsibility of each Proposer to visit the City Purchasing Department’s website to determine if addendum(s) were issued and, if so, to obtain such addendum(s). Failure to acknowledge an addendum above shall not relieve the Proposer from its obligation to comply with the provisions of the addendum(s) not acknowledged above.

Company Name: _____

Work is to commence on or about **October 1, 2023. This contract shall be for five years.**

The City of Dunwoody requires pricing to remain firm for the duration of the initial term of the contract. Failure to hold firm pricing for the initial term of the contract will be sufficient cause for the City to declare bid non-responsive.

Termination for Cause: The City may terminate this agreement for cause upon ten days prior written notice to the Consultant of the Consultant’s default in the performance of any term of this agreement. Such termination shall be without prejudice to any of the City’s rights or remedies by law.

Termination for Convenience: The City may terminate this agreement for its convenience at any time upon 30 days written notice to the Consultant. In the event of the City’s termination of this agreement for convenience, the Consultant will be paid for those services actually performed. Partially completed performance of the agreement will be compensated based upon a signed statement of completion to be submitted by the Consultant, which shall itemize each element of performance.

Termination for fund appropriation: The City may unilaterally terminate this Agreement due to a lack of funding at any time by written notice to the Consultant. In the event of the City's termination of this Agreement for fund appropriation, the Consultant will be paid for those services actually performed. Partially completed performance of the Agreement will be compensated based upon a signed statement of completion to be submitted by the Service Provider which shall itemize each element of performance.

The Proposer agrees to provide all work described in this document.

Legal Business Name _____

Federal Tax ID _____

Address _____

Does your company currently have a location within the City of Dunwoody? Yes ___ No ___

Representative Signature _____

Printed Name _____

Telephone Number _____

Fax Number _____

Email Address _____

APPENDIX

IDDE Plan – Dry Weather Screening Procedures and Inventory Maps

City of Dunwoody, Georgia

BMP C-3

IDDE Plan – Dry Weather Screening Procedure

1.0 Introduction

Illicit discharges are unpermitted non-stormwater flows to the stormwater drainage system that contain pollutants or pathogens. Illicit discharges can be direct discharges or dumping to the stormwater system, or can occur through upstream activities that eventually flow to storm drain or drainage channels. Illegal connections are physical connections such as pipes that allow illicit discharges to enter the stormwater system on an intermittent or ongoing basis.

Screening of stormwater outfalls during dry weather is an important tool for investigating potential non-stormwater entries to the storm drainage system. Subsequent identification and elimination of illicit discharges and illegal connections can result in substantial improvements to local water quality.

2.0 Program Description

Screening of stormwater outfalls for illicit discharges is performed during periods of dry weather, which is defined as rainfall of less than 0.1 inch per day for at least 72 hours. This criterion avoids the screening of flows that may have resulted from wet weather (stormwater) events.

Each outfall is to be inspected for flow. When a dry weather flow is observed at an outfall, the following are to be performed on the flow:

1. **Field observations and measurements** – Site descriptions and qualitative observations of physical conditions of the outfall and flow, as well as measurement of several in-situ water quality parameters.
2. **Water Quality Sampling** – Collection of water quality samples for field analysis or laboratory analysis when indicated by the field observations and measurements.

In dry weather outfall screening, the field team is looking for indicators that point to or confirm an illicit discharge or illegal connection. Section 3.5 and 3.6 provide guidance on potential sources of pollution based upon the findings of the screening.

The discovery of a suspected illicit discharge will warrant a more detailed pollutant source identification investigation.



4800 Ashford Dunwoody Road
Dunwoody, Georgia 30338
P (678)382-6700 F (678)382-6701
dunwoodyga.gov

An outfall is the point where a municipal separate storm sewer system discharges to waters of the State. The City identifies the outfall to be monitored as the lowest downstream point in a storm sewer system. The City may not maintain the storm sewer system continuously upstream from the point that is monitored, but the lowest point in the system is the best location to identify illicit discharges and illegal connections.

The City ensures that field teams performing the dry weather screenings follow the appropriate, EPD-approved procedures. Field teams may consist of a knowledgeable, qualified, professional entity contracted by the City of Dunwoody or an equally capable City staff member.

The annual completion of the Dry Weather Screening and related activities is managed by the City's Stormwater Utility Manager.

3.0 Procedure

3.1 Outfall Screening Locations

In 2016, the City completed a comprehensive review of the streams in Dunwoody to determine which conveyances should be classified as waters of the State. The North Carolina Division of Water Quality's *Methodology for Identification of Intermittent and Perennial Streams and Their Origins*, Version 4.11 was used in this effort. The use of a standard identification method has allowed the City to confidently determine which discharge locations should receive the designation of outfall. The current inventory of outfalls is based on a combination of this work and guidance provided by the EPD.

The City selects at least 5% of the total number of outfalls to screen each year and schedules inspections such that all outfalls are screened within a 5-year period.

3.2 Outfall Screening Preparation

3.2.1 Preliminary Mapping and Land Use Evaluation

To assist in outfall screening, preliminary mapping and land use evaluation will be completed. Mapping information includes:

- Outfall locations
- Outfall drainage areas
- Commercial and industrial activities in each drainage area

Field maps are prepared to guide the screening team when appropriate. These maps, at a minimum, should have labeled streets and hydrologic features so field teams can orient themselves.



3.2.2 Field Sampling and Analysis Equipment

Table 1 lists the recommended equipment for dry weather outfall screening. Before undertaking field work, the field team should ensure that all of the necessary equipment is present and in order. Both the pH meter and the conductivity meter should be calibrated at the start of each day. In addition, field test kits should be inspected to ensure that they have sufficient reagents and test strips/discs.

TABLE 1

List of Equipment and Supplies for Dry Weather Outfall Screening

| Field Equipment | Function |
|---|--|
| Field maps (with outfall locations, drainage areas, and street information) | Locating outfalls for screening |
| Field measurement equipment (temperature, pH, conductivity meters) | Measuring field temperature, pH and specific conductivity of dry weather flows |
| Field test kits | Measuring fluoride, surfactants and fecal coliform |
| Sample bottles with labels | For collection of grab samples |
| Sealed, sterile sample bottles with labels | For collection of bacteria grab samples |
| Grab water sampler (dipper on long pole) | For outfalls/flows that are difficult to reach |
| Waders and walking stick | For reaching outfalls near a stream or waterbody |
| Hand-operated vacuum pump sampler | For shallow dry weather flows |
| Clear tape and applicator | To apply over label |
| Coolers | For transport of grab samples |
| Ice / ice packs | To keep samples preserved after collection and during transport from the site |
| Clipboard or notebook with data collection forms and COC forms / Pens | To document field data and activities |
| List of outfalls, directions, protocols, and Health and Safety Plan | For reference in the field |
| Field logbook | To record notes |
| Permanent marker (extra fine) | Label sample bottles |
| Cell phone | Communication in the field |
| Handheld GPS receiver (if applicable) | Determining outfall locations |
| Digital camera | To document dry weather flow and/or conditions |
| Flashlight | Recording visual conditions |
| First Aid Kit | Health and Safety Plan |
| Disposable gloves, safety shoes, and safety glasses | Health and Safety Plan |

3.2.3 Weather Considerations

Prior to any screening field work, check local rain gages to ensure that the conditions are appropriate for dry weather outfall screening. Dry weather is defined as rainfall of less than 0.1 inch per day for at least 72 hours.

3.3 Outfall Screening Procedures

Figure 1 is an example of a Dry Weather Outfall Screening Form which is used to record the observations and analytical results of the dry weather screening procedures. *Figure 2* is an example of a Data Tracking Form to record Outfall Screenings.

3.3.1 Field Observations and Measurements

Outfall screening is initiated by driving or walking to the outfall location. When an outfall is reached, it should be physically marked or labeled, and the coordinates logged using the GPS receiver (if applicable).

Basic descriptive information is recorded at the top part of the Dry Weather Outfall Screening Form:

- Outfall location
- Outfall ID number
- Outfall type, material and size
- Receiving stream and/or watershed name
- Date and time of screening
- Weather observations
- Staff person(s) undertaking the screening

Digital photographs are taken of the outfall and photo numbers recorded on the screening form.

Physical observations of the site are recorded on the screening form under *Field Observations and Measurements*. If no flow is observed during the outfall screening, the “Flow from outfall?” field should be checked “No” and the screening is complete. This result will be counted towards the total number of outfalls screened.

If flow is observed, then “Yes” should be checked and the following physical indicators recorded. Each of these observations associated with flowing outfalls may predict the presence of an illicit discharge or illegal connection:

- **Odor** – Description of any odors that emanate from the outfall and an associated severity score. Since noses have different sensitivities, the entire field team should reach consensus about whether an odor is present and how severe it is. A severity score of one means that it is faint or the team cannot agree on its presence or origin. A score of two indicates a moderate odor within the pipe. A score of three is assigned if the odor is so strong that the field team smells it a considerable distance away from the outfall.
- **Color** – The visual assessment of the discharge color. The intensity of color is ranked from one (slightly tinted) to three (clearly visible in the flow). The best way to measure color is to collect the discharge in a clear sample bottle and hold it up to the light. Field teams should also look for downstream plumes of color that appear to be associated with the outfall.



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- **Turbidity** – The visual estimate of the turbidity of the discharge, which is a measure of the cloudiness or opaqueness of the water. Turbidity is ranked from one (slight cloudiness) to three (opaque). Like the color observation, turbidity is best observed using a clear sample bottle. The field team should also look for turbidity in the plunge pool below the outfall, and note any downstream turbidity plumes that appear to be associated with the outfall.
- **Floatables** – The presence of any floatable materials in the discharge or the plunge pool below. Sewage, oil sheen or film, and suds are all examples of floatable indicators. [Note that for dry weather screening, trash and debris are not considered indicators of an illicit discharge or illegal connection.]

Upon completing the physical observations, measure temperature, pH, and specific conductivity of the dry weather flow (either in-situ or using a sample bottle), and record the readings on the screening form. The screening and sampling must be conducted in the outfall of the discharge itself, not the stream. The City must screen every outfall with flow for fluoride and surfactants/detergents.

3.3.2 Water Quality Sampling

Water quality sampling of a dry weather flow is performed to look for chemical indicators which may detect, characterize or confirm the presence of an illicit discharge or illegal connection. Water quality sampling is required for all dry weather flows. Some other indicators of an illicit discharge can include:

- Visible sewage or sewage odor
- Physical indicator of potential illicit discharge (color, odor, turbidity or floatables)
- pH lower than 6.5 or higher than 7.5
- Specific conductivity greater than 300 $\mu\text{mho/cm}$

Sampling may be undertaken either using field test kit equipment or by collecting grab samples for laboratory analysis. Fecal coliform samples must be stored in a cooler with ice and delivered to the laboratory within six hours of sampling. Water samples should be tested for the following parameters:

- Fluoride
- Surfactants (detergents)
- Fecal coliform – if conductivity reading is consistently greater than 300 $\mu\text{mho/cm}$

3.3.2.1 Field Sampling and Analysis

Field test kits with appropriate reagents, test strips/discs, and sampling equipment should be used. The test kits must have the ability to detect fluoride within the range 0 to 2.00 mg/L and surfactants within the range 0 to 3.0 mg/L.

Follow the kit manufacturer's procedures for obtaining a test sample and completing the field analysis. Record the field analysis results on the screening form.

Dry weather screening samples must be taken from the outfall flow itself, not from the receiving stream. If there is not enough flow from the outfall for an adequate sample, then a container or bucket must be used to collect a sample to take readings. The bucket must be rinsed twice with flow from outfall and readings taken on the third fill. All probes should be washed with distilled water before and after a reading is taken. Testing equipment must be able to detect values as low as 0.2 mg/L for fluoride and surfactants/detergents.

3.3.2.2 Grab Samples

Grab samples and subsequent laboratory analysis may be performed in lieu of field sampling for one or more of the water quality parameters. Grab samples should be analyzed using EPA-approved laboratory analysis methods.

3.3.2.3 Grab Sample Collection

Grab samples must be taken from the outfall flow itself, not from the receiving stream. In many cases, the sample container itself can be used to collect the sample. Less accessible outfalls will require the use of poles and buckets to collect the grab sample. A pre-measured cut-off milk jug can be used to capture shallow flows from the outfall. To ensure that the manual grab samples are representative, the following procedures should be followed:

- Do not open sample bottle until sample is to be actually collected.
- Use gloves at all times when handling sampling bottles.
- Take the grab from the horizontal and vertical center of the outfall.
- Make sure not to disturb any sediments or benthic growth in the outfall.
- Transfer samples into proper container (e.g., from bucket to sample container).
- Fecal coliform grab samples must be collected directly into the sterile sample container.

All of the equipment and containers that come into contact with the sample should be cleaned in order to avoid contamination and be non-reactive to prevent leaching of pollutants.



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3.3.2.4 Grab Sample Handling

The grab sample bottle type, preservation requirements, and holding time requirement for those parameters being tested are listed in Table 2. Proper preservation and maintenance of the holding times for each parameter is essential for the integrity of the sampling results. Note that fecal coliform samples have a **short holding time of six hours** and must be returned to the lab for analysis within this time or the results may be unrepresentative of the flow. In addition, fecal coliform samples must be stored in a cooler with ice during this period.

TABLE 2

| Modified Handling Requirements for Samples | | | | |
|--|-----------------------------|-------------------|---------------------|----------------------|
| Parameter | Container Type ¹ | Sample Volume (g) | Sample Preservation | Maximum Holding Time |
| Fluoride | P,G | 500ml | Cool, 4°C | 28 days |
| Surfactants (detergents) | P | 500ml | Cool, 4°C | 48 hours |
| Fecal Coliform ² | PP,G | 100 ml | Cool, 4°C | 6 hours |

¹ Polyethylene (P), Polypropylene (PP), Glass (G) – EPA-approved sample containers (40 CFR 136)

² In chlorinated waters, dechlorinate the sample with sodium thiosulfate by adding 1 ml of 10% Na₂S₂O₃ to the 100 ml sample

3.3.2.5 Grab Sample Identification and Labeling

A sample numbering system should be used to ensure that each sample is uniquely identified in the field and tracked on field data collection forms. The sample numbering should be as follows: ### MMDDYY-HH:MM

Where:

- ### = A unique number for each sample location
- MMDDYY = Month, day, year
- HH:MM = Time in military units

All of the samples collected at the site should be placed in the appropriate sample containers for preservation and shipment to the designated laboratory. Each sample should be identified with a separate identification label. A waterproof, gummed label should be attached to each sampling container. Information to be recorded on the label should include:

- Site name;
- Sample number;
- Analysis to be performed;
- Date and time of collection;
- Preservation used and any other field preparation of the sample; and
- Initials of field crew collecting the sample.

3.3.2.6 Grab Sample Documentation

A chain-of-custody (COC) form should accompany all samples. See *Figure 3* for a sample COC form. The COC form shall include all of the information provided on the sample label discussed in the preceding section.

The purpose of the COC form is to provide a mechanism for tracking each sample submitted for laboratory analysis. The information on the COC form must be identical to the information of the sample label. A COC form should be prepared by the sample collector for each set of samples submitted for laboratory analysis. The form should be placed in a re-sealable plastic bag (to keep the form dry) and sealed inside each sample cooler. When transferring possession of the samples, the individual relinquishing and receiving samples should sign, date, and note the time on the COC form. This record documents the transfer of custody from the sampler to another person, to/from a secure storage area, and to the laboratory. Copies of the COC forms should be kept for future reference.

3.3.2.7 Analytical Laboratory Coordination and Sample Delivery

The samples should be packed in coolers with ice (or ice packs) to ensure they maintain the required temperature of less than or equal to 4°C during transport to the designated laboratory. Contact the laboratory prior to sampling to assure that the samples will be analyzed within their holding time. Samples may be placed in individual one-gallon resealable bags as a precaution to avoid spilling the sample. All glass bottles should be individually bagged and bubble-wrapped to prevent breakage on the way to the lab. Samples may be placed in a large trash bag inside a cooler (to ensure against the sample leaking) with ice completely covering the samples.

3.4 Quality Assurance/Quality Control

This section describes the elements of the field quality assurance/quality control (QA/QC) program. The overall QA/QC objective for the monitoring program is to ensure that the data collected are of good quality.

3.4.1 Field QA/QC

Field quality control procedures include calibration procedures, field blanks and field duplicates. The field equipment should be calibrated appropriately prior to leaving for the sampling site to ensure proper performance of the equipment. This includes the pH meter, conductivity meter, and the thermometer. The pH meter should be calibrated using two buffers that bracket the expected pH range (typically 4 and 7). The conductivity meter is calibrated by rotating the probe below the surface in a standard Potassium Chloride solution in a circular motion. The readings must be within 10 percent to be acceptable. The thermometers used should be accurate to + 5°C. Quality control blanks should be used in the field to determine potential sample contamination during sample collection, handling, shipment, storage, or laboratory handling and analysis. Reagent grade water should be used for the quality control blanks. All reagent waste must be disposed of



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properly. All reagents must be checked annually and replaced if necessary. A minimum of one field blank for surfactants (detergents) and fecal coliform is required each day with scheduled field screening. For fluoride, a field blank should be used with approximately 10 percent of samples (or as required by the lab).

Field duplicates should be collected on approximately 10 percent of the samples to assess the representativeness of sampling procedures in addition to the normal uncertainty associated with the analysis.

3.4.2 Laboratory QA/QC

The laboratories should follow Georgia EPD- approved methods and routinely perform quality control checks during laboratory analysis, including calibration standards, blanks, laboratory control samples, laboratory control duplicate samples, matrix spikes, and matrix spike duplicates. Spikes and duplicates should be performed on a minimum of 10 percent of the samples and should meet data quality objectives established by the client.

3.5 Evaluating Dry Weather Screening Results

3.5.1 Background

Dry weather screening of stormwater outfalls is an important tool used to evaluate non-stormwater flows in the storm drainage system. Effectively evaluating and interpreting dry weather screening results and data is the first step in identifying and tracing a potential illicit discharge or illegal connection.

3.5.2 Field Observations

Field observations of a dry weather flow include odor, color, turbidity and floatables. These parameters are qualitative indicators detected by visual inspection and smell, and require no measurement equipment. They are important in evaluating a dry weather flow for a potential illicit discharge, and may confirm the most severe or obvious discharges.

Table 3 lists the field observation parameters, along with potential sources for a number of observed conditions.



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3.5.3 Field Measurements and Water Quality Sampling Results

Field measurements and water quality sampling provide additional information which may detect, characterize or confirm an illicit discharge or illegal connection.

Temperature, pH and conductivity measurements are completed in the discharge flow using probes or other equipment that is calibrated at the beginning of each field testing day. Water quality sampling for the presence of fluoride, surfactants and fecal coliform is performed either in-field using test kit equipment or by collecting grab samples for laboratory analysis.

Table 4, Interpretation of Field Measurements and Water Quality Sampling Parameters, lists the various parameters included in the dry weather screening protocol along with benchmarks and guidance on evaluating results. *Figure 4* provides a flow chart which can be used to identify illicit discharges based upon findings.

TABLE 3

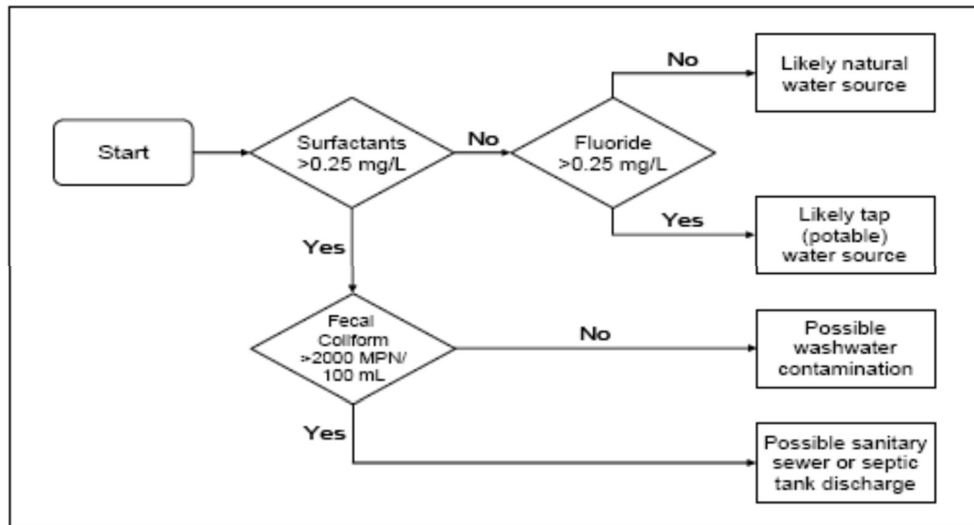
Physical Observations and Potential Sources

| Parameter | Observations | Potential Source(s) |
|------------|-----------------------|---|
| Odor | Sewage | Sanitary sewer; septic tank discharges |
| | Sulfur (rotten eggs) | Industrial discharge (sulfides and/or organics); sanitary sewer; septic tank discharges |
| | Oil / gasoline | Facilities associated with vehicle maintenance and operation; petroleum product manufacturing or storage; industrial discharge |
| | Rancid / sour | Food preparation facilities (restaurants, hotels, etc.) |
| Color | Orange / rust | Construction site or unstabilized soil (eroded soil and clay) |
| | White / milky | Sanitary sewer; septic tank discharges; residential or commercial washwater; concrete or stone operations; fertilizer |
| | Grey | Residential or commercial washwater; dairies |
| | Red | Meat packers |
| | Yellow | Industrial discharge |
| | Green | Industrial discharge; Facilities associated with vehicle maintenance and operation (antifreeze) |
| | Brown / black | Industrial discharge |
| Turbidity | Cloudy | Sanitary sewer; septic tank discharges; residential or commercial washwater; concrete or stone operations; fertilizer; industrial discharge |
| | Opaque | Food preparation facilities (restaurants, hotels, etc.); industrial discharge |
| | Silty / Muddy | Construction site or unstabilized soil (eroded soil and clay) |
| Floatables | Sewage | Sanitary sewer; septic tank discharges |
| | Petroleum (oil sheen) | Facilities associated with vehicle maintenance and operation; petroleum product manufacturing or storage; industrial discharge |
| | Suds | Sanitary sewer; septic tank discharges; residential or commercial washwater |

Table 4
 Interpretation of Field Measurements and Water Quality Sampling Parameters

| Parameter | Benchmarks | Evaluation |
|--------------------------|--|---|
| Temperature | Temperature should be near or below ambient conditions for groundwater or stormwater runoff. | Higher than ambient temperature may indicate stream condensate or industrial process water. |
| pH | The normal pH range for stormwater runoff is between 6 and 9, with 7 being neutral. | pH is a relatively good indicator of liquid wastes from industries, which can have very high or low pH values (ranging from 3 to 12). The pH of residential and commercial wastewater tends to be in the range of 8 or 9. |
| Conductivity | Stormwater should have a low conductivity (under 300 µmho/cm). | Conductivity greater than 300 µmho/cm indicates a high dissolved solids content in the flow which may be from illicit discharge or illegal connection. |
| Fluoride | The normal fluoride range for stormwater is less than 0.2 mg/l | Presence of fluoride indicates the presence of potable (treated) water. Fluoride can often be used to separate treated potable water from untreated water sources, such as stormwater, groundwater, or non-potable industrial waters. |
| Surfactants (detergents) | There should be no traces of surfactants (detergents) in the stormwater. | This parameter is associated with cleaning/washing operations and may indicate residential or commercial wastewater. |
| Fecal Coliform | Fecal coliform is an indicator of fecal bacteria from warm-blooded animals. | Its presence in high numbers often indicates contamination with sanitary waste, although high levels of pet waste may also produce similar results. |

Figure 4
 Flowchart to Identify Illicit Discharges using Outfall Screening Sampling Results



3.6 Following Up on Potential Illicit Discharges

All outfalls ranked as possible, suspect or obvious illicit discharges require follow-up actions and activities to determine the specific source(s) of contamination. The EPD requires the screening of every outfall with flow for pH, conductivity, fluoride, and surfactants / detergents. If the screening reveals values outside the acceptable range, source tracing must be initiated or a re-screening must be conducted within 24 hours, at least four hours after the first screening. If the screening still reveals values outside the accepted range, the City must initiate source tracing procedures. There are a variety of methods for illicit discharge source identification, including:

- **Mapping Analysis** – Evaluation of the drainage area, land uses and properties above the outfall including the route of the storm drainage system and locations of storm drains. This enables local staff to predict the likely locations of illicit discharges and illegal connections. Geographic Information Systems (GIS) are a useful tool for identifying illicit discharges through mapping analysis.
- **Drainage Area Investigation** – A windshield survey or more detailed property inspections in the drainage area that has the illicit discharge. These inspections are often performed following a mapping analysis.
- **Piping Schematic Review** – Examination of building plans and plumbing details for potential sites where improper connections to the storm drainage system may have occurred.
- **Smoke Testing** – Testing of pipes to locate connections by injecting a non-toxic vapor (smoke) into the system and following its path of travel.
- **Dye Testing** – Addition of colored dye to the drain water in suspect piping and subsequent surveillance to determine if dyed water appears in the storm drain system, thus indicating an illegal connection.
- **Septic System Investigation** – Low density residential watersheds may require special investigation methods when failing septic systems are suspected. Homeowner surveys, surface investigations and infrared photography have all been used successfully to identify problem septic system facilities.

The appropriate method for any given outfall or area will be heavily dependent on the watershed and land use conditions, drainage system characteristics, available resources and the nature of the discharge and screening results.

Once an illicit discharge is located, enforcement actions will be implemented in accordance with the Enforcement Response Plan (Appendix A).



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4.0 References

"Illicit Discharge Detection and Elimination – A Guidance Manual for Program Development and Technical Assessments." Center for Watershed Protection. 2004.

"District-Wide Watershed Management Plan Standards and Methodologies for Surface Water Quality Monitoring." Metropolitan North Georgia Water Planning District, March 2007.

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"NPDES Stormwater Sampling Guidance Document. EPA-833-92-001," U.S. Environmental Protection Agency, July 1992.



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Figure 1 – Dry Weather Outfall Screening Form

| Dry Weather Outfall Screening Form | |
|---|---|
| Name of City or County: | Data Sheet Number: |
| Date of screening (MM/DD/YY): | Time of screening: |
| Weather conditions: | |
| Screening performed by: | |
| Outfall Description | |
| Outfall Location: | Outfall ID: |
| Outfall Type/Material: <input type="checkbox"/> Closed Pipe (circle): RCP CMP PVC HDPE Other: _____ <input type="checkbox"/> Open Channel (circle): Concrete Earthen Grassy Other: _____ | Outfall Diameter/Dimensions: |
| Receiving Stream/Watershed Name: | |
| Land use/industries in drainage area: | |
| GPS Coordinates: N _____ E _____ | Photo numbers: |
| Field Observations and Measurements | |
| Flow from outfall? <input type="checkbox"/> Yes <input type="checkbox"/> No | Flow Description: <input type="checkbox"/> Trickle <input type="checkbox"/> Moderate <input type="checkbox"/> Substantial |
| Odor: <input type="checkbox"/> None <input type="checkbox"/> Sewage <input type="checkbox"/> Sulfide (rotten eggs) <input type="checkbox"/> Petroleum/gas <input type="checkbox"/> Rancid/sour <input type="checkbox"/> Other _____ | |
| Relative severity: <input type="checkbox"/> 0-None <input type="checkbox"/> 1-Faint <input type="checkbox"/> 2-Easily Detected <input type="checkbox"/> 3-Noticable from a distance | |
| Color: <input type="checkbox"/> Clear <input type="checkbox"/> White <input type="checkbox"/> Gray <input type="checkbox"/> Orange/Rust <input type="checkbox"/> Red <input type="checkbox"/> Yellow <input type="checkbox"/> Green <input type="checkbox"/> Brown/Black <input type="checkbox"/> Other _____ | |
| Relative severity: <input type="checkbox"/> 0-None <input type="checkbox"/> 1-Faint <input type="checkbox"/> 2-Clearly visible in bottle <input type="checkbox"/> 3-Clearly visible in flow | |
| Turbidity: <input type="checkbox"/> None <input type="checkbox"/> Cloudy <input type="checkbox"/> Opaque <input type="checkbox"/> Silty <input type="checkbox"/> Muddy <input type="checkbox"/> Other _____ | |
| Relative severity: <input type="checkbox"/> 0-None <input type="checkbox"/> 1-Slight cloudiness <input type="checkbox"/> 2-Cloudy <input type="checkbox"/> 3-Opaque | |
| Floatables: <input type="checkbox"/> None <input type="checkbox"/> Sewage <input type="checkbox"/> Petroleum (oil sheen) <input type="checkbox"/> Suds <input type="checkbox"/> Other _____ | |
| Relative severity: <input type="checkbox"/> 0-None <input type="checkbox"/> 1-Few/slight <input type="checkbox"/> 2-Some <input type="checkbox"/> 3-Heavy | |
| Flow Temperature (°C): | |
| Flow pH: | pH meter calibrated? <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Flow Conductivity (µmho/cm): | Conductivity meter calibrated? <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Water Quality Sampling | |
| Field Test Kit Manufacturer: | Model: |
| Fluoride (mg/L): | Fecal Coliform (MPN/100ml): |
| Surfactants (mg/L): | Analysis Comments: |
| Grab sample for lab? (fluoride/surfactants) <input type="checkbox"/> Yes <input type="checkbox"/> No | Bacteria Grab sample for lab? (fecal coliform) <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Grab Sample ID: | Bacteria Grab Sample ID: |
| Source Tracing Activities: | |

NOTE: Water quality sampling (using a field test kit and/or grab samples) is required for a dry weather flow that meets any of the following criteria: Visible sewage or sewage odor; physical indicator of potential illicit discharge (color, odor, turbidity or floatables); pH lower than 6.5 or higher than 7.5; or specific conductivity greater than 300 µmho/cm.



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Figure 3 – Sample Chain of Custody Form

| | | | | | | | |
|-----------------------------|------|--------------------------|------------------|-------------|------|------------------|------|
| REPORT TO: | | CONTACT | | PHONE NO. | | SALESMAN | |
| | | PROJECT NAME | | PROJECT NO. | | P.O. NO. | |
| | | DATE SAMPLED | | SAMPLER(S) | | | |
| BILL TO: | | ANALYSES TO BE PERFORMED | | | | | |
| | | TOTAL NO. OF CONTAINERS | | | | | |
| | | TIME OF SAMPLING | | | | | |
| SAMPLE DESCRIPTION/LOCATION | | REMARKS | | | | | |
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |
| REMARKS: | | SHIPPING CARRIER: | | | | | |
| | | SHIPPING TICKET NUMBER: | | | | | |
| | | CHAIN-OF-CUSTODY SEAL: | | | | | |
| | | INTACT | | BROKEN | | ABSENT | |
| RELINQUISHED BY: | DATE | TIME | RECEIVED BY: | DATE | TIME | RELINQUISHED BY: | DATE |
| | | | | | | | |
| RECEIVED BY: | DATE | TIME | RELINQUISHED BY: | DATE | TIME | RECEIVED BY: | DATE |
| | | | | | | | |
| RELINQUISHED BY: | DATE | TIME | RELINQUISHED BY: | DATE | TIME | RECEIVED BY: | DATE |
| | | | | | | | |

City of Dunwoody Outfalls

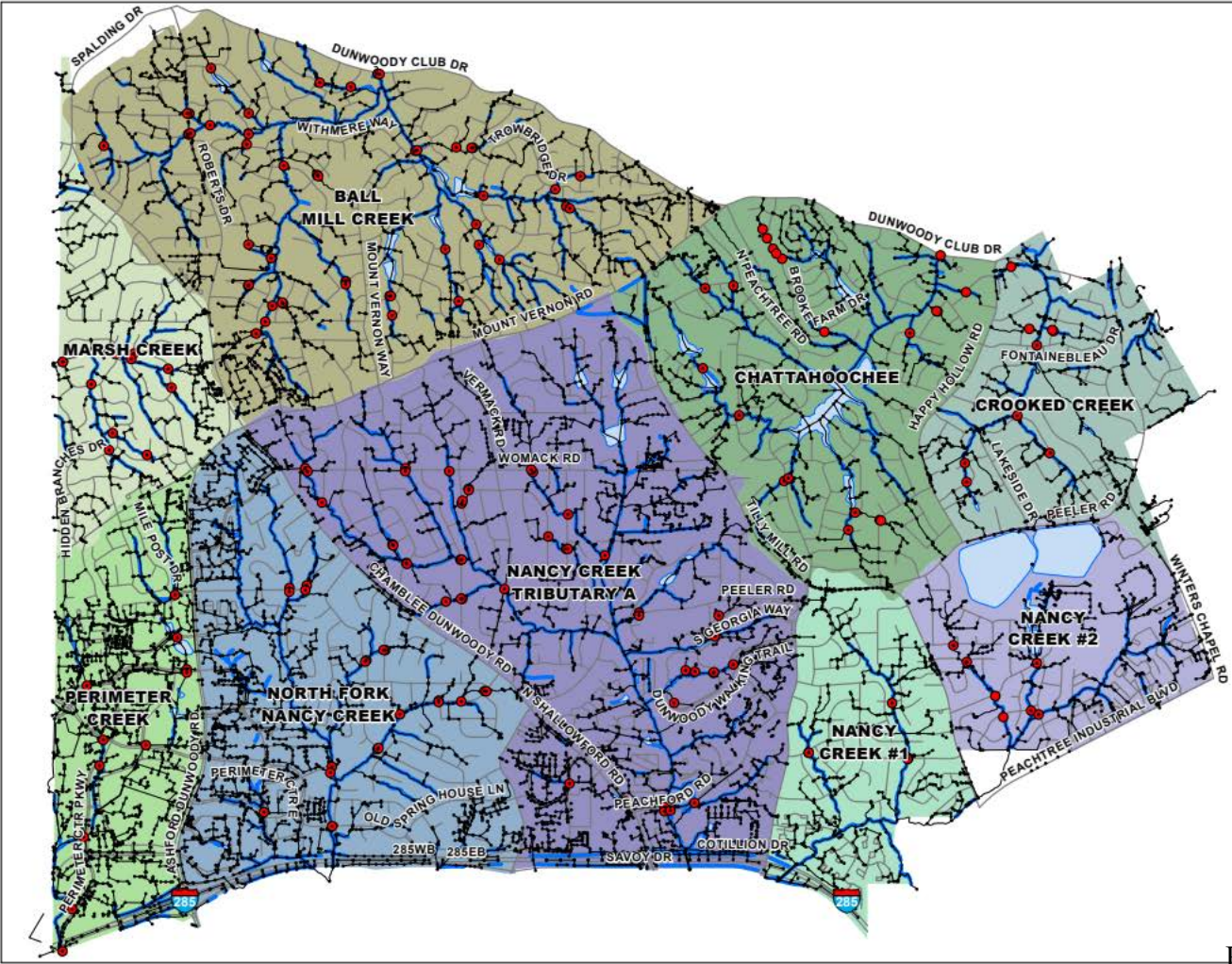
Date: 12/20/2022

Legend

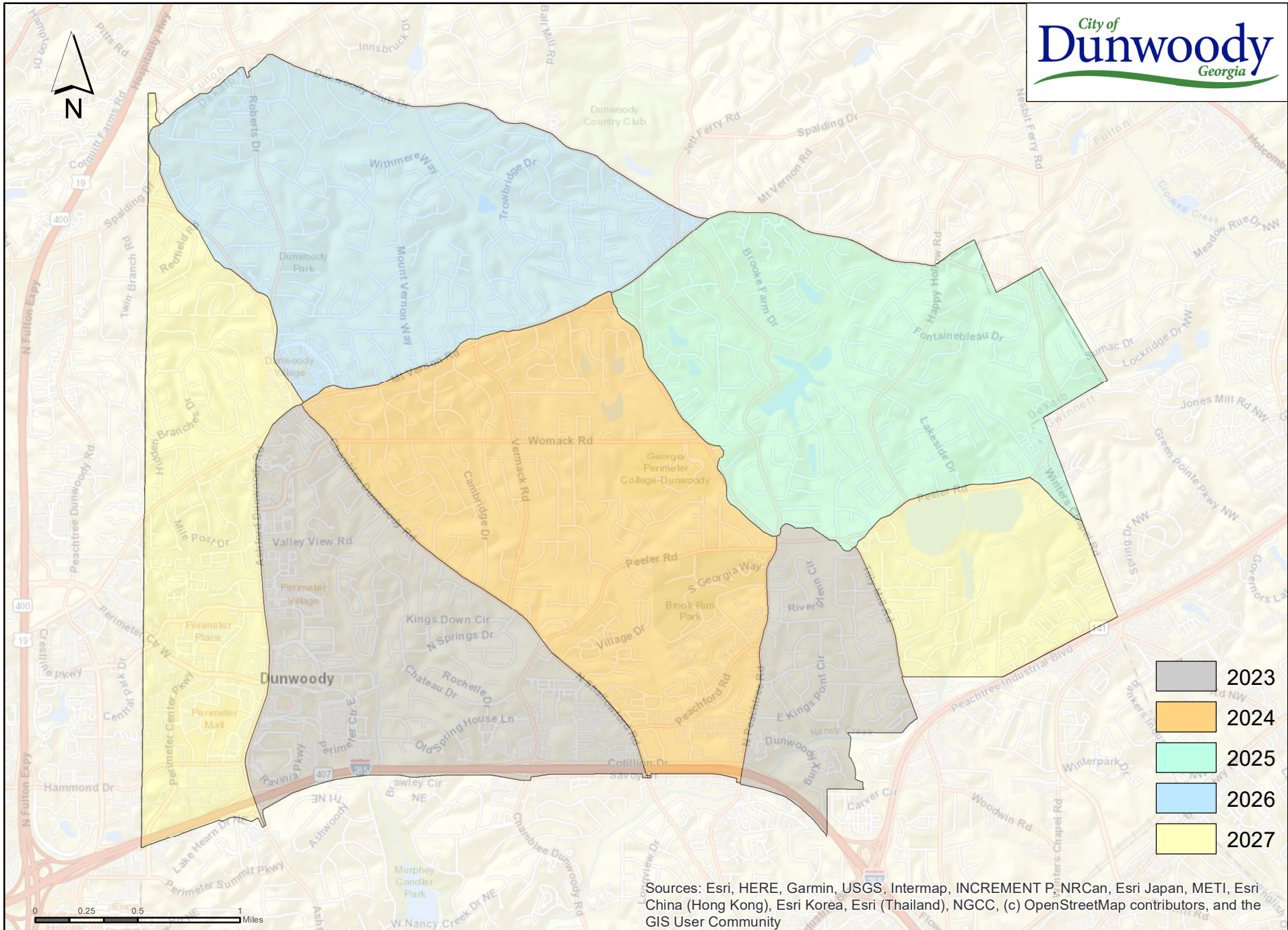
- Outfall (169)
- Stream
- Lake
- Street

Dunwoody Basin

- Ball Mill Creek
- Chattahoochee
- Crooked Creek
- Marsh Creek
- Nancy Creek #1
- Nancy Creek #2
- Nancy Creek Tributary A
- North Fork Nancy Creek
- Perimeter Creek

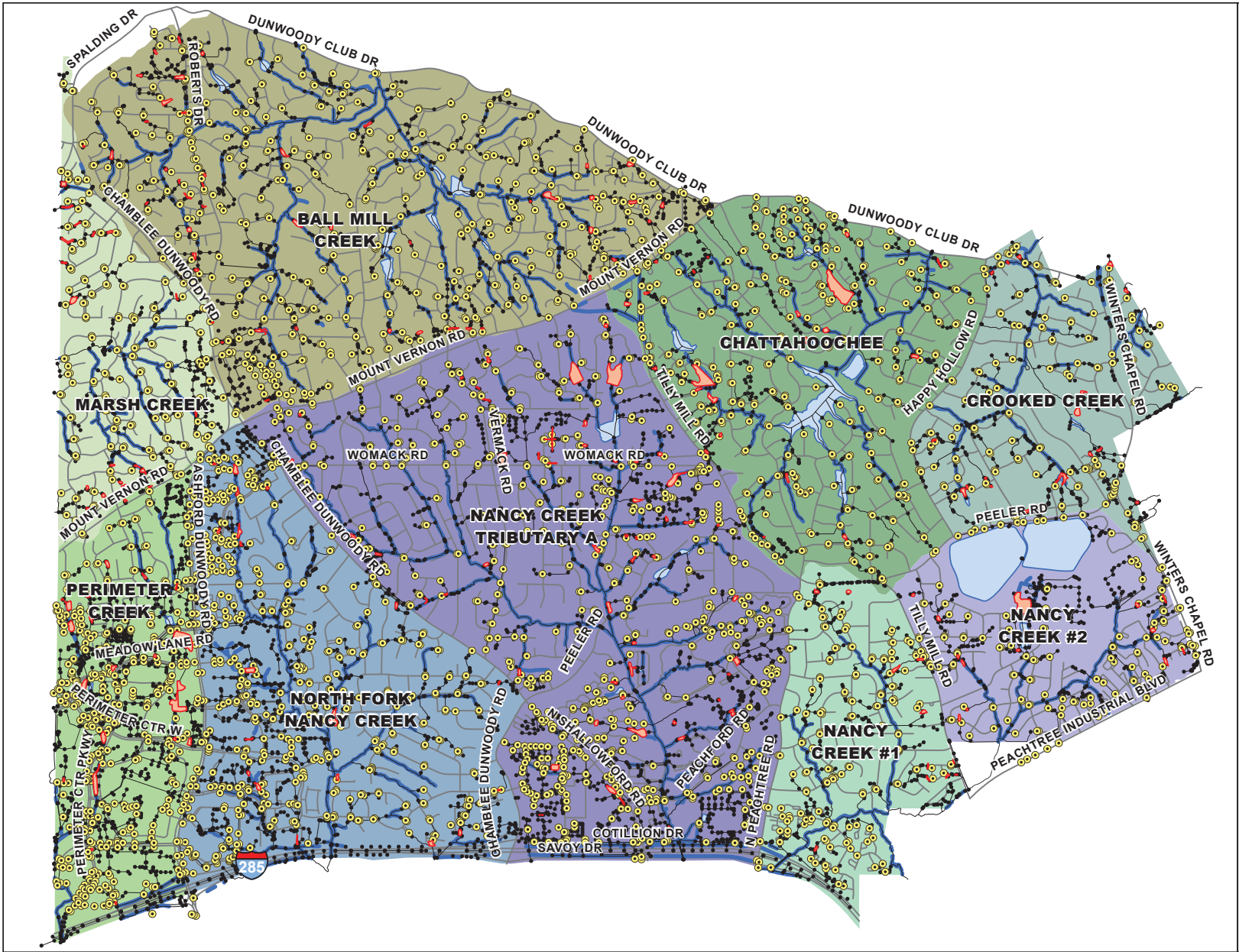


MS4 Inspection Zones, Structure and Conveyance Inventory



- 2023
- 2024
- 2025
- 2026
- 2027

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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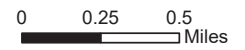
City of Dunwoody Stormwater Infrastructure

Date: 8/15/2023

Legend

- Catch Basin (2,313)
- Structure (3,114)
- Conveyance (68 miles)
- Stream
- Detention Pond (77)
- Lake
- Street

- Dunwoody Basin**
- Ball Mill Creek
 - Chattahoochee
 - Crooked Creek
 - Marsh Creek
 - Nancy Creek #1
 - Nancy Creek #2
 - Nancy Creek Tributary A
 - North Fork Nancy Creek
 - Perimeter Creek



MS4 Pond, Facility, Inventory and Inspection Forms

Pond ID#: _____

Date of Inspection: _____

Pond Address: _____

Inspector: _____

| Dry Detention Basin | | | | | |
|---|-----------|----------|------|------|---------|
| Maintenance Item | Condition | | | | Comment |
| | Good | Marginal | Poor | N/A* | |
| General Inspection | | | | | |
| Access to the site is adequately maintained for inspection and maintenance. | | | | | |
| Area is clean (trash, debris, grass clippings, etc. removed). | | | | | |
| Inlet Structure | | | | | |
| Drainage ways (overland flow or pipes) to the practice are free of trash, debris, large branches, etc. | | | | | |
| Area around the inlet structure is mowed and grass clippings are removed. | | | | | |
| No evidence of gullies, rills, or excessive erosion around the inlet structure. | | | | | |
| Water is going through structure (i.e. no evidence of water going around the structure). | | | | | |
| Inlet pipe is in good condition and is not clogged. | | | | | |
| Diversion structure (high flow bypass structure or other) is free of trash, debris, or sediment. Comment on overall condition of diversion structure and list type. | | | | | |
| Pretreatment (forebay) | | | | | |
| Area is free of trash, debris, and sediment. | | | | | |
| Sediment accumulation is less than 50% of the forebay volume. | | | | | |
| No undesirable vegetation within the forebay. Weeds are removed to prevent clogging. | | | | | |
| Erosion protection is present on site (i.e. turf reinforcement mats). Comment on types of erosion protection and evaluate condition. | | | | | |
| Main Treatment | | | | | |
| Main treatment area is free of trash, debris, and sediment. | | | | | |
| Erosion protection is present on site (i.e. turf reinforcement mats). Comment on types of erosion protection and evaluate condition. | | | | | |
| No evidence of long-term ponding or standing water in the ponding area of the practice (examples include: stains, odors, mosquito larvae, etc.). | | | | | |

| Dry Detention Basin | | | | | |
|--|------------------|-----------------|-------------|-------------|----------------|
| Maintenance Item | Condition | | | | Comment |
| | Good | Marginal | Poor | N/A* | |
| Basin seems to be working properly. No settling around the basin. Comment on overall condition of basin. | | | | | |
| Vegetation within and around practice is maintained. Grass clippings are removed. | | | | | |
| Sediment accumulation within dry detention basin is less than 3 inches. | | | | | |
| No standing water within the basin. | | | | | |
| No evidence of use of fertilizer on grass (fertilizer crusting on the surface of the soil, tips of leaves turning brown or yellow, blackened roots, etc.). | | | | | |
| Emergency Overflow | | | | | |
| Emergency overflow is free of trash, debris, and sediment. | | | | | |
| No evidence of erosion, scour, or flooding around the structure. | | | | | |
| No shrubs or trees growing on embankment. | | | | | |
| No signs of seepage on the downstream face. | | | | | |
| No signs of animal activity. | | | | | |
| Outlet Structure | | | | | |
| Outlet structure is free of trash, debris, and sediment. | | | | | |
| No evidence of erosion, scour, or flooding around the structure. | | | | | |
| All moveable components are operational. | | | | | |
| Results | | | | | |
| Overall condition of Dry Detention Basin: | | | | | |
| Additional Comments | | | | | |
| | | | | | |
| Notes: * If a specific maintenance item was not checked, please check N/A and explain why in the appropriate comment box. | | | | | |

Pond ID#: _____ Date of Inspection: _____

Pond Address: _____ Inspector: _____

| Stormwater Pond | | | | | |
|---|------------------|-----------------|-------------|-------------|----------------|
| Maintenance Item | Condition | | | | Comment |
| | Good | Marginal | Poor | N/A* | |
| General Inspection | | | | | |
| Access to the site is adequately maintained for inspection and maintenance. | | | | | |
| Area is clean (trash, debris, grass clippings, etc. removed). | | | | | |
| Inlet Structure | | | | | |
| Drainage ways (overland flow or pipes) to the practice are free of trash, debris, large branches, etc. | | | | | |
| Area around the inlet structure is mowed and grass clippings are removed. | | | | | |
| No evidence of gullies, rills, or excessive erosion around the inlet structure. | | | | | |
| Inlet pipe is in good condition, and water is going through the structure (i.e. no evidence of water going around the structure). | | | | | |
| Diversion structure (high flow bypass structure or other) is free of trash, debris, or sediment. Comment on overall condition of diversion structure and list type. | | | | | |
| Pretreatment (choose one) | | | | | |
| Forebay – area is free of trash, debris, and sediment. | | | | | |
| Filter Strip or Grass Channels – area is free of trash debris and sediment. Area has been mowed and grass clippings are removed. No evidence of erosion. | | | | | |
| Rock Lined Plunge Pools – area is free of trash debris and sediment. Rock thickness in pool is adequate. | | | | | |
| Main Treatment | | | | | |
| Main treatment area is free of trash, debris, and sediment. | | | | | |
| Erosion protection is present on site (i.e. turf reinforcement mats). Comment on types of erosion protection and evaluate condition. | | | | | |
| No algal growth along or within the pond. | | | | | |
| Native plants were used in the practice according to the planting plan. No undesirable vegetation. | | | | | |
| Practice seems to be working properly. No settling around the stormwater pond. | | | | | |

| Stormwater Pond | | | | | |
|---|------------------|-----------------|-------------|-------------|----------------|
| Maintenance Item | Condition | | | | Comment |
| | Good | Marginal | Poor | N/A* | |
| Comment on overall condition of stormwater pond. | | | | | |
| Vegetation within and around practice is maintained per landscaping plan. Grass clippings are removed. | | | | | |
| No significant sediment accumulation within the practice. | | | | | |
| No evidence of use of fertilizer on plants (fertilizer crusting on the surface of the soil, tips of leaves turning brown or yellow, blackened roots, etc.). | | | | | |
| Plants seem to be healthy and in good condition. Comment on condition of plants. | | | | | |
| Emergency Overflow | | | | | |
| Emergency overflow is free of trash, debris, and sediment. | | | | | |
| No evidence of erosion, scour, flooding, or animal activity around the structure. | | | | | |
| No evidence of erosion, scour, or flooding around the structure. | | | | | |
| Outlet Structure | | | | | |
| Outlet structure is free of trash, debris, and sediment. | | | | | |
| No evidence of erosion, scour, or flooding around the structure. | | | | | |
| Outlet structure does not appear to be blocked. | | | | | |
| No evidence of animal activity. | | | | | |
| No evidence of seepage on the downstream face. | | | | | |
| Results | | | | | |
| Overall condition of Stormwater Pond: | | | | | |
| Additional Comments | | | | | |
| | | | | | |
| Notes: * If a specific maintenance item was not checked, please check N/A and explain why in the appropriate comment box. | | | | | |

Facility ID#: _____ Date of Inspection: _____

Facility Address: _____ Inspector: _____

| Proprietary System | | | | | |
|---|-----------|----------|------|------|---------|
| Maintenance Item | Condition | | | | Comment |
| | Good | Marginal | Poor | N/A* | |
| General Inspection | | | | | |
| Access to the site is adequately maintained for inspection and maintenance. | | | | | |
| Contributing drainage area is clean (trash, debris, grass clippings, etc. removed). | | | | | |
| Inlet and outlet pipes are clean; stormwater can enter and exit the practice without being blocked. | | | | | |
| Overflow structure is in good condition and clean. | | | | | |
| Maintenance is being performed according to manufacturer's guidelines. | | | | | |
| Maintenance is being performed according to the maintenance plan. | | | | | |
| Water is going through structure (i.e. no evidence of water going around the structure). | | | | | |
| Structure seems to be working properly. No settling around the structure. Comment on overall condition of structure. | | | | | |
| Results | | | | | |
| Overall condition of Proprietary System: | | | | | |
| Additional Comments | | | | | |
| | | | | | |
| <p>Notes: * If a specific maintenance item was not checked, please check N/A and explain why in the appropriate comment box.</p> | | | | | |

Pond ID#: _____

Date of Inspection: _____

Pond Address: _____

Inspector: _____

| Underground Detention | | | | | |
|---|-----------|----------|------|------|---------|
| Maintenance Item | Condition | | | | Comment |
| | Good | Marginal | Poor | N/A* | |
| General Inspection | | | | | |
| Access to the site is adequately maintained for inspection and maintenance. | | | | | |
| Area is clean (trash, debris, grass clippings, etc. removed). | | | | | |
| Inlet Structure and Pretreatment | | | | | |
| Drainage ways (overland flow or pipes) to the practice are free of trash, debris, large branches, etc. | | | | | |
| Inlet structure is in good condition. No signs of cracks or leaks. | | | | | |
| Diversion structure (high flow bypass structure or other) is free of trash, debris, or sediment. Comment on overall condition of diversion structure and list type. | | | | | |
| Inlet pipe fits tightly to the underground detention. | | | | | |
| Inlet has protection to prevent clogging with leaves or other debris and has fine mesh for mosquito control. | | | | | |
| Main Treatment | | | | | |
| Main treatment area is free of trash, debris, and sediment. | | | | | |
| Structure seems to be working properly. No signs of settling, leaking, or cracking. Comment on overall condition of structure. | | | | | |
| Emergency Overflow and Outlet Structure | | | | | |
| Area is free of trash, debris, and sediment. | | | | | |
| Overflow valve appears to be in good condition and show no signs of leaking. | | | | | |
| Results | | | | | |
| Overall condition of Underground Detention: | | | | | |
| Additional Comments | | | | | |
| | | | | | |
| <p>Notes: * If a specific maintenance item was not checked, please explain why in the appropriate comment box.</p> | | | | | |

City of Dunwoody - Stormwater Management Facility Inventory

| Asset ID Tag | Detention Facility Name | Detention Facility Type | Drainage Basin ID | Nearest Street Address | Ownership | Maintained By |
|------------------|--|-------------------------|-------------------------|--------------------------------|-----------|--|
| swD 4279-70-4001 | VILLAGE SPRINGS RUN DETENTION POND | ABOVE GROUND DRY POND | NORTH FORK NANCY CREEK | 1479 N SPRINGS DR | PUBLIC | CITY OF DUNWOODY |
| swD 4258-19-8702 | STERLING POINTE POND | UNDERGROUND | NORTH FORK NANCY CREEK | 4565 ASHFORD DUNWOODY RD | PRIVATE | HOTEL DEVELOPMENT PARTNERS |
| no ID | SHALLOWFORD SELF STORAGE | UNDERGROUND | NORTH FORK NANCY CREEK | 4444 N SHALLOWFORD RD | PRIVATE | SHALLOWFORD ROAD STORAGE, LLC |
| swD 5206-46-3235 | GEORGETOWN SQ SOUTH POND | UNDERGROUND | NORTH FORK NANCY CREEK | 4330 GEORGETOWN SQUARE | PRIVATE | MINERVA GEORGETOWN, LLC |
| swD 5206-58-2712 | GEORGETOWN SQ NORTH POND | UNDERGROUND | NORTH FORK NANCY CREEK | 4330 GEORGETOWN SQUARE | PRIVATE | MINERVA GEORGETOWN, LLC |
| swD 4350-50-7860 | SPRULL CENTER POND | UNDERGROUND | NORTH FORK NANCY CREEK | 4681 ASHFORD DUNWOODY RD | PRIVATE | HOTEL DEVELOPMENT PARTNERS |
| swD 5238-72-1878 | PERNOSHAL PARK DETENTION POND | UNDERGROUND | NANCY CREEK TRIBUTARY A | 4575 N SHALLOWFORD RD | PUBLIC | CITY OF DUNWOODY |
| swD 5247-01-6761 | ANNEX DETENTION POND | ABOVE GROUND DRY POND | NORTH FORK NANCY CREEK | 4470 N SHALLOWFORD RD | PUBLIC | CITY OF DUNWOODY |
| swD 5301-27-0116 | PINE ACRES DETENTION POND | ABOVE GROUND DRY POND | NANCY CREEK TRIBUTARY A | 4747 PINE ACRES CT | PUBLIC | CITY OF DUNWOODY |
| swD 5334-29-5812 | SHADOW GLEN DETENTION POND | ABOVE GROUND DRY POND | NANCY CREEK TRIBUTARY A | 5071 SHADOW GLEN CT | PUBLIC | CITY OF DUNWOODY |
| swD 5340-36-3426 | DUNWOODY TRACE POND | ABOVE GROUND DRY POND | NANCY CREEK TRIBUTARY A | 1997 BRIDLE PATH CT | PUBLIC | CITY OF DUNWOODY |
| swS 5321-42-1478 | HERITAGE AT DUNWOODY POND | ABOVE GROUND DRY POND | NANCY CREEK TRIBUTARY A | 4781 OLDE VILLAGE COVE | PRIVATE | HERITAGE AT DUNWOODY HOMEOWNER'S ASSOCIATION, INC. |
| swD 5344-66-9268 | BERMAN COMMONS POND | UNDERGROUND | NANCY CREEK TRIBUTARY A | 2026 WOMACK RD | PRIVATE | MARCUS JEWISH COMMUNITY CENTER OF ATLANTA |
| swD 5218-50-1866 | JFCS POND | ABOVE GROUND DRY POND | NANCY CREEK TRIBUTARY A | 4549 CHAMBLEE DUNWOODY RD | PRIVATE | JEWISH FAMILY AND CAREER SERVICES, INC. |
| swD 5361-56-5243 | BROOK RUN SKATE PARK POND | ABOVE GROUND DRY POND | NANCY CREEK TRIBUTARY A | 4770 N PEACHTREE RD | PUBLIC | CITY OF DUNWOODY |
| swD 5269-49-0598 | BROOK RUN PARK BARCLAY POND | ABOVE GROUND DRY POND | NANCY CREEK TRIBUTARY A | 4770 N PEACHTREE RD | PUBLIC | CITY OF DUNWOODY |
| swD 5335-24-5645 | VANDERLYN ES POND | ABOVE GROUND DRY POND | NANCY CREEK TRIBUTARY A | 1877 VANDERLYN DR | PRIVATE | DEKALB COUNTY SCHOOL DISTRICT |
| swD 4364-86-1436 | DUNWOODY LIBRARY POND | ABOVE GROUND DRY POND | NANCY CREEK TRIBUTARY A | 5339 CHAMBLEE DUNWOODY RD | PUBLIC | CITY OF DUNWOODY |
| swD 5360-52-7624 | PCMS POND NORTH | ABOVE GROUND DRY POND | NANCY CREEK TRIBUTARY A | 4664 N PEACHTREE RD | PUBLIC | CITY OF DUNWOODY |
| swD 5360-52-8417 | PCMS POND SOUTH | ABOVE GROUND DRY POND | NANCY CREEK TRIBUTARY A | 4664 N PEACHTREE RD | PRIVATE | DEKALB BOARD OF EDUCATION |
| swD 5353-03-4679 | GEORGIA PERIMETER PARKING DECK POND | ABOVE GROUND DRY POND | NANCY CREEK TRIBUTARY A | 2137 WOMACK RD | PRIVATE | GEORGIA PERIMETER COLLEGE |
| swD 5343-47-0738 | GEORGIA PERIMETER FIELDS POND | ABOVE GROUND DRY POND | NANCY CREEK TRIBUTARY A | 2137 WOMACK RD | PRIVATE | GEORGIA PERIMETER COLLEGE |
| swD 5353-52-2965 | GEORGIA PERIMETER SOUTH POND | ABOVE GROUND DRY POND | NANCY CREEK TRIBUTARY A | 2137 WOMACK RD | PRIVATE | GEORGIA PERIMETER COLLEGE |
| swD 5363-12-7360 | GEORGIA PERIMETER EAST LOT POND | ABOVE GROUND DRY POND | NANCY CREEK TRIBUTARY A | 2137 WOMACK RD | PRIVATE | GEORGIA PERIMETER COLLEGE |
| swD 5314-47-4041 | DHS POND | ABOVE GROUND DRY POND | NANCY CREEK TRIBUTARY A | 1877 VANDERLYN DR | PRIVATE | DEKALB COUNTY SCHOOL DISTRICT |
| swD 5258-29-1081 | PEACHFORD HOSPITAL DETENTION POND | UNDERGROUND | NANCY CREEK TRIBUTARY A | 2151 PEACHFORD RD | PRIVATE | UHS OF PEACHFORD, LLC |
| swD 5330-82-5054 | HUNTINGTON HALL CT POND | UNDERGROUND | NANCY CREEK TRIBUTARY A | 1965 HUNTINGTON HALL CT | PUBLIC | CITY OF DUNWOODY |
| swS 5347-22-6171 | MEADOWLAKES ESTATES | ABOVE GROUND DRY POND | NANCY CREEK TRIBUTARY A | 5165 LAKESPRINGS DR | PRIVATE | MEADOWLAKE ESTATES HOA |
| swD 5227-59-9165 | DUNWOODY GREEN POND | ABOVE GROUND DRY POND | NANCY CREEK TRIBUTARY A | 4000 DUNWOODY PARK | PUBLIC | CITY OF DUNWOODY |
| swD 5381-37-3758 | TILLY MILL ASSISTED LIVING POND | ABOVE GROUND DRY POND | NANCY CREEK #1 | 4954 TILLY MILL RD | PUBLIC | CITY OF DUNWOODY |
| swD 5387-55-4102 | 5142 BROOKE FARM DETENTION POND | ABOVE GROUND DRY POND | CHATTAHOOCHEE | 5142 BROOKE FARM DR | PUBLIC | CITY OF DUNWOODY |
| swD 5387-12-0809 | 5176 BROOKE FARM DETENTION POND | ABOVE GROUND DRY POND | CHATTAHOOCHEE | 5176 BROOKE FARM DR | PUBLIC | CITY OF DUNWOODY |
| swS 6329-71-7280 | WHITNEY LANDING DETENTION POND | ABOVE GROUND DRY POND | CHATTAHOOCHEE | 4880 DUNWOODY CLUB DR | PRIVATE | WHITNEY LANDING HOMEOWNERS ASSOCIATION, INC. |
| swS 6304-28-5091 | ENCLAVE AT HAPPY HOLLOW POND | ABOVE GROUND DRY POND | CHATTAHOOCHEE | 4974 HAPPY HOLLOW RD | PRIVATE | "OWNER OF LOT 6" - 4974 HAPPY HOLLOW RD |
| swD 6344-61-0615 | AUTOZONE DETENTION POND | ABOVE GROUND DRY POND | CROOKED CREEK | 4885 GLAZE DR | PRIVATE | AUTOZONE, INC. |
| swD 6323-95-1302 | WINDWOOD HOLLOW PARK POND | ABOVE GROUND DRY POND | CROOKED CREEK | 4865 LAKESIDE DR | PUBLIC | CITY OF DUNWOODY |
| swD 6328-17-8659 | WOODALL PRESERVE POND | ABOVE GROUND DRY POND | CROOKED CREEK | 5325 HAPPY HOLLOW RD | PRIVATE | WOODALL PRESERVE COMMUNITY ASSOCIATION |
| no ID | 6900 PEACHTREE INDUSTRIAL POND | UNDERGROUND | NANCY CREEK #2 | 6900 PEACHTREE INDUSTRIAL BLVD | PRIVATE | WHITE SKY DEVELOPMENT |
| swD 6310-52-4067 | EAST MADISON POND | ABOVE GROUND DRY POND | NANCY CREEK #2 | 2562 E MADISON DR | PRIVATE | DEKALB COUNTY |
| swD 6310-43-3477 | BRIERS NORTH DETENTION POND | ABOVE GROUND DRY POND | NANCY CREEK #2 | 2567 BRIERS NORTH DR | PUBLIC | CITY OF DUNWOODY |
| swD 4349-57-7116 | DUNWOODY KNOLL DETENTION POND | ABOVE GROUND DRY POND | BALL MILL CREEK | 1234 DUNWOODY KNOLL DR | PUBLIC | CITY OF DUNWOODY |
| swD 4442-42-5856 | 1200 CORONATION DR DETENTION POND | ABOVE GROUND DRY POND | BALL MILL CREEK | 1200 CORONATION DR | PUBLIC | CITY OF DUNWOODY |
| swD 4482-40-8264 | WITHMERE WAY POND | ABOVE GROUND DRY POND | BALL MILL CREEK | 1644 WITHMERE WAY | PUBLIC | CITY OF DUNWOODY |
| swD 5338-36-6571 | LYTHAM CT DETENTION POND | ABOVE GROUND DRY POND | BALL MILL CREEK | 1960 LYTHAM CT | PUBLIC | CITY OF DUNWOODY |
| swD 5339-37-8160 | 4495 OXFORD CHASE POND | ABOVE GROUND DRY POND | BALL MILL CREEK | 5376 OXFORD CHASE WAY | PUBLIC | CITY OF DUNWOODY |
| swD 5430-44-0167 | 5376 OXFORD CHASE POND | ABOVE GROUND DRY POND | BALL MILL CREEK | 5499 OXFORD CHASE WAY | PUBLIC | CITY OF DUNWOODY |
| swD 4443-38-5841 | 5697 WHITEHALL WALK DETENTION POND | ABOVE GROUND DRY POND | BALL MILL CREEK | 5697 WHITEHALL WALK | PUBLIC | CITY OF DUNWOODY |
| swD 4433-86-3115 | 1167 WHITEHALL POINTE DETENTION POND | ABOVE GROUND DRY POND | BALL MILL CREEK | 1167 WHITEHALL POINTE | PUBLIC | CITY OF DUNWOODY |
| swS 4366-39-8156 | DUNWOODY VILLAGE TOWNHOMES WQD 1 | PROPRIETARY DEVICE | BALL MILL CREEK | 1530 DUNWOODY VILLAGE PARKWAY | PRIVATE | LENNAR GEORGIA, INC. |
| swS 4366-83-8633 | DUNWOODY VILLAGE TOWNHOMES WQD 2 | PROPRIETARY DEVICE | BALL MILL CREEK | 1530 DUNWOODY VILLAGE PARKWAY | PRIVATE | LENNAR GEORGIA, INC. |
| swD 4367-14-3849 | CENTER DRIVE POND | ABOVE GROUND DRY POND | BALL MILL CREEK | 1380 DUNWOODY VILLAGE PKWY | PUBLIC | CITY OF DUNWOODY |
| swD 4368-17-2673 | 5290 WYNTERCREEK DR POND | ABOVE GROUND WET POND | BALL MILL CREEK | 5290 WYNTERCREEK DR | PUBLIC | CITY OF DUNWOODY |
| swD 5450-82-8671 | JP MORGAN MT VERNON NORTH CMP POND | UNDERGROUND | BALL MILL CREEK | 2526 MOUNT VERNON RD | PRIVATE | JP MORGAN CHASE BANK |
| swD 5450-91-6835 | JP MORGAN MT VERNON SOUTH STORMTECH POND | UNDERGROUND | BALL MILL CREEK | 2526 MOUNT VERNON RD | PRIVATE | JP MORGAN CHASE BANK |
| swD 4387-94-6974 | WELLINGTON PLACE POND | ABOVE GROUND DRY POND | BALL MILL CREEK | 5185 WELLSHIRE PL | PRIVATE | DEKALB COUNTY |
| swD 4369-03-4927 | DUNWOODY NATURE CENTER RETENTION POND | ABOVE GROUND WET POND | BALL MILL CREEK | 5321 ROBERTS DR | PUBLIC | CITY OF DUNWOODY |
| swD 4369-10-3675 | AUSTIN ELEMENTARY DETENTION POND | UNDERGROUND | BALL MILL CREEK | 5321 ROBERTS DR | PRIVATE | DEKALB COUNTY BOARD OF EDUCATION |
| swD 4450-38-3156 | AUSTIN ELEMENTARY (old site) | ABOVE GROUND DRY POND | BALL MILL CREEK | 5435 ROBERTS DR | PUBLIC | CITY OF DUNWOODY |

| | | | | | | |
|------------------|---|-----------------------|-------------------------|------------------------------|---------|--|
| swD 4328-01-3628 | 1006 REDFIELD TERR POND | ABOVE GROUND DRY POND | MARSH CREEK | 1006 REDFIELD TER | PUBLIC | CITY OF DUNWOODY |
| swD 4318-89-2931 | 5330 REDFIELD DR POND | ABOVE GROUND DRY POND | MARSH CREEK | 5330 REDFIELD DR | PUBLIC | CITY OF DUNWOODY |
| no ID | TWELVE24 PERIMETER PLAZA STORMTECH POND | UNDERGROUND | PERIMETER CREEK | 1224 HAMMOND DR | PRIVATE | TWELVE24 OFFICES, LLC |
| swD 4321-36-5722 | RIDGEVIEW FALLS POND | ABOVE GROUND DRY POND | PERIMETER CREEK | 1067 MANOAH CT | PRIVATE | RIDGEVIEW FALLS POINT HOMEOWNERS ASSOCIATION, INC. |
| swS 4236-32-8726 | CHICK-FIL-A AT HAMMOND WQD 1 - WEST | PROPRIETARY DEVICE | PERIMETER CREEK | 4350 ASHFORD DUNWOODY RD | PRIVATE | CHICK-FIL-A, INC. |
| swS 4236-62-5813 | CHICK-FIL-A AT HAMMOND WQD 2 - EAST | PROPRIETARY DEVICE | PERIMETER CREEK | 4350 ASHFORD DUNWOODY RD | PRIVATE | CHICK-FIL-A, INC. |
| swD 4225-79-3438 | STATE FARM PHASE 1 EAST POND | UNDERGROUND | PERIMETER CREEK | 236 PERIMETER CENTER PKWY NE | PRIVATE | STATE FARM |
| swD 4226-41-7176 | STATE FARM PHASE 1 NORTH POND | UNDERGROUND | PERIMETER CREEK | 236 PERIMETER CENTER PKWY NE | PRIVATE | STATE FARM |
| swS 4225-78-4073 | STATE FARM PHASE 1 CISTERN | CISTERN | PERIMETER CREEK | 236 PERIMETER CENTER PKWY NE | PRIVATE | STATE FARM |
| no ID | PRADO DEVELOPMENT POND A | UNDERGROUND | PERIMETER CREEK | 121 PERIMETER CENTER W | PRIVATE | PRADO PERIMETER CENTER LLC |
| no ID | PRADO DEVELOPMENT POND B | UNDERGROUND | PERIMETER CREEK | 121 PERIMETER CENTER W | PRIVATE | PRADO PERIMETER CENTER LLC |
| swS 4331-22-8206 | GRAMERCY TOWNHOMES POND | ABOVE GROUND DRY POND | PERIMETER CREEK | 1100 ASHWOOD PARKWAY | PRIVATE | THE GRAMERCY CONDOMINIUM ASSOCIATION, INC. |
| swD 4341-28-9705 | CITY HALL POND | ABOVE GROUND DRY POND | PERIMETER CREEK | 4800 ASHFORD DUNWOODY RD | PUBLIC | CITY OF DUNWOODY |
| swS 4277-22-7110 | TOWNSEND AT PERIMETER POND | UNDERGROUND | PERIMETER CREEK | 54 PERIMETER CTR E | PRIVATE | TAYLOR MORRISON OF GEORGIA, LLC |
| (no ID) | SAINT BARNABAS POND | ABOVE GROUND DRY POND | NANCY CREEK #1 | 4795 NORTH PEACHTREE RD | PRIVATE | SAINT BARNABAS ANGLICAN CHURCH |
| (no ID) | KMC TILLY MILL POND | ABOVE GROUND DRY POND | CHATTAHOOCHEE | 4991 NORTH PEACHTREE RD | PUBLIC | CITY OF DUNWOODY |
| (no ID) | PERIMETER MARKETPLACE POND | UNDERGROUND | PERIMETER CREEK | 600 ASHWOOD PKWY | PRIVATE | BRANCH ASHWOOD ASSOCIATES |
| (no ID) | QUIKTRIP STORE 1717 | PROPRIETARY DEVICE | PERIMETER CREEK | 600 ASHWOOD PKWY | PRIVATE | SCG BR PERIMETER MARKETPLACE LP |
| (no ID) | ENCLAVE AT DUNWOODY POND | ABOVE GROUND DRY POND | NANCY CREEK TRIBUTARY A | 4529 CAROLINE WALK | PRIVATE | JWC DUNWOODY PARK LLC |

MS4 Inspections and Dry Weather Screenings Proposal Submittal for

Dunwoody, Georgia



2023 - 2027 MS4 Inspections and Dry Weather Screenings

RFQ # 23-06

September 21, 2023

Submitted by

TerraMark Geospatial

1396 Bells Ferry Rd

Marietta, GA 30066-6084

Voice: 770-421-1927 Fax: 770-421-0552

www.TerraMark.com



PROVIDING GEOSPATIAL SERVICES SINCE 2003





September 21, 2023

Mr. John Gates, Purchasing Manager
 City of Dunwoody
 4800 Ashford Dunwoody Road
 Dunwoody, Georgia 30338-4897

Re: Request for Proposals RFP 2023-06 “2023-2027 MS4 Inspections and Dry Weather Screenings”

Mr. Gates:

TerraMark Geospatial is pleased to submit our qualifications for the City of Dunwoody’s RFP 2023-06 “2023 - 2027 MS4 Inspections and Dry Weather Screenings.” We believe that upon the City’s review of our enclosed information, you will realize the **TerraMark** team is well suited to provide the services requested. It is our intent to continue to serve both the City and its constituents competently and to deliver surveying, mapping, and geospatial services that exceed your expectations.

Our office, located in Marietta, serves clients throughout the State of Georgia, as well as the southeastern United States. The City’s project will be managed and staffed from this office. Our clientele includes federal, state, and local government entities as well as private sector corporations. **TerraMark**’s registered professional staff includes seven (7) land surveyors, two (2) certified GIS professionals, two (2) FAA registered UAV pilots, and two (2) MS4 Certified Enforcement and Compliance Inspectors with a cumulative experience exceeding 180 years in the required service categories. The City of Dunwoody’s surveying, mapping, and GIS needs are very similar in nature to many of our successfully completed north Georgia projects. In fact, **TerraMark** has been performing various surveying and mapping tasks for the City of Dunwoody since the City’s inception in December, 2008. We performed the first MS4 inventory and inspection in 2010 and have been retained by the City since for both inventory, inspections, and outfall dry weather screening since the initial inspections. We have also provided services to the City for several projects, including Dunwoody Village Parkway, Brook Run Park, and Project Renaissance.

Key staff members that will be assigned to your project include Paul Cannon, RLS, Joshua Wilson, RLS, John Blount RLS, Wendell Hand, GISP, and Kevin Hardy GISP / RLS. The project will be managed by Mr. Hand, **TerraMark**’s GIS Manager, who has many years of experience with various types of surveying and mapping projects, including water, sewer, and stormwater inventory collection endeavors. He will be supported by Mr. Hardy, who will act as our assistant project manager. I, Paul Cannon, RLS am our President / Principal-in-Charge, who will ensure the necessary corporate resources are available for the duration of the project. Mr. John Blount, RLS will head our Quality Assurance and Quality Control efforts. We will be assisted by the appropriate field and office staff to ensure the timely completion of your job.

In conclusion, we believe the **TerraMark** team offers an exceptionally well qualified group of surveying, engineering, mapping, and geospatial professionals coupled with the necessary and dedicated resources to complete the City’s project. We have a sincere desire to service the City and want to thank you for this opportunity. We look forward to your review of our qualifications and the opportunity to continue to provide these services.

Sincerely,

Paul Cannon, RLS
 President



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A. PROPOSAL FORM

A. Completed Proposal Form A-1



1. PROJECT UNDERSTANDING AND APPROACH

1.1 Project Understanding and Approach

RFP Section 4.1.1: Project Understanding and Approach: Describe the consultant's understanding of the proposed project as described in the Request for Proposals. Demonstrate an understanding of the magnitude of the task, the constraints, and the desired outcome for the project.

The **TerraMark** team recognizes the success of this MS4 Inspections and Dry Weather Screenings project relies on having the right people, properly equipped and competently managed, dedicated to your work. We take pride on being able to offer the City of Dunwoody (City) such a team that will efficiently and effectively complete your project. This opportunity provides us with another chance to showcase our expertise. In updating the City's MS4 dataset and supporting documents, you will have information that will facilitate maintenance and expansion of the system within the City. Completion of this project will provide the City with information vital for the following programs:

- Renew a National Pollutant Discharge Elimination System (NPDES) permit
- Develop a Stormwater Management Program in accordance with Municipal Storm Sewer System (MS4)
- Achieve compliance with the Metropolitan North Georgia Water Planning District's Watershed Management Plan, Wastewater Management Plan, and Water Supply and Conservation Plan
- Comply with the requirements outlined by the Governmental Accounting Standards Board (GASB)
- Identify MS4 assets requiring maintenance, repair, or replacement
- Develop a capital improvements plan for the stormwater utility

TerraMark has been the prime consultant for the City's MS4 Inventory and Inspection program since its inception in 2010, completing the following phases:

- 2008 (GIS Consulting)
- 2009 (Cadastral Mapping)
- 2013 - 2017 (MS4 Inspections)
- 2018 - 2022 (MS4 Inspections / Dry Weather Outfall Screenings)

Additionally, **TerraMark** also supports the City through numerous survey projects to aid the City with a variety of capital improvement projects.

The project team comprised of City Stormwater and GIS staff united with **TerraMark's** personnel and resources has yielded excellent results for the past twelve (12) years. We are fully prepared to continue to deliver updated Inventory and Inspection data with support as outlined further within our proposal. Our team is **fully intact** from the previous efforts and remains dedicating to providing the City with the level of service Dunwoody expects. **TerraMark** knows the City, its infrastructure and staff fully, allowing us to start immediately without requiring a "learning curve." We have stayed up-to-date with current technologies and have some exciting new resources which may employed for this project.

We perform a series of tasks with the following objectives:

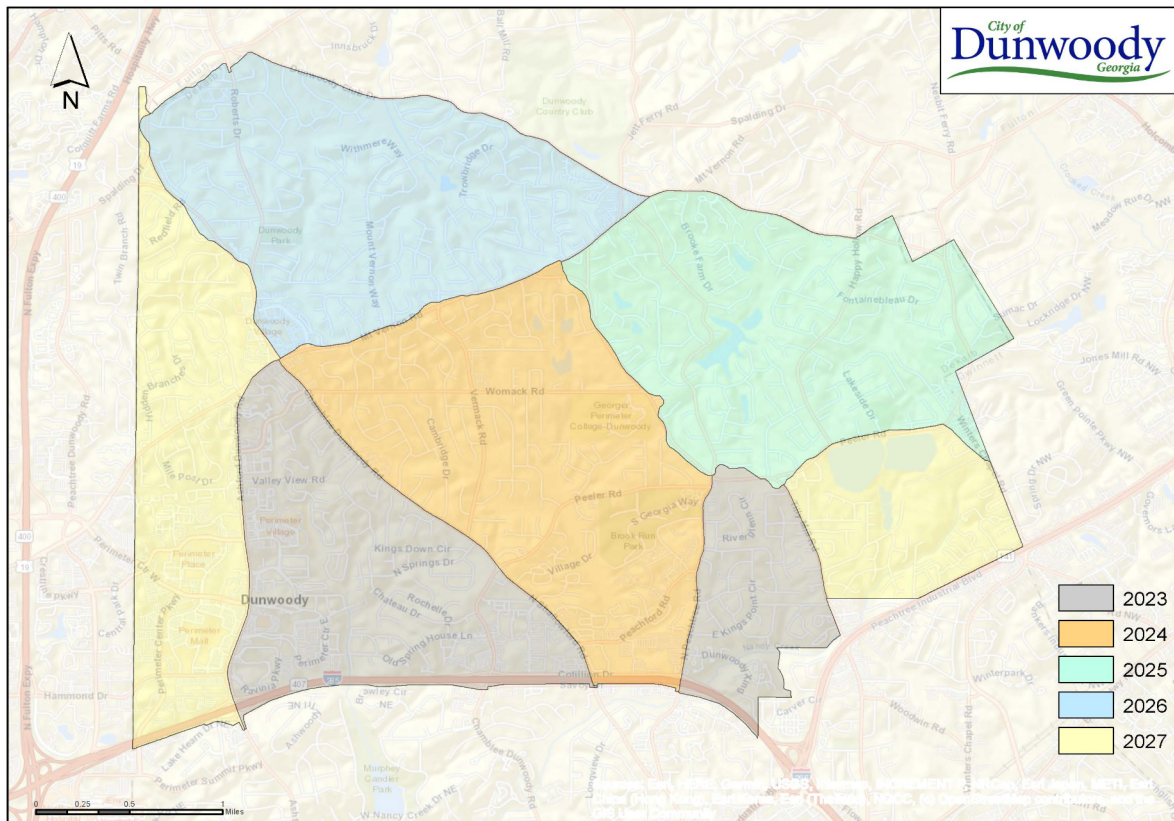
- Enhance the geodatabase using the City's new inspection criteria.
- Update and amend the database with the information on the system's current condition allowing the City to prioritize short and long term maintenance projects.
- Perform GPS updates on structures and
- Add elevations and inverts per the City's specifications. Elevation data will be recorded at the top of each structure. Drop-down depths for each conveyance will be recorded from the top of each structure. The corrected elevation shall be provided for the invert at the upstream and downstream of each conveyance.

1. PROJECT UNDERSTANDING AND APPROACH

1.1 Project Understanding and Approach

- Conduct dry weather outfall screenings when conditions are applicable (72 hours without rainfall).
- Conduct a visual inspection of both public and private infrastructure components to determine both the system’s condition and serviceability (presence of obstructions).
- Obtain digital photographs of structures both inside and outside where access is not limited and safely feasible. Images shall be provided in JPG format.
- Obtain digital video of underground conveyances where access is not limited and safely feasible. Videos shall be provided in MS4 format.
- Obtain digital photographs of above ground conveyances where access is not limited and safely feasible. Images shall be provided in JPG format.
- Determine ownership and approximate age (date of construction) for man-made structures and conveyances based upon the City’s existing database, recorded plats and record drawings where available.
- Update the City’s GIS geodatabase in as direct a manner as possible. Options to be discussed with the City prior to beginning the project.
- Prepare summary reports, various maps and other documentation as required by the City.

Each annual phase will be performed as depicted on the “2023 - 2027 MS4 Inspection Areas” map as provided by the City.



Our immediate goal will be the completion of the 2023 area within the stated time constraints. A detailed five (5) year schedule is presented in Section 3, “Schedule” of this proposal.

2. SCOPE OF WORK

2.1 General Scope of Service

RFP Section 4.1.2: Scope of Work: Include sufficient detail to determine how each task shall be accomplished. The work plan will describe how the consultant proposes to complete the project. The work plan must be sufficiently determine the effectiveness of the proposal and should spell out how this work can be performed in a cost-effective manner.

The City's Scope of Services as stated in the RFP are designed to:

- Ensure compliance with federal, state, regional, and local ordinances
- Eliminate pollutants from discharging into state waters
- Reduce the impact of flooding
- Assist officials to fund, manage, and operate the City's stormwater utility

During the program's initial phase (2010 - 2011) **TerraMark** assisted the City in developing its "first generation" MS4 Inventory and Inspection data set. Once again, "during the 2013 - 2017 reporting period, all public & privately owned outfalls, ponds, Green Infrastructure/Low Impact Development (GI/LID) structures, and storm drain infrastructures (inlets, outlets, conveyances, etc.) were surveyed, inventoried, and assessed for structural integrity"¹ by **TerraMark**, resulting in an improved and more robust "second generation" data set. These enhancements are the product of the combined efforts of the dedicated professionals from both the City and **TerraMark**.

During the 2018 - 2022 reporting period, the scope was reduced to only public structures. In addition, **TerraMark** worked with the City of Dunwoody to upload inspection reports directly to the City's GIS server. This allowed the City to examine results in a near real time schedule.

The opportunity is now before the existing team, who have built a good, long-term relationship, to jointly develop the "third generation" database. **TerraMark** has read and understands the strategy continues to be the inventory and inspection of stormwater assets, both public and private, and is prepared to comply with these requirements.

2.2 Scope of Service Tasks

RFP Section 2.2: The following list of tasks is provided to express the intent of the Scope of Service and is not provided to be all inclusive.

The **TerraMark** team proposed to provide the services detailed in Section 2.3 in compliance with the City's stated goals and objectives of RFP 23-06.

2.3 Drainage System Inventory

RFP Section 2.3.1: Since the City has completed mapping its inventory, the purpose of this assessment is to update and amend the database with information on the structure's current condition allowing the City to prioritize short & long-term maintenance projects

The City has established **this assessment** shall be "based on current GIS data, this includes 169 outfalls, 77 ponds (33 City-owned and 44 Private) ponds, 2,313 catch basins, 3,114 structures, and 68 miles of conveyances (channels and pipes)"² which will allow **TerraMark** to improve our previous Dunwoody work flow process with the use of:

- Single consultant "point of contact" for all MS4 inventory, inspection, and monitoring activities.
- More closely coordinated and integrated data between all MS4 subject matter.
- New, survey-grade GPS (Trimble R10) providing better than 0.1-foot accuracy.
- New data collector units (Trimble Juno 5D) providing better collection and camera capabilities.
- Enhanced processing routines.
- Inspection data to be revised / updated in a "direct manner" agreeable to both **TerraMark** and the City.
- High-definition video imagery of underground closed conveyances.
- Optional use of SfM (Structure from Motion) or "PhoDAR" technology for enhanced inspection of detention ponds.

¹ City of Dunwoody, Public Works Department - Stormwater Division. "Request for Proposals RFP 23-06 2023-2027 MS4 Inspections & Dry Weather Screening." *Request for Proposals RFP 23-06 MS4 Inspections & Dry Weather Screening*, City of Dunwoody, 2023 p. 6

² Ibid.

2. SCOPE OF WORK

2.3 Drainage System Inventory (cont'd)

RFP Section 2.3.2: GPS updates will be required only in instances where data on the structure was not successfully obtained in the original survey or if the drainage system was modified by a recent maintenance project. In these instances, structures and conveyances will be located, including the structural data (ex. structure type, size, dimensions), X,Y, Z coordinates, and any other information to one (1) foot accuracy. Review, update, and correct the data to acceptable accuracy requirements.



TerraMark will perform GPS updates as required by the RFP. We have two (2) Trimble R10 Integrated GNSS Systems, which can be used for this task. The R10 combines the GNSS receiver, antenna, radio, and battery into a single, compact unit that is lightweight, rugged, and cable-free, providing our crews with the ability to capture data with a precision of eight (8) mm (0.03 feet) horizontally and 15 mm (0.05 feet) vertically in a real time kinematic mode. Additionally, we have four (4) R12 GNSS units, totaling out at six (6) units available, if necessary.

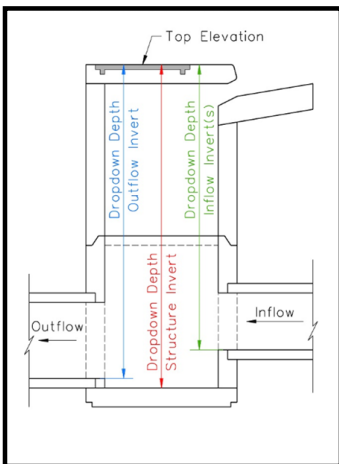


We subscribe to the Trimble RTK network covering Georgia with multiple Continuously Operating Reference Stations (CORS) accessing both GPS and Glonass satellite signals. **TerraMark** employs Trimble's office software which provides us with the ability to access predictive satellite visibility as well as cumulative dilution of precision. Field data is collected using standards and procedures comparable with Federal Geodetic Data Committee. Field data is then post processed using Trimble Business Center software (TBC) version 3.82. All adjustments are performed for maximum adjusted relative positional accuracy.

RFP Section 2.3.3: Elevation data will be recorded at the top of each structure. Drop-down depths for each conveyance will be recorded from the top of each structure. The corrected elevation must be provided for the invert at the upstream and downstream of each conveyance.



TerraMark will use a combination of equipment and techniques to complete the elevation / invert portion of the project. First, a structure's top elevation will be determined using **GPS**. After the top elevation has been captured, drop-down depths will be measured as indicate. Our primary tool used to obtain drop-down dimensions is waterproof, ruggedized Leica Disto E7400x laser distance meter. Occasionally, circumstances may dictate the use of alternative measuring devices including tape measures and / or level rods. All dimensions shall use the US Survey Foot as the standard of measurement. All elevation shall be indexed to the North American Vertical Datum of 1988 (NAVD88).



- Structure Top Elevation: The top elevation will be stored in the Structures feature class.
- Structure Invert Elevation: A drop-down measurement will be taken from the structure top to the structure bottom and stored as “structure depth” in the Structures feature class. The Structure Invert Elevation will be calculated by subtracting the “structure depth” from the top elevation and also stored in the Structures feature class.
- Conveyance Upstream Elevation: A drop-down measurement will be taken from the structure top to the outflow invert and stored as “upstream depth” in the Conveyances feature class. The Conveyance Upstream Elevation will be calculated by subtracting the “upstream depth” from the top elevation and also stored in the Conveyances feature class.
- Conveyance Downstream Elevation: A drop-down measurement will be taken from the structure top to the inflow invert and stored as “downstream depth” in the Conveyances feature class. The Conveyance Downstream Elevation will be calculated by subtracting the “downstream depth” from the top elevation and also stored in the Conveyances feature class.

2. SCOPE OF WORK

2.3 Drainage System Inventory (cont'd)

RFP Section 2.3.4: The entire outfall & structural inventory within one (1) stream basin, at minimum must be inspected each year. The applicant must consider the limited amount of time to complete this goal in 2023 and plan accordingly.

TerraMark anticipates adhering to the City’s proposed schedule for both MS4 Inspection Areas and Outfall Inspection Areas.

- 2023: Nancy Creek #1 and North Fork Nancy Creek
- 2024: Nancy Creek Tributary A
- 2025: Chattahoochee and Crooked Creek
- 2026: Ball Mill Creek
- 2027: Marsh Creek, Nancy Creek #2, and Perimeter Creek

There are two (2) primary conditions to consider when devising a schedule: tree canopy as it affects GPS data acquisition and weather conditions pertaining to the dry weather screening efforts. These circumstances and their impact are discussed in *Section 3, “Schedule”* where we will present our detailed schedule for the 2023 - 2027 program.

RFP Section 2.3.5: Weekly reports shall be provided by the service contractor showing all progress and an updated schedule for completion. This report shall be submitted no longer than Thursday for the previous week’s work.

Our team will provide a weekly status report, which includes the following:

- Map illustrating completed areas and areas in progress
- Report of structures / conveyances requiring immediate attention
- Updated schedule for completion
- Issues / action items requiring the project team’s attention

This report shall be submitted by the following Thursday for the previous week’s work during those periods when **TerraMark** is actively working on the project.

RFP Section 2.3.6: The service contractor will conduct dry weather outfall screenings when conditions are applicable (72 hours without rainfall). At a minimum, the contractor should inspect 20% of the outfalls by the end of the year. If dry weather flow is detected, the service contractor will conduct general water quality samples (temperature, pH, conductivity, etc.) and identify the source of the flow. If the source of the dry weather flow is a potential illicit discharge or illegal connection, the contractor will contact the City for further instructions. A list of all outfalls with dry weather flow and a summary of the outcome is to be provided with the weekly report.



TerraMark is ready to continue to provide outfall dry weather screening services to the City, having done so for the 2018 - 2022 project. For that project, we developed a digital version of the EPD “Dry Weather Outfall Screening Form” (RFP page 28) with pick lists to ensure all observations were recorded in a consistent format.

This data was provided to the City in individual completed PDF forms as well as an esri geodatabase feature class allowing the City to analyze and map outfalls based upon any combination of field observations, measurements, and water quality samples recorded.

TerraMark is ready to resume these duties as described in the City’s “IDDE Plan - Dry Weather Screening Procedure” following the appropriate EPD and City-approved procedures.

Our dry weather screening team consists of the same two (2) MS4 Certified Enforcement and Compliance Inspectors from the 2017 - 2022 project. Each outfall shall be inspected for flow. When a dry weather flow is detected, we shall perform the following:

- **Field Observation and Measurements:** Site descriptions and qualitative observations of physical conditions of the outfalls and flow, as well as measurement of several site water quality parameters.

2. SCOPE OF WORK

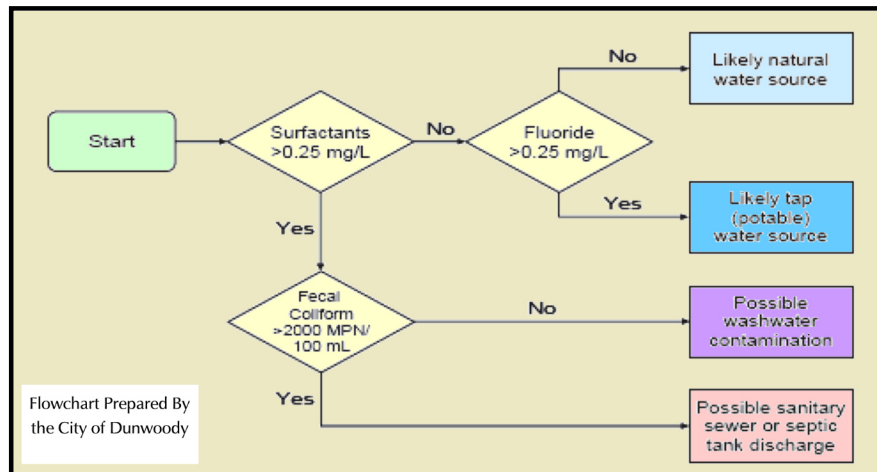
2.3 Drainage System Inventory (cont'd)

- Water Quality Sampling: Collection of water quality samples for field or laboratory analysis when indicated by field observations and measurements.

Our dry weather screening team is prepared with and trained in the use of the following equipment:

- Trimble Juno 5D data collectors and Samsung Galaxy S2 tablets containing:
 - Digital copy of the “City of Dunwoody, Georgia BMP C-3 IDDE Plan – Dry Weather Screening Procedure” for reference
 - Digital field maps
 - Digital data collection forms
 - GPS receiver
- Extech ExStick III thermometer
- Extech ExStick III pH meter
- Extech ExStick III conductivity meter
- Chemets K9400 Surfactants test kit
- Hanna Fluoride LR test kit
- Sample bottles with labels
- Sealed, sterile sample bottles with labels
- Grab water sampler
- Distilled water for washing probes
- Sealed “reagent waste / sample discard” container
- Safety equipment and first aid kit

Field equipment shall be calibrated per the manufacturer's recommendation at **TerraMark** offices each day prior to leaving for outfall / sampling sites. Grab samples shall be obtained when field sampling proves to be inconclusive or samples require laboratory analysis. Grab sample handling shall follow the procedures specified in *Section 3.3.2.4 Grab Sample Handling “City of Dunwoody, Georgia BMP C-3 IDDE Plan - Dry Weather Screening Procedure.”* Samples shall be accompanied by completed COC forms. Upon completion of field observations and measurements, each outfall shall be ranked for potential illicit discharge using the following flowchart as a guide. **TerraMark** shall include outfall Dry Weather Screening reports in each weekly report to the City. Situations that pose a health threat shall be immediately conveyed to the City’s Stormwater Manager. As with previous projects, any outfall exceeding the conductivity or pH ranges, **TerraMark** will notify the City for further testing.



2. SCOPE OF WORK

2.3 Drainage System Inventory (cont'd)

RFP Section 2.3.7: For structural inspections, a visual assessment, along with photos, is required to determine if the system is in serviceable condition. At a minimum, the contractor must inspect 20% of all structures by the end of each year. A scoring matrix will be used to assess each conveyance and each structure. It is based on criteria such as sediment/debris obstruction, stability (ex. invert failure, cracks, and collapse).

In order to simplify data collection and provide uniform, standardized results, **TerraMark** utilizes data collection “templates” when performing utility asset inventory work. These templates are installed on every data collector, laptop, or workstation associated with the project. This allows both field personnel and office staff to work with a common software platform. After the spatial location has been verified, our field staff opens up the appropriate template and begins to record the required attributes of the asset.

Each screen shall be tailored specifically for that type of asset. The customization of these templates will be dependent upon the City’s geodatabase and data dictionary. Input screens are supplemented with pick lists for common attributes such as material type (concrete, brick, etc.) or pipe size (8-inch, 12-inch, 18-inch, etc.). The use of pick lists ensures uniformity across the entire database structure.

Additionally, once the field person begins a record, certain field flagged as mandatory, requiring a valid input before continuing. On the fly checking of inputs reduces the risk of error and lowers the chance of having to revisit a structure because data was either omitted or entered in error during the initial visit. Finally, the data collector is programmed to ensure that the operator can not begin a new point before completing the record for the asset currently being inventoried. Information stored in the data collectors is uploaded to our central server at the end of each work day. The data is then processed by a GIS stormwater specialist using standard procedures and checklists to ensure a uniform product. Completed data is reviewed by a senior staff member to ensure the logic of the network and attributes as well as verifying that data collection and processing meets or exceeds the project specifications.

RFP Section 2.3.8: Service contractor will inspect 100% of all inventoried GI/LID and stormwater management structures (stormwater ponds, bioretention areas, permeable pavement, infiltration trenches, etc.) owned and operated by the City by December 31, 2027. At a minimum, the contractor must inspect 20% of all GI/LID structures by the end of each year. Full details on inspection forms can be found in the *Operations & Maintenance Guidance Document* of the Georgia Stormwater Management Model (GSMM).

TerraMark shall inspect all **inventoried, City-owned and operated** Green Infrastructure / Low Impact Development (GI / LID) stormwater assets as part of this project. These inspections shall be conducted basin-by-basin, simultaneously with stormwater and outfall infrastructure. Due to the diverse types of GI / LID assets that may be encountered and the wide variety of potential inspection topics listed in the cited *Operations & Maintenance Guidance Document* of the Georgia Stormwater Management Manual (GSMM), the City and **TerraMark** shall jointly develop the topics for inspection (structural issues, ponding, vegetation, erosion, etc.) to be included in the geodatabase (potential map feature classes, map features, and attributes).

RFP Section 2.3.9: Submit the data in electronic format compatible with the City of Dunwoody Geographic Information System (GIS). Our stormwater data is in an ArcGIS for Server enterprise geodatabase. Our preference is to have inspections performed on that data in as direct a manner as possible, preferably through feature services or within a replicated environment. Other comparable approaches may be considered.

TerraMark agrees the most advantageous situation is to “have inspections performed on that data in as direct a manner as possible, preferably through feature services or within a replicated environment.” We shall work with the City and designated staff for a mutually beneficial data access / submittal situation. **TerraMark** provides all of our GIS products using the ArcGIS file geodatabase format, so we do not anticipate any compatibility issues with the City’s ArcGIS for Server Enterprise operation. **TerraMark** successfully integrated with the City’s Arc Server Enterprise during the 2018 - 2022 project. We believe this to be the best way to keep the City up to date with **TerraMark**’s progress.



2. SCOPE OF WORK

2.3 Drainage Inventory (cont'd)

RFP Section 2.3.10: Contact the City with any structural issues requiring immediate maintenance (i.e., health or safety hazard). Provide a summary of these high-priority assets along with the weekly report.

As part of our Standard Operating Procedures when performing MS4 inventory and inspection work for Dunwoody since 2010, contacting the City regarding immediate health and / or safety standards is a top priority. We understand the importance of keeping Dunwoody’s citizens and visitors protected from harmful situations. TerraMark’s prime contact with the City for these instances shall be:

Carl Thomas, Sr., CFM (678) 382-6864
Stormwater Utility Manager carl.thomas@dunwoodyga.gov

RFP Section 2.3.11: The City will provide all existing databases, maps, or any other available information requested by the service contractor to utilize in updating the inventory data.

TerraMark shall be requesting the following source information to assist with this project:

- Cadastral geodatabase (parcels and related features)
- Transportation geodatabase (center-lines and related features)
- Administrative Boundaries geodatabase (city limits and related features)
- Elevation geodatabase (contours and spot elevations)
- Hydrography geodatabase (water bodies, water courses, drainage basins, etc.)
- Orthoimagery (most current available)
- Planimetrics geodatabase (buildings, structures, edge of pavement, etc.)
- Addresses geodatabase
- Geodetic Control geodatabase (used to horizontal and vertical data obtained during this project to the City’s known geodetic control system)
- Historical plats prior to the City’s 2008 incorporation
- Approved plats / development plats / construction documents after the City’s 2008 incorporation
- Engineering / as-built construction drawings for commercial, multi-family, etc. developments; City Capital Improvement Projects involving stormwater and City stormwater infrastructure repair / replacement projects

Source data shall be provided to TerraMark by the City neatly and logically organized, with the City bearing all costs associated with providing said information by the following dates:

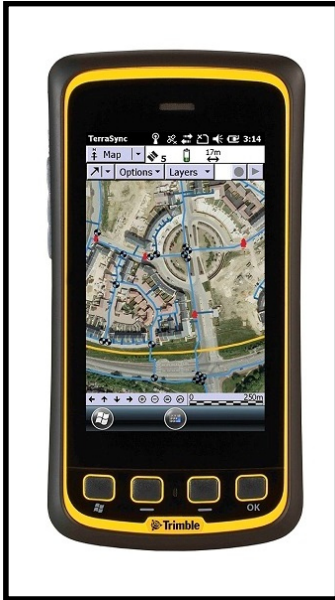
| <u>Year</u> | <u>Basins</u> | <u>Delivery Date</u> |
|-------------|--|----------------------|
| 2023 | North Fork Nancy Creek / Nancy Creek #1 | December 15, 2023 |
| 2024 | Nancy Creek Tributary A | December 15, 2024 |
| 2025 | Chattahoochee / Crooked Creek | December 15, 2025 |
| 2026 | Ball Mill Creek | December 15, 2026 |
| 2027 | Marsh Creek / Nancy Creek #2 / Perimeter Creek | December 15, 2027 |

The City shall be responsible for keeping source data current as it becomes available (i.e., new aerial photography)

2. SCOPE OF WORK

2.3 Drainage System Inventory (cont'd)

RFP Section 2.3.12: Images of structures will be taken of both the inside and outside of the infrastructure. Flash photography should be used to record images of the inside of the structures. The make and model of the proposed camera must be included in the contractor's response. All images will be provided in JPEG format.



TerraMark will provide the City with digital photographs of both the inside and outside (where safely accessible and physically feasible) of each structure inventoried. These pictures will be captured and delivered using the ISO-10918-1 standard developed by the Joint Photographic Experts Group and commonly known as "JPEG" or "JPG." Structure photographs will be taken using Trimble Juno 5 series data collectors featuring an eight (8) megapixel camera with geo-tagging and dual LED flash. As usual, we shall use our photo titling software to label the photos as shown below.



RFP Section 2.3.13: Videos with an HD pole camera will be required for all underground conveyances. These videos will be recorded from a stationary position within the adjoining stormwater structure. When access is not limited, videos must be obtained from both the upstream and downstream adjoining structure. The videos should be approximately 10 to 20 seconds of stabilized video that show the conveyance at multiple zooms. The pole camera must be equipped with lighting that will sufficiently illuminate culverts for a minimum of 200 feet. The make and model of the proposed pole camera equipment must be specified in the contractor's response. Videos must be provided in an MP4 format.



TerraMark shall use our Quickview airHD zoom camera with HD video to supply the City with the necessary underground conveyance digital imagery. This inspection camera features in-manhole view centering, hands-free stabilization, quad haloptical lighting, and a low-lux imagery to enhance details from darker / further regions.

We have owned and operated our own Quickview family of inspection cameras since 2011 and are quite comfortable with their use. **TerraMark** alternatively proposes to video conveyances at stream crossings and to continue to use still photos for non-stream conveyances.



2. SCOPE OF WORK

2.3 Drainage System Inventory (cont'd)

RFP Section 2.3.14: Images of above-ground conveyances must be obtained. The make and model of the proposed camera must be included in the contractor’s response. All images will be provided in JPEG format.



For open conveyances, **TerraMark** will provide the City with digital photographs, one (1) upstream and one (1) downstream image (where safely accessible and physically feasible) of each conveyance inventoried. These pictures will be captured and delivered using the ISO-10918-1 standard developed by Joint Photographic Experts Group and commonly known as “JPEG” or “JPG.” Conveyance photographs will be taken using Trimble Juno 5 series data collectors featuring an eight (8) megapixel camera with geo-tagging and dual LED flash.

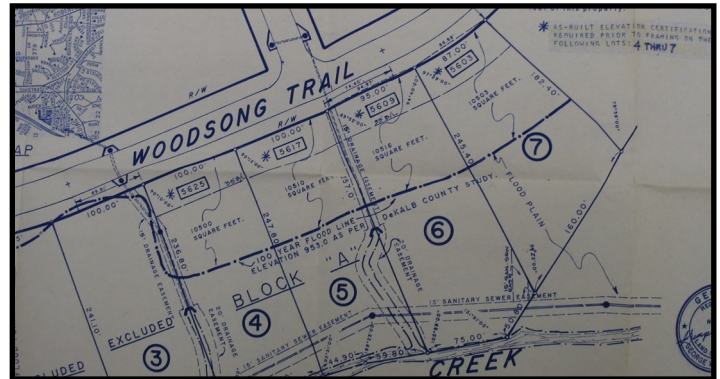
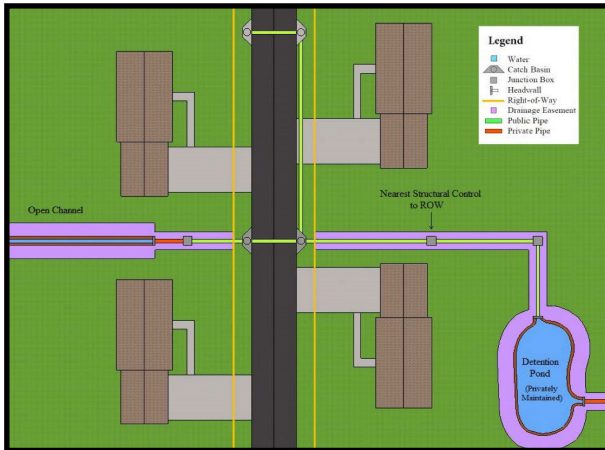
RFP Section 2.3.15: The extent of structures and conveyances to be located in the inventory is all structures, both public and private, including ditches and streams. The intent is to have a totally connected system.

TerraMark understands all other storm inlets, outlets, and open and closed conveyances will be re-inspected on public and private property. The only structures that will NOT be reassessed during the 2023 - 2027 reporting period are:

- Private ponds designed prior to December 2018
- Privately owned GI / LID structures

RFP Section 2.3.16: Service contractor shall determine “Ownership” of all structures and conveyances by utilizing the existing database, recorded plats, and record drawings where available.

TerraMark shall determine “ownership” of all structures and conveyances in accordance with the City’s “*Stormwater Management Extent of Service Infrastructure Repairs and Maintenance (March 2, 2017).*” The determination of ownership may also rely upon the use of recorded plats and other record documents when available.



Examples of source documents to be used in determining ownership City “Extent of Service” diagram (left) and recorded plat (above).

RFP Section 2.3.16: Service contractor shall determine “Ownership” of all structures and conveyances by utilizing the existing database, recorded plats, and record drawings where available.

TerraMark shall provide a portable hard drive to the City for the transfer of the “PDF or image file format of all recorded plats according to Land Lot and District.” We will work with the City to ensure periodic updates of this data is delivered for our use during the life of the project.



2. SCOPE OF WORK

2.3 Drainage Improvements (cont'd)

RFP Section 2.3.18: An ESRI GIS geo-database, prepared by the City of Dunwoody has been developed to aid in the collection and storage of each feature. The service contractor and the City shall work together to refine and finalize the geo-database during the course of the project requirements

During the program’s initial phase (2010 - 2011), **TerraMark** assisted the City in developing its “first generation” MS4 Inventory and Inspection data set. Once again, “during the 2013 - 2017 reporting period, all public & privately owned outfalls, ponds, Green Infrastructure/Low Impact Development (GI/LID) structures, and storm drain infrastructures (inlets, outlets, conveyances, etc.) were surveyed, inventoried, and assessed for structural integrity”¹ by **TerraMark**, resulting in an improved and more robust “second generation” data set. These enhancements are the product of the combined efforts of the dedicated professionals from both the City and **TerraMark**.

During the 2018 - 2022 reporting period, the scope was reduced to only public structures. In addition, **TerraMark** worked with the City of Dunwoody to upload inspection reports directly to the City’s GIS server. This allowed the City to examine results in a near real time schedule.

The opportunity is now before the existing team, who have built a good, long-term relationship, to jointly develop the “third generation” database. **TerraMark** has read and understands the strategy continues to be the inventory and inspection of stormwater assets, both public and private, and is prepared to comply with these requirements.

RFP Section 2.3.19: Virtual Structures: It is anticipated some structures will be located but not be able to be accessed due to physical obstructions / limitations or may be buried or otherwise inaccessible for internal inspection. Structures meeting these requirements shall be classified as Virtual Structures. Virtual Structures shall be located with GPS coordinates, related to connecting features and attributed to the maximum extent possible.

It is anticipated some structures will be able to be located but not be able to be accessed due to physical obstructions / limitations or may be buried or otherwise inaccessible for internal inspection. It is also possible the presence of some structures may be based purely upon conditions in the field. Structures meeting these requirements shall be classified as “virtual” structures. Another possibility is that a recordable, accurate GPS location of some structures may not be obtainable due to tree cover or physical obstructions. Under these conditions, the structure shall be classified as an “offset” structure. Our team is very familiar with the “virtual” and “offset” structure concepts. We are complete comfortable with and have used these concepts on several of our projects. If areas are not accessible or structures are obstructed, the location techniques will capture virtual structures, which will have as much data as they can safely collect. We will document the reason the structure is designated as a virtual structure. Where other conditions prevent acquiring a location meeting the project specifications, we will capture the location as “offset” with suitable notations describing the offset while populating the attributes accordingly.

RFP Section 2.3.20: The service contractor shall determine, when available, the date of installation / construction for man-made structures and conveyances.

TerraMark shall determine, when possible, the date of installation for man-made stormwater assets using data supplied by the City. The date shall be stored as month and year. In lieu of specific information, a final plat date will be used.

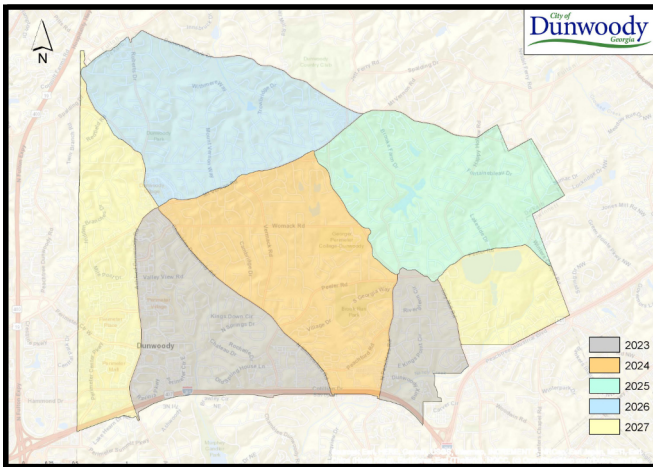
3. SCHEDULE

3.1 Schedule

RFP Section 4.1.3: Schedule: Include a schedule for timely completion of the scope of work. Include information on the amount of time for each task. The Schedule indicated on the Appendix Basin Map should be used as the primary guideline. Each year’s re-inventory should be completed by December 15th of that year.

The **TerraMark** team has developed the following comprehensive schedule. Each annual phase will be performed as depicted on the “2023 - 2027 MS4 Inspection Areas” map as provided by the City. We estimate the following quantities for each year of the project:

| <u>Year</u> | <u>Basins</u> | <u>Structures</u> | <u>Conveyances</u> | <u>Outfalls</u> | <u>Ponds</u> | <u>GI/LID</u> | <u>Assets</u> |
|---------------|-------------------------|-------------------|--------------------|-----------------|--------------|---------------|---------------|
| 2023 | North Fork Nancy Creek | 1,994 | 2,143 | 20 | 5 | 0 | 4,162 |
| | Nancy Creek #1 | 571 | 639 | 7 | 11 | 0 | 1,228 |
| 2024 | Nancy Creek Tributary A | 2,994 | 3,171 | 46 | 19 | 2 | 6,182 |
| 2025 | Chattahoochee | 1,045 | 1,202 | 21 | 4 | 2 | 2,274 |
| | Crooked Creek | 655 | 716 | 11 | 3 | 0 | 1,385 |
| 2026 | Ball Mill Creek | 1,872 | 2,065 | 49 | 15 | 3 | 4,004 |
| 2027 | Marsh Creek | 604 | 635 | 11 | 2 | 0 | 1,252 |
| | Nancy Creek #2 | 547 | 601 | 7 | 3 | 0 | 1,158 |
| | Perimeter Creek | <u>1,775</u> | <u>1,747</u> | <u>11</u> | <u>6</u> | <u>0</u> | <u>3,539</u> |
| Totals | | 12,007 | 12,919 | 183 | 68 | 7 | 25,184 |



Our immediate goal will be the completion of the 2023 area within the stated time constraints. The available time, based upon the City’s anticipated start date of October 1 and the requirement for completion of the 2023 area by December 15, 2023, is 75 calendar days or approximately 10.5 weeks.

TerraMark is basing our proposed schedule upon an October 1st start date. This will require maximum dedication from ALL team members, both the City and **TerraMark**, to achieve this objective. To meet the accelerated schedule imposed by the City, **TerraMark** requests field work will be allowed to commence work at 7:00 AM each day, **including weekends and holidays**, and continue working until 6:00 PM.

For the remaining four (4) phases (2024 - 2027), **TerraMark**’s schedule factors in both weather conditions and tree canopy to achieve a more efficient field data collection environment:

- Based upon the USA National Phenology Network, the optimum period of “leaf-off” condition begins in early November and continues until mid-March of the next year. This shall be the “target” timeframe for the inventory and inspection tasks.
- Based upon the National Weather Service’s thirty year average rainfall (recorded at the Peachtree City Weather Forecast Office), the optimum three (3) month period of least precipitation is April through June. This shall be the “target” timeframe for the outfall dry weather screening tasks.

Proposed schedules are provided on the following pages for the City’s review.



3. SCHEDULE

3.1 Schedule

2023

| SUN | MON | TUES | WED | THURS | FRI | SAT |
|-----|--|--|--|--|--|---|
| 1 | 2 Notice to Proceed Schedule Project Startup Meeting | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 Field Data Collection | 10 Field Data Collection | 11 Field Data Collection | 12 WEEKLY REPORT Field Data Collection | 13 Field Data Collection | 13 Field Data Collection |
| 15 | 16 Field Data Collection Office Data Processing | 17 Field Data Collection Office Data Processing | 18 Field Data Collection Office Data Processing | 19 WEEKLY REPORT Field Data Collection Office Data Processing | 20 Field Data Collection Office Data Processing | 21 Field Data Collection Office Data Processing |
| 22 | 23 Field Data Collection Office Data Processing | 24 Field Data Collection Office Data Processing | 25 Field Data Collection Office Data Processing | 26 WEEKLY REPORT Field Data Collection Office Data Processing | 27 Field Data Collection Office Data Processing | 28 Field Data Collection Office Data Processing |
| 29 | 30 Field Data Collection Office Data Processing QA/QC Reviews | 31 Field Data Collection Office Data Processing QA/QC Reviews | 1 Field Data Collection Office Data Processing QA/QC Reviews | 2 Field Data Collection Office Data Processing QA/QC Reviews | 3 Field Data Collection Office Data Processing QA/QC Reviews | 4 Field Data Collection Office Data Processing QA/QC Reviews |
| 5 | 6 Field Data Collection Office Data Processing QA/QC Reviews | 7 Field Data Collection Office Data Processing QA/QC Reviews | 8 Field Data Collection Office Data Processing QA/QC Reviews | 9 WEEKLY REPORT Field Data Collection Office Data Processing QA/QC Reviews | 10 Field Data Collection Office Data Processing QA/QC Reviews | 11 Field Data Collection Office Data Processing QA/QC Reviews <i>Field Data Collection Make-Up Day (if necessary)</i> |
| 12 | 13 Field Data Collection Office Data Processing QA/QC Reviews | 14 Field Data Collection Office Data Processing QA/QC Reviews | 15 Field Data Collection Office Data Processing QA/QC Reviews | 16 WEEKLY REPORT Field Data Collection Office Data Processing QA/QC Reviews | 17 Field Data Collection Office Data Processing QA/QC Reviews | 18 Field Data Collection Office Data Processing QA/QC Reviews <i>Field Data Collection Make-Up Day (if necessary)</i> |
| 19 | 20 Field Data Collection Office Data Processing QA/QC Reviews | 21 Field Data Collection Office Data Processing QA/QC Reviews | 22 Field Data Collection Office Data Processing QA/QC Reviews | 23 THANKSGIVING | 24 THANKSGIVING <i>Field Data Collection Make-Up Day (if necessary)</i> | 25 Field Data Collection Office Data Processing QA/QC Reviews <i>Field Data Collection Make-Up Day (if necessary)</i> |
| 26 | 27 Field Data Collection Office Data Processing QA/QC Reviews | 28 Field Data Collection Office Data Processing QA/QC Reviews | 29 Field Data Collection Office Data Processing QA/QC Reviews | 30 WEEKLY REPORT Field Data Collection Office Data Processing QA/QC Reviews | 1 Field Data Collection Office Data Processing QA/QC Reviews | 2 Field Data Collection Office Data Processing QA/QC Reviews <i>Field Data Collection Make-Up Day (if necessary)</i> |
| 3 | 4 Office Data Processing QA/QC Reviews Finalize Deliverables | 5 Office Data Processing QA/QC Reviews Finalize Deliverables | 6 Office Data Processing QA/QC Reviews Finalize Deliverables | 7 WEEKLY REPORT Office Data Processing QA/QC Reviews Finalize Deliverables | 8 Office Data Processing QA/QC Reviews Finalize Deliverables | 9 Field Data Collection Office Data Processing QA/QC Reviews <i>Field Data Collection Make-Up Day (if necessary)</i> |
| 10 | 11 Office Data Processing QA/QC Reviews Finalize Deliverables | 12 Office Data Processing QA/QC Reviews Finalize Deliverables | 13 Office Data Processing QA/QC Reviews Finalize Deliverables | 14 WEEKLY REPORT Prepare Final Deliverables | 15 PHASE CLOSOUT Submit Final Deliverables and Closeout Project | |

OCT

NOV

DEC



3. SCHEDULE

3.1 Schedule

| 2023 | | | | | | | | | | | | |
|--|-----|-----|-----|-------|-----|------|------|-----|-----|-----|-----|-----|
| | JAN | FEB | MAR | APRIL | MAY | JUNE | JULY | AUG | SEP | OCT | NOV | DEC |
| Nancy Creek #1 Basin Startup | █ | | | | | | | | | | | |
| Nancy Creek #1 Inventory/ Inspection Field Work | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Nancy Creek #1 Outfall Dry Weather Screening | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Nancy Creek #1 Detention Ponds and GI / LIDs | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Nancy Creek #1 GIS Processing | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Nancy Creek #1 QA/QC | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| North Fork Nancy Creek Basin Startup | █ | | | | | | | | | | | |
| North Fork Nancy Creek Inventory / Inspection Field Work | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| North Fork Nancy Creek Outfall Dry Weather Screening | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| North Fork Nancy Creek Detention Ponds and GI / LIDs | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| North Fork Nancy Creek GIS Processing | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| North Fork Nancy Creek QA/QC | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| 2023 Phase Completion and Closeout | | | | | | | | | | | █ | █ |

| 2024 | | | | | | | | | | | | |
|--|-----|-----|-----|-------|-----|------|------|-----|-----|-----|-----|-----|
| | JAN | FEB | MAR | APRIL | MAY | JUNE | JULY | AUG | SEP | OCT | NOV | DEC |
| Nancy Creek Tributary A Basin Startup | █ | | | | | | | | | | | |
| Nancy Creek Tributary A Inventory/ Inspection Field Work | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Nancy Creek Tributary A Outfall Dry Weather Screening | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Nancy Creek Tributary A Detention Ponds and GI / LIDs | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Nancy Creek Tributary A GIS Processing | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Nancy Creek Tributary A QA/QC | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| 2024 Phase Completion and Closeout | | | | | | | | | | | █ | █ |

| Key | |
|-----------------------------------|---|
| Basin Startup | █ |
| Inventory / Inspection Field Work | █ |
| Outfall Dry Weather Screening | █ |
| Detention Ponds and GI / LIDs | █ |
| GIS Processing | █ |
| QA/QC | █ |
| Phase Completion and Closeout | █ |



3. SCHEDULE

3.1 Schedule

| 2025 | | | | | | | | | | | | |
|---|-----|-----|-----|-------|-----|------|------|-----|-----|-----|-----|-----|
| | JAN | FEB | MAR | APRIL | MAY | JUNE | JULY | AUG | SEP | OCT | NOV | DEC |
| Chattahoochee Basin Startup | █ | | | | | | | | | | | |
| Chattahoochee Inventory/ Inspection Field Work | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Chattahoochee Outfall Dry Weather Screening | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Chattahoochee Detention Ponds and GI / LIDs | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Chattahoochee GIS Processing | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Chattahoochee QA/QC | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Crooked Creek Basin Startup | █ | | | | | | | | | | | |
| Crooked Creek Inventory / Inspection Field Work | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Crooked Creek Outfall Dry Weather Screening | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Crooked Creek Detention Ponds and GI / LIDs | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Crooked Creek GIS Processing | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Crooked Creek QA/QC | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| 2025 Phase Completion and Closeout | | | | | | | | | | | █ | █ |

| 2026 | | | | | | | | | | | | |
|--|-----|-----|-----|-------|-----|------|------|-----|-----|-----|-----|-----|
| | JAN | FEB | MAR | APRIL | MAY | JUNE | JULY | AUG | SEP | OCT | NOV | DEC |
| Ball Mill Creek Basin Startup | █ | | | | | | | | | | | |
| Ball Mill Creek Inventory/ Inspection Field Work | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Ball Mill Creek Outfall Dry Weather Screening | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Ball Mill Creek Detention Ponds and GI / LIDs | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Ball Mill Creek GIS Processing | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Ball Mill Creek QA/QC | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| 2025 Phase Completion and Closeout | | | | | | | | | | | █ | █ |



3. SCHEDULE

3.1 Schedule

| 2027 | | | | | | | | | | | | |
|---|-----|-----|-----|-------|-----|------|------|-----|-----|-----|-----|-----|
| | JAN | FEB | MAR | APRIL | MAY | JUNE | JULY | AUG | SEP | OCT | NOV | DEC |
| Marsh Creek Basin Startup | █ | | | | | | | | | | | |
| Marsh Creek Inventory / Inspection Field Work | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Marsh Creek Outfall Dry Weather Screening | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Marsh Creek Detention Ponds and GI / LIDs | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Marsh Creek GIS Processing | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Marsh Creek QA/QC | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Nancy Creek #2 Basin Startup | █ | | | | | | | | | | | |
| Nancy Creek #2 Inventory / Inspection Field Work | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Nancy Creek #2 Outfall Dry Weather Screening | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Nancy Creek #2 Detention Ponds and GI / LIDs | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Nancy Creek #2 GIS Processing | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Nancy Creek #2 QA/QC | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Perimeter Creek Basin Startup | █ | | | | | | | | | | | |
| Perimeter Creek Inventory / Inspection Field Work | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Perimeter Creek Outfall Dry Weather Screening | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Perimeter Creek Detention Ponds and GI / LIDs | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Perimeter Creek GIS Processing | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Perimeter Creek QA/QC | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| 2027 Phase Completion and Closeout | | | | | | | | | | | █ | █ |

3. SCHEDULE

3.2 Operational Procedures

As depicted on the previous pages, **TerraMark** has developed a suggested project timeline with milestones ensuring the completion of each annual phase by the City's required due date of December 15. While the City has not requested periodic project meetings, we feel these are a necessary and inherent part of a successful project. A project meeting schedule may be determined during the startup and mobilization tasks.

3.2.1 Project Start-Up Meeting and Mobilization

Upon receiving the City's written Notice to Proceed, the **TerraMark** team will mobilize the necessary resources to begin work. We will also meet immediately with the appropriate City staff members to introduce key team members and establish lines of communications between those members. Our group prides itself on our nimbleness and ability to quickly begin work. This will require the ability to swiftly communicate with the proper authorities when decisions need to be made. We will be responsible for creating a "contacts list" to assure suitable personnel are contacted with minimal involvement from other team members.

3.2.2 Research and Investigation

Once the lines of communication have been established, the **TerraMark** team and the City shall make provision for the timely transfer of source materials and existing City records regarding the utility systems. The City has agreed to provide certain source documents and materials to us for our use during the life cycle of the project. Options for providing access to these records will be discussed during the project start up meeting. Items provided by the City include:

- Existing GeoDatabases
- Aerial Photography
- Source Documents
- Other information as offered by the City per the RFP

3.2.3 Public Relations, Coordination, and Safety

While providing the right equipment and knowledge to perform the job is important, it is equally vital our field crews conduct themselves in a thoroughly professional manner at all times while in the community. Dunwoody's citizens expect to be treated courteously with a minimal disruption to their lives as a result of this project. Our employees recognize the fact that we are guests within your city and will conduct themselves accordingly regarding private property, traffic situations, and safety issues. All employees will carry a photo ID card identifying each as City a city contractor. We are experienced in dealing with the general public and are aware that some concerns may surface to our work. We will make concerted efforts to avoid disturbing any private property.

The team's data collection professionals closely monitor our work conditions while in the field. When we are working near busy streets, we deploy warning signs, traffic cones, or other measures to encourage safe driving by passing motorists. Our vehicles are equipped with warning lights, which provide high visibility. Additionally, all data team members are equipped with mobile communication devices (smart cell phone, Wi-Fi-enabled laptop, etc.) which provides instant communication between other crews, our offices, or the City. This is particularly important as it allows us to inform the City in a timely fashion should we discover a dangerous condition involving the City's utility assets.

As part of our Standard Operating Procedures when performing MS4 inventory and inspection work for Dunwoody since 2010, contacting the City regarding immediate health and / or safety hazards is a top priority. **TerraMark's** prime contact with the City for these instances will be:

Carl Thomas, Sr., CFM (678) 382-6864
Stormwater Utility Manager carl.thomas@dunwoodyga.gov



3. SCHEDULE

3.2.3 Public Relations, Coordination, and Safety

To support our field efforts, all team members will carry a letter of introduction similar to the following:

Dear City Resident:

The City of Dunwoody has recently engaged TerraMark Geospatial to inventory the City’s Stormwater Utility Assets. These manholes, catch basins, pipes, etc. are part of the City’s stormwater system. The project will allow the City to more effectively manage its infrastructure.

As part of this project, TerraMark Geospatial will have surveying teams working in various areas of the City during the next few weeks. We request that you offer your support to these crews during this phase of the project.

For more information regarding this project, please contact the following:

*Mr. Carl Thomas, Sr., CFM
Public Works - Stormwater Division
City of Dunwoody
41 Perimeter Center East, Ste 250
Dunwoody, Georgia 30346
678-382-6864*

*Wendell Hand, GISP
Director of GIS Services
TerraMark Geospatial
1396 Bells Ferry Road
Marietta, Georgia 30066
770-421-1927*

3.2.4 Field Data Collection

Field data collection shall be conducted as described in *Section 2 “Scope of Work”* of this proposal and during the timeframe outlined in the annual schedules.

3.2.5 GIS Data Preparation

TerraMark’s GIS analysts, specialist, and / or technicians will complete the processing of the collected field data upon the data passing the initial field location quality control checks. This task consists primarily of:

- Checking / revising node - line - node topology (i.e., structure - conveyance - structure)
- Update individual asset records
- Place associated photographs and videos into corresponding asset folders
- Quality control checks and reviews

The review of the node-line-node topology is the backbone of the drainage system network. This topology ensures that each linear feature, such as a stream or pipe, has associated nodes, such as a catch basin or stream junction, for both the upstream and downstream endpoints.

3.2.6 Quality Control and Quality Assurance

TerraMark believes if good Quality Assurance (QA) / Quality Control (QC) standards and procedures are designed and adhered to, then a superior surveying, mapping, and/or GIS product is guaranteed. In particular, the QA/QC efforts associated with the creation of the final products are the responsibility of **TerraMark**. As such, we exercise specific tests and routines to “measure quality” at various stages of the production process. We believe the QA/QC metrics for surveying, mapping, and/or GIS projects fall into two (2) categories: process control and product assurance. Process metrics are used strictly for evaluating and improving the effectiveness of our methods and procedures. The process QA/QC efforts are primarily the responsibility of **TerraMark**.

The amount of process QA/QC performed by **TerraMark** is governed by project specifications.

3. SCHEDULE

3.2.6 Quality Control and Quality Assurance

The specific process QC reviews are developed based upon the end functional use of the product by the client. Product quality assurance is also primarily **TerraMark**'s responsibility. However, the client is the final judge as to whether or not our product meets their requirements. So, the client also has some responsibility for product QA.

TerraMark's group of GIS analysts, specialists, and technicians have a rigorous QA/QC agenda to which all of Dunwoody's data will be subjected. Data processing occurs once the field location data has been uploaded to the server. Dunwoody's job will be assigned to a lead GIS analysts who will be committed to this phase for the duration of the project. The analyst is skilled in manipulating spatial data with widespread utility mapping experience. A standard checklist is employed during the QC review to ensure consistency. Next, we perform a "logic" review, where locations and relationships are checked. If we uncover some issue that cannot be resolved by a review with the responsible location personnel, we will return to the actual site to verify or correct the data. Upon completion, datasets are then reviewed by either a senior GIS analyst or the GIS manager who comprehensively checks the data, verifies that collection and processing we completed to specifications, and approves the dataset for delivery.

Periodically, **TerraMark** will perform random, in-field quality control (QC) reviews of data previously collected. This QC review will be conducted by a separate group not directly involved with the daily field data collection to ensure a tally independent and unbiased review. This independent group will collect and survey utility assets that have been arbitrarily selected by **TerraMark**'s Quality Control Manager, Mr. John Blount, RLS. The data collected by the QC team will then be compared with the data collected by the project field crews for both accuracy and completeness.

As a final step, **TerraMark**'s in-house quality control group will perform an independent Quality Assurance Review of project deliverables. The QA/QC group will select a statistically representative subset of both structures and conveyances to be used as the test sample. This test sample will then be revisited by an independent field crew, the same project data will be collected and processed with the results being compared to the original information. Our QA/QC team will be looking for incorrectly located assets and/or missing or incorrect attributes associated with a particular asset. Directionality will also be reviewed to ensure that the network "flows" properly.

If questions surface during this review, the QA/QC team will meet with the original data collection crew and the project manager at the asset in question to discuss the situation and reach an agreement regarding the issue. If a mutually agreeable solution can not be reached, the point shall be considered as being in error and will be recaptured by a third data collection team. Only parameters failing the QA/QC review will be recaptured. For instance, if the attributes are correct, but the location is not, only the location data will be rechecked.

If this independent review uncovers a systematic problem, the additional assets will be revisited to verify the data, identify any potential issues and corrective measures put in place to resolve the problem. Assets coded as "virtual" or "offset" will be verified and modified as appropriate, but will not be considered in any confidence level calculations or location.

3.2.7 Weekly Status Reports

Our team will provide a weekly status report, which includes the following:

- Map illustrating completed areas and areas in progress
- Reports of structures / conveyances requiring immediate attention
- Updated schedule for completion
- Issues / action items requiring the project team's attention

This report shall be submitted by the following Thursday for the previous week's work.

3. SCHEDULE

3.2.8 Incremental Data Deliveries

With the anticipated use of work being “performed on that data in as direct a manner as possible, preferably through feature services or within a replicated environment” as provided by the City, there should be no need for incremental data deliveries as the City shall have close to real time access to updated and revised information.

3.2.9 Project Meetings

The **TerraMark** team has found a significant key to the success of our GIS projects is frequent communication. Therefore, we are proposing that periodic progress meetings be part of the overall project schedule. While this requires a commitment from both parties, we feel the regularly scheduled occurrence of these meetings throughout the life of the project will contribute greatly toward its success.

3.2.10 Project Completion and Closeout

Upon successful completion of the project, we will provide a complete set of digital data and/or hard copy maps per the agreed to deliverables schedule to the City as well as return any source documents or other items provided to assist with the assignment. Digital data will be provided on a set of CD / DVD disks, USB flash drives, or external hard drive as appropriate for such a delivery.

4. PROJECT PERSONNEL

4.1 Project Personnel

RFP Section 4.1.4: Project Personnel: Provide information on personnel to be assigned to this project. Personnel should have experience from similar projects and in fields necessary to complete this proposed work.

The **TerraMark** team that effectively completed the 2023 - 2027 MS4 Inventory and Inspection, as well as the Outfall Dry Weather Screenings, remains intact and will be assigned to this project, including:

- Paul B. Cannon, RLS: President and Principal-in-Charge - Mr. Cannon will be responsible for ensuring the necessary corporate resources are available.
- William C. “Bill” Wohlford, Jr., PE, RLS: Principal and QA/QC - Mr. Wohlford will assist in ensuring the necessary corporate resources are available and managing the independent quality assurance and quality control reviews.
- Kevin W. Hardy, GISP, RLS: Assistant Project Manager - Mr. Hardy will support Mr. Hand with various parts of the project.
- John C. Blount, RLS: QA/QC Supervisor - Mr. Blount will manage the independent (using personnel not directly assigned to this project) quality assurance and quality control reviews.
- Wendell C. Hand, GISP: Project Manager - Mr. Hand will be the Project Manager assigned to this project. He will oversee the schedule and be the main point of contact for this project.
- Joshua D. Wilson, RLS: Operations Manager - Mr. Wilson will be responsible for overseeing the daily operations of the survey team for the duration of the project.
- Marcus Flores: GIS Technician - Mr. Flores will also be fully devoted to the various field data collection tasks.
- Gavin Smith: GIS Technician: Mr. Jackson will be fully devoted to the various field data collection tasks.
- Andrew Jackson: GIS Technician: Mr. Jackson will be fully devoted to the various field data collection tasks.

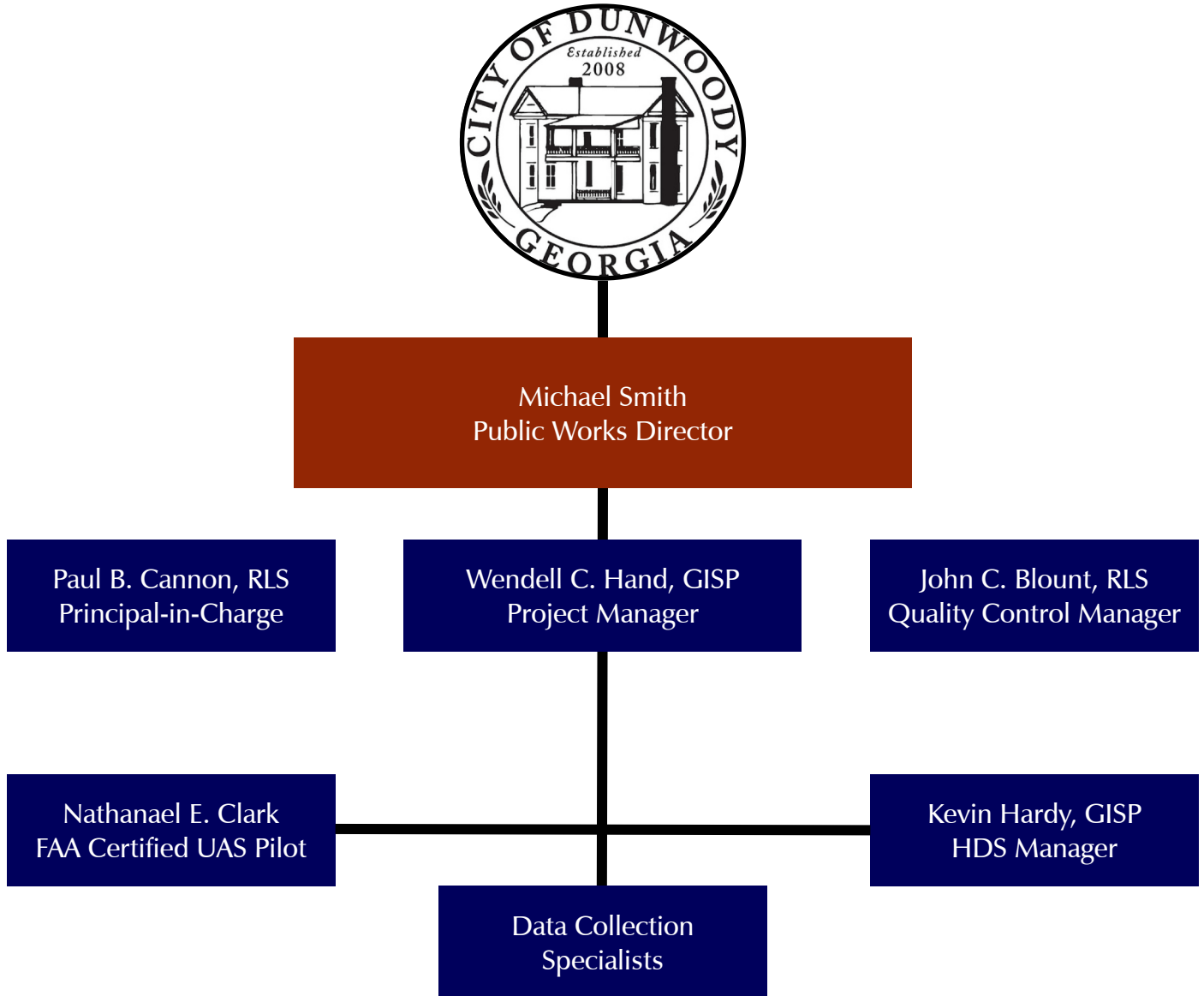
Additional, specialized **TerraMark** personnel that may be utilized on this project include:

- Nathaniel E. Clark: LiDAR / SfM Specialist. Mr. Clark shall conduct specialized detention pond data collection if necessary.
- Andrew T. Allen: Data Collection Specialist. A veteran of previous Dunwoody and similar MS4 projects, Mr. Allen will be available in a supplementary capacity.
- Jeremy L. Hale: Data Collection Specialist. Also a veteran of previous Dunwoody and similar MS4 projects, Mr. Hale will be available in a supplementary capacity.
- Troy A. Golden: GPS Specialist. Mr. Golden, as **TerraMark**'s resident GPS expert, will be available to assist with GPS data collection.

4. PROJECT PERSONNEL

4.2 Organization Chart

Our project team organization chart is illustrated below. Please note that we have registered and licensed (RLS, GISP, LSIT, and MS4CECI) staff members in **all** key positions, not just supervisory stations.





4. PROJECT PERSONNEL

Paul Cannon, RLS President

Mr. Cannon has twenty-six (27) years of experience in land surveying. As a Registered Land Surveyor, he has been involved in all aspects of surveying, including the establishment of permanent survey control, boundary line retracement, deed research, topographic and route surveys, and construction layout. Additional experience includes GPS data location methods and extensive utilization of MicroStation for project deliveries. Throughout his tenure, he has served as Crew Chief, Survey Technician, Project Manager, Project Surveyor, and President.

Representative Projects

City of Adairsville, GA - “Joe Frank Harris Parkway Sewer Relocation”; Bartow County, Georgia (2021)

Mr. Cannon managed a topographic and property database survey design of a sanitary sewer relocation project located at the southwesterly intersection of South George Street and Joe Frank Harris Parkway. The work comprised of location of the existing properties, observed improvements, terrain break lines, surface features, driveway limits, roadway striping, location of storm, location of storm and sanitary sewer pipes, sizes and inverts, and location of underground utilities as marked by utility location service.

City of Adairsville, GA - “State Route 140 Water Relocation”; Bartow County, Georgia (2021)

Mr. Cannon managed a topographic and property database survey to support the design of approximately 5,500 linear feet of watermain replacement along Georgia State Route 140. The work comprised of location of the existing properties, observed improvements, terrain break lines, surface features, driveway limits, roadway striping, location of storm and sanitary sewer pipes, sizes and inverts, and location of underground utilities marked by the City of Adairsville.

Marietta Board of Lights and Water - “Franklin Gateway Sewer Interceptor”; Cobb County, Georgia (2017 - 2019)

Mr. Cannon managed a topographic and property database survey to support the design of approximately 6,000 linear feet of proposed 36-inch sewer line along Rottenwood Creek, including a jack and bore under Interstate 75. The work comprised of location of the existing properties, observed improvements, terrain break lines, surface features, driveway limits, roadway striping, location of storm and sanitary sewer pipes, sizes and inverts, and location of underground utilities as marked by a utility location service.

Cumberland CID - Pedestrian Trail System; Cobb County, Georgia (2019)

Mr. Cannon managed a topographic and property database survey to support the design of approximately 4,500 linear feet of a multi-use trail along Cumberland Boulevard and Interstate North Parkway, extending from South Akers Mill Road to Interstate North Circle. The work comprised of location of the existing properties, observed improvements, terrain break lines, surface features, driveway limits, roadway striping, location of storm and sanitary sewer pipes, sized and inverts, and location of underground utilities by a utility location service.

| |
|--|
| Title |
| President |
| Education |
| Bachelor of Civil Engineering <i>Kennesaw State University</i> |
| Experience |
| <i>In Industry: 27 years</i> <i>With TerraMark: 20 years</i> |
| Professional Credentials |
| <u>Registered Land Surveyor:</u> <i>Georgia, No. 002928</i> <i>Alabama, No. 30593</i> |
| References |
| Kimley Horn Associates <i>Emmy Montanye, PE - VP</i> <i>817 West Peachtree Street</i> <i>Suite 601</i> <i>Atlanta, GA 30308</i> <i>404-419-8700 (Office)</i> <i>emmy.montanye@kimley-horn.com</i> |
| Decatur Housing Authority <i>Karen Atchley</i> <i>Technical Services Coordinator</i> <i>750 Commerce Drive</i> <i>Suite 400</i> <i>Decatur, GA 30030</i> <i>kka@decaturga.org</i> |



4. PROJECT PERSONNEL

William C. “Bill” Wohlford, RLS, P.E. Principal

Mr. Wohlford has forty (40) years of combined experience in the areas of surveying, survey computing, transportation, transportation engineering and land development engineering. As a Registered Land Surveyor, he has been involved in all aspects of surveying, including framework, survey computing, and project management. Throughout his tenure, his responsibilities have included management in the aforementioned fields as Survey Party Chief, Survey Manager, and Engineering Project Manager.

Representative Projects

Cobb County-Marietta Water Authority - “Florence Road 20-Inch Water Main Relocation”; Cobb County, Georgia (2020)

Mr. Wohlford performed horizontal and vertical control surveys, field topographic and property surveys for 500 linear feet of intersection to be used to design a relocation of an existing 20-inch water main in South Cobb County. The water main ran along the east side of Florence Road at the intersection with Old Gaydon Road.

Cobb County-Marietta Water Authority - “Blackjack Mountain - 36-Inch Water Main Replacement”; Cobb County, Georgia (2019)

Mr. Wohlford performed horizontal and vertical control surveys, field topographic surveys, and property surveys for 31,000 linear feet of proposed 36-inch water main in East Cobb County. The proposed water main ran along an existing easement for a concrete line placed in the 1950s, beginning at Highway 41 in Marietta and running east to Lower Roswell Road near the Quarles Water Treatment Plant. The work was comprised of easement drawings and legal descriptions for various property owners along the corridor.

Cobb County-Marietta Water Authority - “Highway 41 - 20-Inch Parallel Water Main Replacement”; Cobb County, Georgia (2018)

Mr. Wohlford managed horizontal and vertical control surveys, field topographic surveys and property surveys for 12,000 linear feet of proposed 20-inch parallel water main in North Cobb County. The proposed water main ran along the east side of Highway 41, beginning 600 feet north of Mars Hill Road and running across Allatoona Lake to Highway 92 West. Additional work was comprised of easement drawings and legal descriptions for over 10 property owners and Corps of Engineers property along the corridor.

Cobb County-Marietta Water Authority - “West Side Loop, Section 2 - 36-Inch Water Main Replacement”; Cobb County, Georgia (2018)

Mr. Wohlford managed horizontal and vertical control surveys, field topographic surveys, and property surveys for 21,000 linear feet of proposed 36-inch water main in South Cobb County. The proposed water main ran along South Gordon and Cardell Road, beginning at Old Alabama Road and running to Mableton Parkway. The work was also comprised of easement drawings and legal descriptions for various property owners along the corridor.

| |
|--|
| Title Principal |
| Education Bachelor of Civil Engineering <i>Virginia Polytechnic Institute and State University</i> |
| Experience <i>In Industry: 40 years With TerraMark: 20 years</i> |
| Professional Credentials <u>Registered Land Surveyor:</u> <i>Georgia, No. 002577 Virginia, No. 0403001668</i> <u>Professional Engineer:</u> <i>Virginia, No. 0402023139</i> |
| References Cobb County-Marietta Water Authority (CCMWA) <i>Glenn Page, PE General Manager 1170 Atlanta Industrial Dr Marietta, GA 30066 770-514-5300 (Office) gpage@ccmwa.com</i> Forsyth County, Georgia <i>Donna Kukarola Director of Procurement 514 West Maple Street Suite 104, Cumming, Georgia 30040 770-888-8872 (Office) dhkukarola@forsythco.com</i> |



4. PROJECT PERSONNEL

John Blount, RLS Quality Assurance / Quality Control

Mr. Blount has over thirty-seven (37) years of experience in the field of land surveying. This experience spans across boundary, topographic, ALTA, planimetric, route, control, construction, railroad, aviation, and transportation and floodplain surveys working closely with Civil, Municipal, Industrial, Aviation, and Architectural departments. Throughout his tenure, his responsibilities have included management in all aforementioned fields as Survey Party Chief, Field Coordinator, Survey Manager, and Quality Control Specialist.

Representative Projects

Dekalb County Department of Watershed Management - “Sewer Flow Redirection from Gwinnett to Dekalb-Reverse Gwinnett Flows”; DeKalb/Gwinnett County, Georgia (2020 - Current)

Mr. Blount managed horizontal and vertical control surveys, property survey, field topographic surveys, and underground utility surveys to support the design of over 25,000 feet of sewer realignment to remove sewer flows within Gwinnett County.

City of Roswell - “Martin Road Culvert Replacement”; Fulton County, Georgia (2020)

Mr. Blount managed horizontal and vertical control surveys, property surveys, field topographic surveys, and underground utility surveys to support the replacement of a drainage culvert and associate drainage facilities within and along Martin Road.

City of East Point Water Department- “Lakeside Preserve Water Main Extension”; Fulton County, Georgia (2020)

Mr. Blount performed a database survey for approximately 2,500 linear feet of proposed waterline extension to connect an existing residential subdivision to an industrial property. The job was also comprised of the location of existing properties and road right of way.

Forsyth County Department of Water and Sewer - “Windmere Parkway Sewer Relocation”; Forsyth County, Georgia (2020)

Mr. Blount performed a database for 2,500 linear feet of proposed sewer main design and construction to relocate sewer crossing at Windmere Parkway.

Forsyth County Department of Water and Sewer - “Parkstone Lift Station and Sewer Force Main”; Forsyth County, Georgia (2019 - 2020)

Mr. Blount performed a database survey for approximately 9,000 linear feet of a proposed sewer force main, running south from Parkstone Lift Station to an existing sewer on the south side of Matt Park. Additionally, the job was comprised of a survey necessary to support the redesign of the existing lift station and locating existing properties and road right of way.

Paulding County Water System - “Coppermine Water Reclamation Facility - MBR Expansion”; Paulding County, Georgia (2019)

Mr. Blount managed boundary, topographic, and utility surveys for over seven (7) acres of property encompassing a portion of the wastewater treatment plant on Coppermine Road. This survey was conducted to support the design of a redevelopment of part of the existing facility.

| |
|---|
| Title |
| Quality Assurance / Quality Control |
| Education |
| Engineering Surveying Certificate Middle Georgia College |
| Experience |
| <i>In Industry: 37 years</i> <i>With TerraMark: 15 years</i> |
| Professional Credentials |
| <u>Registered Land Surveyor:</u> <i>Georgia, No. 002577</i> <i>Alabama, No. 25525</i> <i>North Carolina, No. L-5036</i> |
| References |
| <i>River 2 Tap</i> <i>Jim Hawkins, PE</i> <i>Senior Engineer</i> <i>580 Crossville Road</i> <i>Suite 101</i> <i>Roswell, GA 30075</i> <i>404-805-5024 (Cell)</i> <i>jimhawkins@r2tap.com</i> |
| <i>Brown & Caldwell, Inc</i> <i>Joshua Funte, EIT</i> <i>990 Hammond Drive,</i> <i>Suite 400</i> <i>Atlanta, GA 30328</i> <i>770-794-5150</i> |



4. PROJECT PERSONNEL

Wendell C. Hand, GISP Project Manager / Director of GIS Services

Mr. Hand has over twenty-three (23) years of experience in the CADD and GIS field. This experience spans across a background in CADD along with the newer technology and knowledge of GIS in order to create comprehensive GIS maps and databases, performing field inspections, and processing aerial photos for impervious surface calculations. Throughout his tenure, his responsibilities have included both conducting GIS services and managing those who do so.

Representative Projects

City of Brookhaven, Georgia - “MS4 Stormwater Inventory and Inspection” (2014 - 2018)

Mr. Hand served as GIS Technician responsible for performing data collection including GPS locations, performing inspection evaluations, taking asset photographs and post processing of the field information.

City of Dunwoody, Georgia - “MS4 Stormwater Inventory and Inspection” - DeKalb County, Georgia (2014 - 2022)

Mr. Hand served as the GIS Technician responsible for performing field data collection including GPS locations, performing inspection evaluations, taking asset photographs and post processing of the field information. He then took on the roles of Assistant Project Manager and Project Manager.

City of Hampton, Georgia - Utilities Inspection

Mr. Hand served as GIS Manager responsible for the completion of the GIS dataset and GPS locations for the entire sewer, stormwater, and sewer system infrastructure.

City of Jonesboro, Georgia - Cemetery Mapping

Mr. Hand conducted an inventory of the existing grave locations. The project included locating unmarked graves over four (4) acres with GPR and applying a grid system for the City to use in helping provide locations to visitors to the cemetery and help mitigate grave digging.

City of Loganville, Georgia - Utility Mapping and Inspection

Mr. Hand served as GIS Manager responsible for the completion of the GIS dataset and GPS locations for the entire sewer, stormwater, and water system infrastructure. The project consisted of gathering information for approximately 11,200 structures and 4,000 conveyances including sub-meter location data, size, material, and condition attributes. The data was placed into a topologically structured geodatabase for use by the City in managing its stormwater utility for maintenance requests.

City of Villa Rica, Georgia - On-Call GIS and Mapping

Mr. Hand served as GIS Manager responsible for the completion of the GIS dataset and GPS locations for the entire sewer, stormwater, and water system infrastructure. The project consisted of gathering information for approximately 5,500 structures and 2,000 conveyances, including survey grade and sub-meter grade location data, size, material, and condition attributes. The data was placed into a topologically structured database for use by the City in managing maintenance requests and city personnel in locating utilities in the field. An indexed map book was created to provide a visual location for field crews to use daily.

| |
|---|
| Title |
| Project Manager Director of GIS Services |
| Education |
| Bachelor of History GIS Certificate <i>Kennesaw State University</i> |
| Experience |
| <i>In Industry: 23 years With TerraMark: 6.5 years</i> |
| Professional Credentials |
| <u><i>Certified GISP</i></u> <i>No. 160523</i> <i>MS4 Certified Enforcement and Certified Inspector</i> |
| Professional Organizations |
| <i>Esri Southeast User Group</i> |
| <i>Urban and Regional Information Systems</i> |
| <i>Surveying and Mapping Society of Georgia</i> |
| <i>American Society for Photogrammetry and Remote Sensing</i> |



4. PROJECT PERSONNEL

Kevin W. Hardy, RLS, GISP Vice President Technology

Mr. Hardy has over eighteen (18) years of experience in land surveying. As a Land Surveyor in Training, he has been involved in many aspects of surveying, including the establishment of permanent survey control, boundary line retracement, deed research, topographic and route surveys, and construction layout. Additional experience includes four years of MicroStation, through which he became proficient in 3D modeling, ArcGIS and Global Mapper GIS. Throughout his tenure, he has served as Survey Technician, Senior Surveyor, Laser Scanning Manager, Assistant Project Manager, Project Manager, and Vice President Technology.

Representative Projects

City of Brookhaven, GA - “MS4 Stormwater Inventory and Inspection”

Mr. Hardy served as Assistant Project Manager in supervising the field data collection tasks for the City’s MS4 stormwater mapping project.

City of Dunwoody, GA - “Cadastral Mapping / MS4 Stormwater Inventory and Inspection”

Mr. Hardy served as Assistant Project Manager supervising the field data collection tasks for the City’s MS4 stormwater mapping project. He also served as a GIS mapping specialist for the City’s cadastral mapping project involving the creation of a parcel layer with associated map features using COGO and other industry standard compilation and attribution techniques.

City of Marietta, GA - Water System Inventory

Mr. Hardy served as Assistant Project Manager responsible for field data collection and post-processing of data prior to insertion into the project geodatabase.

City of Peachtree Corners, GA - GIS Consulting

Mr. Hardy served as a GIS mapping specialist assisting with all GIS-related activities within the City.

City of Stone Mountain, GA - “Clark Patterson Lee Design Professionals/ MS4 Stormwater Inventory and Inspection”

Mr. Hardy served as GIS mapping specialist assisting with the creation of a ninety (90) mile attributed road network.

Cobb County-Marietta Water Authority - “Blackjack Mountain Distribution Main”

Mr. Hardy served as Assistant Project Manager responsible for creating an engineering grade accurate data base responsible for the Blackjack Mountain distribution main (five miles in length) replacement project.

Cobb County-Marietta Water Authority - “Easements GIS”

Mr. Hardy served as Project Manager for GIS pilot project to build an easement geodatabase.

| |
|--|
| Title |
| Vice President Technology Laser Scanning Manager Project Manager |
| Education |
| Bachelor of Accounting Kennesaw State College |
| Experience |
| <i>In Industry: 18 years</i> <i>With TerraMark: 18 years</i> |
| Professional Credentials |
| <u>Land Surveyor in Training:</u> <i>Georgia, No. 001124</i> <u>Certified GISP</u> <i>No. 67864</i> |
| Professional Organizations |
| <i>Esri Southeast User Group</i> <i>Bently Microstation and Geospatial Communities</i> |

5. SIMILAR EXPERIENCES

5.1 Corporate Profile

RFP Section 4.1.5: Similar Experience: List and describe your firm's projects worked on in the past five (5) years that best match the scope and design of this project. Identify unique constraints or challenges associated with those projects and how you addressed those in order to deliver a successful project. The City may request samples of comparable work during the proposal review process.

TerraMark Geospatial is an employee-owned Small Business Firm specializing in providing surveying, mapping, geospatial, LiDAR / SfM an unmanned aerial vehicle services to both public and private clients located throughout the southeastern United States. Our firm includes five (5) Registered Land Surveyors (RLS), two (2) Land Surveyors-in-Training (LSIT), two (2) Geographic Information Systems Professionals (GISP), two (2) MS4 Compliance and Enforcement Certified Inspectors (MS4CECI), two (2) FAA Certified UAV pilots and other individuals that are in the training phases of their careers that will ultimately lead to additional registered professionals.

TerraMark was incorporated in December, 2002 and officially began business on January 1, 2003. Our senior staff has worked together in varying capacities for the past twenty-five years. We are responsive to client needs, creative in our solutions, and cost-effective in our execution. We understand relationships are key to our success. Our desire is to make you a happy and satisfied client with successful projects. Additionally, we collaborate with numerous professional companies (engineers, architects, attorneys, etc.) to provide a wide spectrum of specialized, qualified, and licensed assistance to customers.

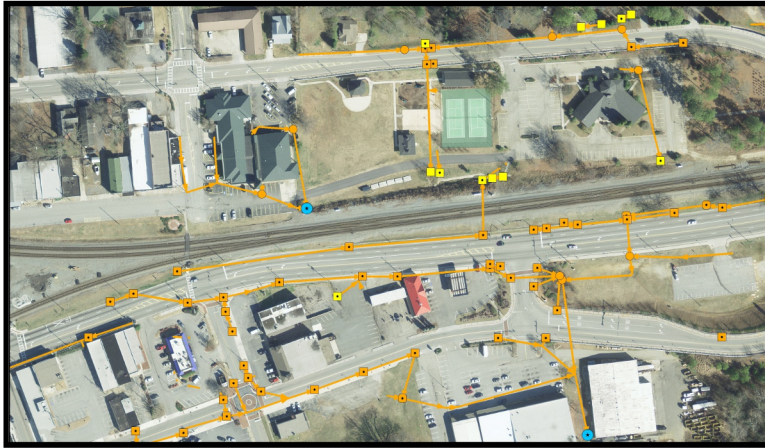
5.2 Corporate Resources

TerraMark has the following resources (equipment, software, etc.) available to support the City in this endeavor:

- Adobe Software Products
- Autodesk AEC Collection
 - Revit
 - AutoCAD
 - Civil 3D
- Canon Cameras and Printers
 - Canon EOS T6 Camera
- Bentley Systems Software Products
 - Microstation V8i
 - Bentley Inroads
 - Geographics
 - OpenRoads Designer
- Dell Servers, WorkStations, Laptops, and Tablets
- DeLorme / Garmin Mapping Products
- DJI Drone Systems
 - Phantom 4 Pro (2)
 - DroneMapper Photogrammetry Software
 - eGPS Solutions Virtual GPS Networks
- EnviroSight QuickView Pipeline Inspection Systems
 - QuickView
 - QuickView Air HD
- esri ArcGIS Software Products
 - ArcGIS Pro
 - ArcMap
 - ArcGIS Online
- Global Mapper Software Products
- Hewlett Packard Printers and Plotters
- iPOGO Coordinate Geometry Software
- Microsoft Office Professional Suite
- MySQL Open-Source Relation Database Management System
- Ohmex Ltd. Hydrographic Surveying Systems
- Python Object-Oriented Programming Language
- QGIS Open-Source GIS Software
- rGaGEO Public Works Software Products
- RIEGL Laser Scanners
 - VZ-400
 - VZ-400i
- Sokkia Surveying Products
- TatukGIS Software Products
- TopoDOT Point Cloud Software Products
 - TopoDOT
 - TopoLift
 - TopoPlanner
 - TopoMission
- Trimble Products and Software
 - R8 / R10 GNSS Systems
 - M3 / S5 / S6 Total Stations
 - TSC3 / Juno Data Collectors
 - Trimble Business Center Software
- Visual Basic Programming Language
- Western Digital Mass Data Storage Solutions

5. SIMILAR EXPERIENCES

MS4 Inventory and Inspection City of Austell, Georgia



TerraMark has recently been retained on behalf of the City of Austell by RINDT, Inc. to revise and update the City’s MS4 data set. A primary requirement is to upgrade both the horizontal and vertical locational information to “survey grade” accuracy. **TerraMark**’s scope of work includes using our MS4 Compliance & Enforcement Certified Inspectors to field visit stormwater infrastructure locations within the project area and gather both inventory and inspection data. Each structure shall be field located using survey-grade GPS and / or traditional surveying techniques. The northing and easting (x and y horizontal values) shall be updated per these observations. A “top of structure” elevation (z vertical value) shall also be updated. Measure down values shall be obtained and used to calculate appropriate invert values. For structures, the following attribute field shall be updated:

- Northing
- Easting
- Top Elevation
- Invert Elevation
- Structure Type
- Condition
- Number of Pipes In
- Number of Pipes Out
- Photograph
- Comments

For conveyances, the following attribute fields shall be updated:

- Type
- Size
- Upstream Invert
- Downstream Invert

Client:

RINDT, Inc.

Owner:

City of Austell Public Works
Department - Stormwater Division

Location:

Austell, Georgia

Date:

August 2018 - 2019

Main Contact:

RINDT, Inc.

Meg Mbugua, PE
334 Cherokee St NE
Marietta, GA 30060
470.234.6141

Website:

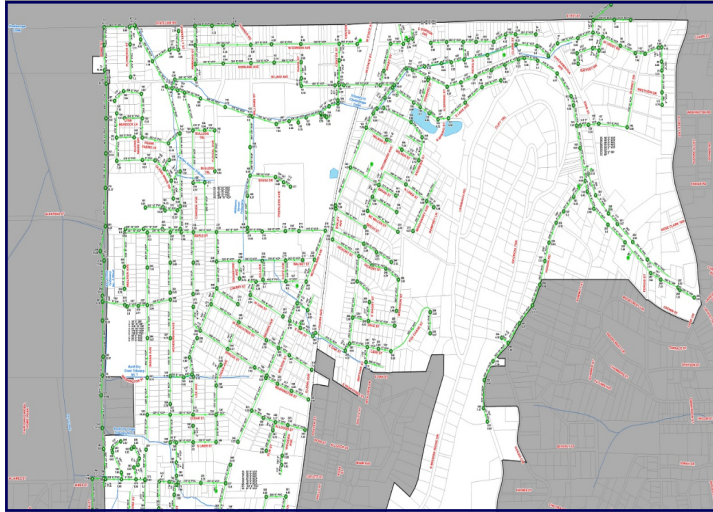
www.RINDT.com

Services:

Update inventory and inspection of
MS4 infrastructure

5. SIMILAR EXPERIENCES

Utility Inventory and Inspection City of Rossville, Georgia



TerraMark was selected by the City to maintain and update their various utility geodatabases. Our first project was to evaluate the stormwater dataset for completeness. Upon conclusion of our review, we then went into the field to locate and inspect items that were missing, newly found, or recently installed. This process included acquiring map-grade GPS locations and inventory/inspection data. The current stormwater geodatabase includes 885 structures and 1,032 conveyances (13.6 miles). We serve in a support capacity to the City for their efforts to inspect twenty percent (20%) of their stormwater infrastructure each year to meet the Georgia EPD requirements.

TerraMark's second task was to complete the sanitary sewer mapping project that had been started by a previous consultant. Again, we began by appraising the work that had been completed to date and gauging the effort remaining to finish the project. This task also required obtaining map-grade GPS locations and inventory/inspection data. The current sanitary sewer geodatabase includes 456 structures and 519 conveyances (23.2 miles).

The City of Rossville continues to use **TerraMark** on an ongoing basis to support their GIS efforts.

Client:

City of Rossville Public Works
Department - Stormwater Division

Owner:

City of Rossville, GA

Location:

Rossville, Georgia

Date:

September 2015 - Present
(as-needed basis)

Main Contact:

Mark Harris
City of Rossville
400 McFarland Avenue
Rossville, GA 30741
706.841.2912

Website:

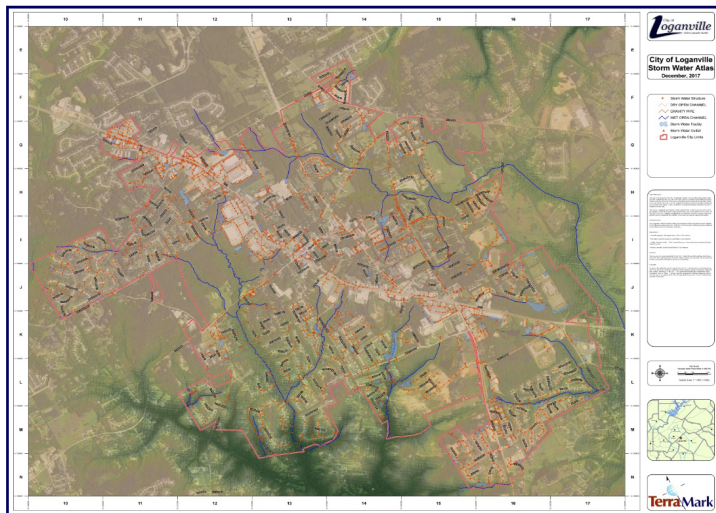
www.rossvillegagov.us

Services:

- Location and inspection of all stormwater system components
- Maintenance of the stormwater system geodatabase
- Maintenance of the sanitary sewer system geodatabase

5. SIMILAR EXPERIENCES

Utility Inventory and Inspection City of Loganville, Georgia



The City of Loganville contacted **TerraMark** to become Loganville’s GIS database administrators. **TerraMark** first began redefining the City of Loganville’s existing stormwater inventory geodatabase into a more robust MS4 stormwater inspection geodatabase. Every private and public storm drain, manhole, catch basin, pipe, ditch, stream, and pond in the City divided into inspection basins. This would allow the **TerraMark** inspection teams to perform more accurate and repeatable inspections and inventories on the MS4 stormwater system for Loganville. Beginning in 2016, **TerraMark** began inspecting and locating Loganville’s stormwater structures. Loganville has 5,270 structures, 160 storage ponds, and 5,000 conveyances (110 miles).

The second task **TerraMark** performed was to clean up the sewer model information. The existing sewer database had data stored in various places making it difficult to understand. **TerraMark** then organized the sewer data to an easy-to-understand format. The City of Loganville engineers can now perform sewer models on their sewer data.

The third task **TerraMark** completed was to locate and inspect the street signs in the city limits. **TerraMark** inspection crews GPS-located and photographed all street signs within the right-of-way for the City of Loganville. This allows Loganville Road and Streets Department to visually see the condition of the street signs without having to be in the field. It also allows them to prioritize street signs needing replacement.

Client:
City of Loganville Public Works
Department - Stormwater Division

Owner:
City of Loganville Public Works
Department - Stormwater Division

Location:
Loganville, Georgia

Date:
September 2015 - Present

Main Contact:
City of Loganville
Public Utilities Department
Brandon Phillips, Director
4303 Lawrenceville Road
Loganville, GA 30052
770.466.0911

Website:
www.loganville-ga.gov

Services:

- Location and inspection of all stormwater system components
- Photographic documentation of structures and conveyances
- Creation and maintenance of the stormwater system geodatabase
- Annual 20% system review per Georgia EPD requirements
- Maintain sewer system geodatabase
- Maintain zoning geodatabase
- Location and inspection of all street signs in city limits

5. SIMILAR EXPERIENCES

MS4 Inventory and Inspection City of Brookhaven, Georgia



In November 2018, the City began an inventory of its stormwater system - every storm drain, manhole, catch basin, pipe, and pond in the City. Brookhaven contains approximately 9,700 drains, 300 storage ponds, and almost 11,000 conveyances/pipes.

“The intent is to have a totally connected system that connects the structures in the rights-of-way (sic) to the stormwater discharge locations at the City’s boundaries,” said Gregory Anderson, the City’s Stormwater Utility Manager. “We will also have a visual assessment of the maintenance and structural condition of the system.” TerraMark Land Surveying, Inc. Was contracted to conduct the inventory, including photographing, mapping, and collecting data, such as the condition of each asset.

Mayor Davis says that many residents are unaware that the stormwater system has been transferred from the County to Brookhaven. “Along with this transfer came a maintenance backlog and infrastructure neglect. We have managed our budget well for this department and have the necessary funds which will allow us to manage a more consistent schedule of maintenance and upgrades.”

TerraMark has been retained by the City to perform the annual twenty percent (20%) inspection and inventory, as required by the Georgia EPD. This process includes a field visit to assets to determine their condition, inspect for obstructions, monitor for illicit connections and/or discharges and recommend potential repairs or replacements. Obtaining on-site photographs of both structures and conveyances is part of this procedure. Data is formatted and stored in a geodatabase for use within the City’s GIS by staff members. **At the City’s request, the project was completed within four (4) years, rather than five (5).**

**Reprinted from Brookhaven City News Volume 4, Issue 1, Winter 2015*

Client:

City of Brookhaven Public Works
Department - Stormwater Division

Owner:

City of Brookhaven Public Works
Department - Stormwater Division

Location:

Brookhaven, Georgia

Date:

January 2014 - December 2018

Main Contact:

City of Brookhaven
Public Works Department
Stormwater Division
Don Sherrill, PE, PLS, PMP
4362 Peachtree Road
Brookhaven, GA 30319
404.637.0524

Website:

www.brookhavenga.gov

Services:

Location and inspection of all
stormwater system components

Photographic documentation of
structures and conveyances

Creation and maintenance of the
stormwater system geodatabase

Annual 20% system review per
Georgia EPD requirements

5. SIMILAR EXPERIENCES

Stormwater Management GIS City of Dunwoody, Georgia



*“Under the requirements of the City of Dunwoody’s Notice of Intent for a small Municipal Separate Storm Sewer (MS4) Permit, the City is required to perform and maintain an inventory of the stormwater conveyance system. This inventory will provide location as well as a condition assessment of all storm structures (catch basins, junction boxes, headwalls), and all pipes within the City. The permit requires that a minimum of twenty percent of the system is assessed each year with the intent that each municipality reviews their entire storm system once every five years. In order to comply with this requirement, the City issued a Request for Proposal (RFP) to begin this inventory.”**

In January 2010, **TerraMark** was chosen by the City for the initial phase. Working together with the City’s Public Works Department, the project team used the state-of-the-art technology to locate and inspect the system. The results are stored in a geodatabase designed by the City and enhanced by **TerraMark’s** GIS staff. This dataset includes identification, location, physical, operational, and maintenance information for each asset (structure and/or conveyance) within the project’s area of interest. GPS-enabled data collectors are used by our field crews to both map the location and store vital information for each asset. Specially-equipped digital cameras enable us to obtain high-quality photographs illustrated conditions inside of pipes, catch basins, etc.

TerraMark was retained by the City to complete the original inventory in 2011, to begin the annual twenty percent (20%) review cycle as required by the Georgia EPD in 2013, and was subsequently awarded a multi-year contract to continue performing the 20% reviews and updates beginning in 2014.

**Chuck Davis, PE, Deputy Director of Public Works, Dunwoody*

Client:

City of Dunwoody Public Works
Department - Stormwater Division

Owner:

City of Dunwoody Public Works
Department - Stormwater Division

Location:

Dunwoody, Georgia

Date:

January 2010 - December 2011

Main Contact:

City of Dunwoody
Public Works Department
Stormwater Division
John Gates, Public Works Director
4800 Ashford Dunwoody Road
Dunwoody, GA 30338
678.382.6700

Website:

www.dunwoodyga.gov

Services:

- Location and inspection of all stormwater system components
- Photographic documentation of structures and conveyances
- Creation and maintenance of the stormwater system geodatabase
- Annual 20% system review per Georgia EPD requirements

5. SIMILAR EXPERIENCES

MS4 Inventory and Inspection City of Dunwoody, Georgia



In 2013, the City of Dunwoody once again selected **TerraMark** to perform the MS4 Inventory and Inspection project. Outfall Dry Weather Screening was added to the list of tasks to be accomplished for the 2013 - 2017 reporting cycle. A separate Outfall map feature layer was created allowing the City to report and map outfalls based upon any combination of parameters (odor, color, turbidity, floatables, etc.), field measurements (temperature, pH, conductivity, fluoride, surfactants, etc.), and potential illicit discharges.

We also designed and created a detention pond map feature layer, capturing two-hundred-twenty-four (224) detention facilities from various source documents. Additional enhancements resulted in an improved and more robust “second generation” data set. These enhancements resulted in an improved and more robust “second generation” data set. These enhancements are the product of the combined efforts of the dedicated professionals from both the City and **TerraMark**.

The completion of this project resulted in a geodatabase containing:

- 11,323 man-made structures
- 1,020 network nodes (conveyance intersections without a physical structure)
- 8,894 closed conveyances (140 miles)
- 3,081 open conveyances (79 miles)
- 939 outfalls
- 224 detention facilities

We were again selected in 2018 to perform the MS4 Inventory and Inspection Project, Outfall Dry Weather Screening, and Post-Construction Stormwater Management.

Client:

City of Dunwoody Public Works
Department - Stormwater Division

Owner:

City of Dunwoody Public Works
Department - Stormwater Division

Location:

Dunwoody, Georgia

Date:

January 2013 - 2022

Main Contact:

City of Dunwoody
Public Works Department
Stormwater Division
John Gates, Public Works Director
4800 Ashford Dunwoody Road
Dunwoody, GA 30338
678.382.6700

Website:

www.dunwoodyga.gov

Services:

- Five-year MS4 inventory and inspections
- Five-year outfall dry weather screenings and inspections
- Enhanced geodatabase capabilities
- Developed detention pond map features layer

5. SIMILAR EXPERIENCES

5.3 References

TerraMark is pleased to submit the following list of similar public sector clients as references:

CITY OF AUSTELL, GEORGIA

Meg Mbugua, PE
RINDT, Inc.
334 Cherokee St NE
Marietta, GA 30060

Voice: 770-427-8123
Fax: 770-425-8930
Email: meg@rindt.com

CITY OF LOGANVILLE, GEORGIA

Brandon Phillips Director of Utilities
PO Box 39
Loganville, GA 30052

Voice: 770-466-1306
Fax: 770-466-0904
Email: bphillips@loganville-ga.gov

BARROW COUNTY, GEORGIA

Mr. Chris Yancey
Public Works Director
30 North Broad Street
Winder, GA 30680

Voice: 770-867-7640
Fax: 770-307-3001
Email: cyancey@barrowga.com

CITY OF ROSSVILLE, GEORGIA

Mr. Mark Harris
City of Rossville Public Works Department
400 McFarland Avenue
Rossville, GA 30741

Voice: 706-866-1325
Fax: 706-861-0765
Email: markharris_rsd@att.net

CITY OF BROOKHAVEN, GEORGIA

Mr. Gregory Anderson, PE
Stormwater Utility Manager
4362 Peachtree Road NE
Brookhaven, GA 30319

Voice: 404-637-0528
Fax: 404-637-0525
Email: gregory.anderson@brookhaven.gov

CITY OF ROSWELL, GEORGIA

Robert Dell-Ross, PE
Engineering Design Manager
38 Hill Street, Suite 235
Roswell, GA 30075

Voice: 770-594-6295
Fax: 678-639-7545
Email: rdellross@roswellga.gov

FORSYTH COUNTY, GEORGIA

Ms. Adrian Casey, Procurement Director
Forsyth County
514 West Maple Street, Suite 104
Cumming, GA 30040

Voice: 770-888-8872
Fax: 770-205-4666
Email: acasey@forsythco.com

COBB COUNTY MARIETTA WATER AUTHORITY

Ms. Rita Neely, PE
Cobb County Marietta Water Authority
1170 Atlanta Industrial Drive
Marietta, GA 30066

Voice: 770-514-5300
Fax: 770-514-5224
Email: rneely@ccmwa.org

PROPOSAL FORM
RFP 23-06 2023-2027 MS4 Inspections & Dryweather Screenings

The undersigned, as Proposer, hereby declares that this Proposal is in all respects fair and submitted in good faith without collusion or fraud. Proposer represents and warrants to the City that: (i) except as may be disclosed in writing to the City with its Proposal, no officer, employee or agent of the City has any interest, either directly or indirectly, in the business of the Proposer, and that no such person shall have any such interest at any time during the term of the Contract should it be awarded the Contract; and (ii) no gift, gratuity, promise, favor or anything else of value has been given or will be given to any employee or official of the City in connection with the submission of this Proposal or the City’s evaluation or consideration thereof.

The Proposer further represents that it has examined or investigated the site conditions if necessary, and informed itself fully in regard to all conditions pertaining to the place where the work is to be done; that it has examined the Contract Documents (available at <http://www.dunwoodyga.gov>) and has read all Addendum(s) furnished by the City prior to the opening of the Proposals, as acknowledged below, and that it has otherwise fully informed itself regarding the nature, extent, scope and details of the services to be furnished under the Contract.

The Proposer agrees, if this Proposal is accepted, to enter into the written Contract with the City in the form of Contract attached (properly completed in accordance with said Proposal Documents), and the Contract Documents for RFP 23-06 2023-2027 MS4 Inspections & Dryweather Screenings, at the City of Dunwoody, and to furnish the prescribed evidence of a valid business license, insurance, and all other documents required by these Contract Documents. The Proposer further agrees to commence work and to perform the work specified herein within the time limits set forth in the Contract Documents, which time limits Proposer acknowledges are reasonable.

The undersigned further agrees that, in the case of failure or refusal on its part to execute the said contract, provide evidence of specified insurance, a copy of a valid business or occupational license and all other documents required by these Contract Documents within ten (10) business days after being provided with Notice of Intent to Award the contract (or such earlier time as may be stated elsewhere in these Proposal Documents), the Proposal award may be offered by the City to the next ranked Proposer, or the city may re-advertise for Proposals, and in either case the City shall have the right to recover from the Proposer the City’s costs and damages including, without limitation, attorney’s fees, to the same extent that the City could recover its costs and expenses from the Proposer under section 10 of the Instructions to Proposers if the Proposer withdrew or attempted to withdraw its Proposal.

The Proposer further agrees, if it fails to complete the work according to the Specification within the scheduled time or any authorized extension thereof, that damages may be deducted from the Contract price otherwise payable to the Proposer.

Acknowledgement is hereby made of the following Addendum(s) received since issuance of the Solicitation Documents (identified by number)

| Addendum No. | Date | Addendum No. | Date | Addendum No. | Date |
|--------------|-------|--------------|-------|--------------|-------|
| N/A | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ |

RFP 23-06

It shall be the responsibility of each Proposer to visit the City Purchasing Department’s website to determine if addendum(s) were issued and, if so, to obtain such addendum(s). Failure to acknowledge an addendum above shall not relieve the Proposer from its obligation to comply with the provisions of the addendum(s) not acknowledged above.

Company Name: TerraMark Geospatial

Work is to commence on or about **October 1, 2023. This contract shall be for five years.**

The City of Dunwoody requires pricing to remain firm for the duration of the initial term of the contract. Failure to hold firm pricing for the initial term of the contract will be sufficient cause for the City to declare bid non-responsive.

Termination for Cause: The City may terminate this agreement for cause upon ten days prior written notice to the Consultant of the Consultant’s default in the performance of any term of this agreement. Such termination shall be without prejudice to any of the City’s rights or remedies by law.

Termination for Convenience: The City may terminate this agreement for its convenience at any time upon 30 days written notice to the Consultant. In the event of the City’s termination of this agreement for convenience, the Consultant will be paid for those services actually performed. Partially completed performance of the agreement will be compensated based upon a signed statement of completion to be submitted by the Consultant, which shall itemize each element of performance.

Termination for fund appropriation: The City may unilaterally terminate this Agreement due to a lack of funding at any time by written notice to the Consultant. In the event of the City's termination of this Agreement for fund appropriation, the Consultant will be paid for those services actually performed. Partially completed performance of the Agreement will be compensated based upon a signed statement of completion to be submitted by the Service Provider which shall itemize each element of performance.

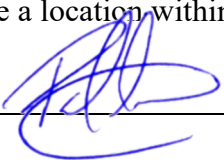
The Proposer agrees to provide all work described in this document.

Legal Business Name TerraMark Geospatial

Federal Tax ID 01-0760217

Address 1396 Bells Ferry Rd, Marietta, GA 30066

Does your company currently have a location within the City of Dunwoody? Yes No

Representative Signature 

Printed Name Paul Cannon, RLS

Telephone Number 770-421-1927

Fax Number 770-421-0552

Email Address pcannon@terramark.com

MS4 Inspections and Dry Weather Screenings Cost Estimate for

Dunwoody, Georgia



2023 - 2027 MS4 Inspections and Dry Weather Screenings

RFQ # 23-06

September 21, 2023

Submitted by

TerraMark Geospatial

1396 Bells Ferry Rd

Marietta, GA 30066-6084

Voice: 770-421-1927 Fax: 770-421-0552

www.TerraMark.com



PROVIDING GEOSPATIAL SERVICES SINCE 2003





COST ESTIMATE

- RFP Section 3.3: All fees shall be **unit rates** and include all labor, material, equipment, and direct expenses. No allowances for reimbursable expenses such as mileage, printing, deliveries, etc.
- RFP Section 3.5: Each proposal shall include a cost estimate within a separate sealed package. Cost estimates should be provided on a unit basis for the following:
 - Stormwater Structure
 - Stormwater Conveyance
 - Outfall Screening
 - GI / LID
 - Stormwater Ponds
- RFP Section 3.6: More ponds other than the 77 public and private-owned ponds may require inspections. Submit a unit cost per pond inspection along with the cost estimate.

1.1 COST ESTIMATE

| <u>ITEM</u> | <u>UNIT COST</u> |
|-------------------------------|------------------|
| EXISTING Stormwater Structure | \$33.00 |
| New Stormwater Structure | \$90.00 |
| Stormwater Conveyance (Video) | \$95.00 |
| Stormwater Conveyance (Photo) | \$12.00 |
| Outfall Screening | \$143.00 |
| GI / LID Facility | \$500.00 |
| Stormwater Pond | \$385.00 |

Unit costs stated above will be valid from the date of receipt of written Notice to Proceed from the City through December 31, 2027.