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TNH22001.19

September 25, 2024

David Ryan, PE
Town Engineer
Town of Nags Head
PO Box 99
Nags Head, NC 27959

**RE: Town of Nags Head Stormwater Management Plan Update
Nags Head, North Carolina
TNH22001.19**

Dear Mr. Ryan,

Proposed Project

The Town of Nags Head was awarded a Stormwater Planning Grant for \$400,000 from NC Division of Water Infrastructure. The grant application included tasks for a stormwater master plan update, asset inventory and condition assessment, and a watershed restoration plan. Phase 1 of this project includes the kickoff of the stormwater master plan update and the stormwater asset inventory and assessment. Completion of the updated stormwater master plan and completion of watershed restorations plans will be completed at a later date.

A scope and fee is provided for the requested tasks, with the remaining budget committed, but not scoped at this time. Change orders will be sent for future tasks. The total contract amount shall not exceed \$400,000 without written approval from the Town.

Assumptions

This proposal is based on the following assumptions:

- I Any public notifications will be coordinated through the Town of Nags Head;
- I Basic traffic control for pipe inspection work will be conducted by McAdams and its subconsultants. Additional traffic control support may be needed with support by the Town of Nags Head (McAdams will notify the Town at least 48-hours in advance of any needs). Major traffic control needs may need to be sub-contracted out at a higher fee and will be negotiated as an additional service;
- I Detailed inspection methodology (visual, pole camera, etc) will be determined during the course of the project based on a number of factors, including but not limited to: known problem areas, visual inspection, discussion and confirmation between McAdams and the Town Nags Head, or other relevant factors;
- I Opinions of Probable Construction Costs (OPCCs) will be high level, budgetary estimates for planning purposes, based upon best available data and appropriate engineering judgement for each project area. Detailed survey data, subsurface utility exploration information, geotechnical investigations, etc. may be required later to refine costs and obtain bid-level estimates;
- I Project and contract management will be led by McAdams; and



- Tasks will be completed McAdams, Moffatt & Nichol, Biohabitats, and Coastal Engineering & Surveying, or a combination of staff from these firms. Additional firms may be added for specialty work as necessary to complete the grant deliverables.

Proposed Services + Fees

We propose the following services (alphanumeric task numbers are for internal coding purposes):

Phase 1A – General Project Administration

A4.10 PROJECT MANAGEMENT + ADMINISTRATION:

FEE: \$8,000

Work under this phase includes the following major tasks and components:

- Initial project due diligence, records research, as-built information, site investigations, data gap analysis, and (as necessary) plat/easement/deed research;
- Assistance with creation of project notifications and communication of site access to impacted residents;
- Periodic project updates and status reports; and
- General project management and administration throughout duration of Phase 1 of contract.

A4.11 PROJECT MEETINGS:

FEE: \$19,000

Work under this phase includes the following major tasks and components:

- In person project kickoff meeting and initial site visits for stormwater master planning (completed August 2024);
- One (1) in person meeting and presentation to Town stakeholders to discuss project prioritization and asset inventory of pipes and structures;
- Up to two (2) virtual public informational meetings/presentations with Town stakeholders, including any committee or council meetings as directed by the Town of Nags Head; and
 - Meetings in this task may include discussion of all three phases of this contract.

Phase 1B – Stormwater Master Plan Update, Initial Analysis

D4.12 PROBLEM AREA ID + CONCEPTUAL DESIGN:

FEE: \$72,000

For this task, McAdams will provide the following scope of services:

- McAdams will analyze up to eleven (11) areas or systems for flood mitigation and hydraulic improvement;

- Areas shall be determined by the Town and their stakeholders (anticipated fall 2024);
- Alternatives analysis and replacement recommendations should balance the replacement longevity and the cost to each community including upfront and maintenance costs. It is envisioned that alternatives will likely include the following:
 - Upgrade of culvert/drainage systems to meet established design criteria;
 - Upgrade of portions of the culvert/drainage system to lesser design standards (with Town approval);
 - Use alternative stormwater control measures such as stormwater pumps, groundwater lowering, floodplain storage, and green stormwater infrastructure for water quantity and quality control;
 - Improvements along alternative alignments to minimize construction cost and impacts to private property, transportation systems, and other existing infrastructure;
 - Non-structural floodproofing options, including alternative flood-hazard mitigation strategies;
- ▮ Capacity analysis of South Memorial Avenue Trunk Line
 - Determine existing conditions hydrology for contributing drainage area
 - Compare existing conditions to current Town standards, and if the current system does not meet Town standards, determine minimum pipe size necessary to bring infrastructure up to current standard
 - Additional modeling, conceptual design, corridor study, and constructability assessment can be completed as a future Phase if requested.
- ▮ Hydrologic and Hydraulic modeling software(s) will be used to perform high level analyses of select existing storm drainage systems within the project area, including both closed conduit and open channel systems. For the majority of the H+H modeling, McAdams will primarily utilize PC-SWMM to prepare an analysis of integrated systems across Town;
- ▮ For each drainage system of interest and S. Memorial Avenue, McAdams will determine peak flow rates (or flood volumes), provided levels of service, and preliminary sizing of pipes and drainageways to meet intended level of service and/or drainage improvements for problem areas;
- ▮ McAdams will evaluate 1- 2-, and 10-, 24-hour SCS Type III rainfall distribution events as part of our modeling efforts. Rainfall depths will be based on NOAA Atlas 14 data. Additional storms may be analyzed on a case by case basis;
- ▮ Previous completed field survey data and drainage basin maps will be used to develop the hydrologic models;
- ▮ Utilize hydrologic models to verify infrastructure capacities, flood prone areas, and identify system deficiencies and critical assets; and
- ▮ Concept level plans are proposed to be exhibits generated from GIS, and will show locations, type, sizes, and preliminary elevation information for proposed drainage infrastructure.

Phase 1C – Asset Inventory + Assessment

D4.21 ASSEST INVENTORY + FIELD DATA COLLECTION:

FEE: \$38,400

Work under this task will include the following:

- ▮ Initial field walks to verify and confirm system connectivity and limits;
- ▮ All field work support associated with pipe, structure, and outfall inspections (including site visits and any support during pipe cleaning and inspection work), plus additional pole camera inspections as determined appropriate. McAdams will perform data collection efforts for stormwater assets through the following tasks:

- Deploy one (1) two-person field crew to collect information on existing stormwater assets in priority areas (to be determined and agreed upon by McAdams and the Town of Nags Head). This information will be collected using a Trimble Catalyst subscription plan, ESRI's Field Maps software and GPS equipment. All field data will be configured into a Geodatabase format for the development of a GIS inventory for the priority areas; and
- Conduct detailed evaluation and quality assurance of field surveys for existing drainage basins and stormwater infrastructure within the project areas.

D4.22 GEODATABASE MANAGEMENT + DASHBOARD CREATION:

FEE: \$26,100

McAdams will update the Town's stormwater GIS inventory and integrate asset conditions into a project dashboard based upon inspection results and problem identification. This work will include:

- | Data assembly and geodatabase development;
- | GIS Dashboard creation, including real-time viewing of field information during data collection based on feedback with Town staff;
- | Adding pipeline ratings based on Town priorities and condition data to the dashboard with links to field data;
- | Ongoing maintenance of the dashboard throughout the life-cycle of this contract. Data maintenance, revisions to the infrastructure map, and updates to condition assessments after initial project completion can be completed under separate contract, or completed by the Town; and
- | A map showing the areas studies in Phase 1 of this scope of work, and areas within the Town limits that are vulnerable to future flooding.

D4.23 ASSET CONDITION ASSESSMENT:

FEE: \$39,500

For this task, McAdams will review all photographs and assess the storm drainage system to determine current condition and where immediate, remedial action may be necessary. A prioritization list relative to repairs needed based on current conditions will be provided. From this information, McAdams will develop an optimized stormwater infrastructure and operation maintenance plan for the Town considering the full inventory of all stormwater control structures and other planned developments. The purpose of this O&M plan will be to extend the life of the existing infrastructure and to optimize its existing operation.

Deliverables:

- | Structural assessments of pipes, catch basins, and other storm structures within the area of interest;
- | Development of scoring matrix based on structural conditions of pipes and open channels;
- | Integration of individual infrastructure repairs (outside of the eleven project areas) into the CIP prioritization, if warranted; and
- | Revisions and updates based on feedback from the Town of Nags Head.

Extra Services

J. ADDITIONAL SERVICES

When requested by the Client and confirmed by the Client and/or Firm in writing, the Firm shall perform services in addition to those described above in this Agreement and the Client shall compensate the Firm by hourly charges in accordance with the attached Rate Schedule.

K. REIMBURSABLE EXPENSES

Valid expenses include mileage, lodging, reproduction and express delivery service with an anticipated total budget of **\$5,000**. These expenses may be paid by the Town in addition to the fees listed above.

Future Phases

Scope and fee for future phases of this project will be completed when requested by the Town.

Stormwater Master Plan Final Report – estimated \$55,800

- ▮ CIP prioritization, probable construction costs, additional engineering reports for up to five sites, review of Town codes, and implementation planning.

Watershed Restoration Plans – estimated \$65,500

- ▮ EPA 9 Element Plan to address impaired waters in Roanoke Sound

Final Reporting – estimated \$8,000

- ▮ Final reporting for grants or deliverables for Town commissioners.

Miscellaneous Contingency – estimated \$62,700

- ▮ Additional stakeholder meetings, travel, field survey, exhibits, reports, expenses, etc.

Fee Summary

- ▮ Phase 1A – \$27,000
- ▮ Phase 1B – \$72,000
- ▮ Phase 1C – \$104,000
- ▮ Expenses – \$5,000

Total for Phase 1 = \$208,000

Future Phases = \$192,000

Our proposed fee for the scope of services described herein is not to exceed **\$400,000** including future phases, contingency, and reimbursables.

Project Schedule

The Firm's services shall be performed as expeditiously as is consistent with professional skill and care and the orderly progress of the project. The following is the expected schedule for completion of work on this project:

An estimated schedule has been included below. McAdams is proposing to complete all Phase 1 work within approximately 240 working days of Notice to Proceed (NTP) from the Town of Nags Head, including the below breakdown by major milestone. Milestone dates below are approximate and shall be adjusted throughout the duration of the project based on any major changes to the scope of the project and/or site conditions. A more detailed schedule will be completed upon NTP from the Town of Nags Head with more specific deadlines.

- ! **Milestone 1:** Project Kickoff, Work Planning, and Scheduling: **+30-days** from NTP
- ! **Milestone 2:** Stakeholder Meetings: **+90 days** from NTP
- ! **Milestone 3:** Storm Structure Inspections/Field Data Collection: **+120-days** from Milestone 1
- ! **Milestone 4:** Geodatabase Management + Dashboard Creation: **+30-days** from Milestone 2
- ! **Milestone 5:** Preliminary Asset Inspection + Assessment Results: **+30-days** from Milestone 3
- ! **Milestone 6:** Phase 1 Final Report: **+30-days** from Milestone 5

Phase 1A, 1B, and 1C of this project are anticipated to be completed by June 1, 2025.

The time limits and schedule set forth above have been agreed to by the Client and Firm, but the time limits and schedule shall be extended for (1) reasonable cause, or for (2) any delays associated with the Firm's work on the project that are not the sole responsibility of the Firm.

Client Responsibilities

Client shall be responsible for the following:

- ! Notification to proceed;
- ! Timely approval of sketches presented for Client approval;
- ! Payment of invoices in accordance with Terms and Conditions; and
- ! Notification to Firm of any problems, in accordance with Terms and Conditions.

Exclusions

The following services are not included in this Agreement:

- ! Any engineering or surveying service not specifically described above;
- ! Field surveying and environmental studies, delineation, or investigation, except those specifically described above;
- ! Court appearances for litigation, or preparation for same;
- ! Legal advertisements for construction contracts;
- ! Revised directives from Client after design has begun;
- ! Historical, archeological, insect, or terrestrial or aquatic animal surveys that require highly specialized expertise;
- ! Oversight and direction for vegetation clearing to facilitate evaluation of stormwater infrastructure; and
- ! Scope and detailed fees for Future Phases will be provided at a later date

General Conditions

- ! This proposal is valid for 120 days from the above date.
- ! Reimbursable expenses will be billed in accordance with the attached Rate Schedule.

Conclusion

We appreciate this opportunity to propose our services. We are eager to pursue this project further and thank you for your consideration.

Sincerely,
McAdams

Hunter Freeman, PE, LEED AP | Senior Advisor, Water Resources – Green Stormwater Infrastructure
freeman@mcadamsco.com | 919. 361. 5000

HF/kt

Acceptance

By: _____ Date: _____

Name: _____

Title: _____

Accounting Information

Billing Contact: _____

Billing Contact Email Address: _____

Billing Contact Phone Number: _____

Billing Address: _____
