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October 25, 2017

Richard P. Lovett, P.G.
Environmental Compliance Support Manager
City of Greensboro
Field Operations Department
401 Patton Ave.
Greensboro, NC 27406

Subject: Phase 4 Scope
Onsite and Offsite Monitoring Well Installation and Sampling
Kitchen Building (former Stevecoknits) Property

Dear Mr. Lovett:

CDM Smith Inc. (CDM Smith) is pleased to provide this proposal for the fourth phase of assessment at the former Stevecoknits site (Site). This location is now the Kitchen Building and houses critical City services such as Water Resources, Fire and Police personnel. Based on discussions of proposed scope and a review of the previous data from Phases 2 and 3, we are proposing a fourth phase to assess the site to a point that Phase I and Phase II Remedial Investigation Reports can be generated.

Phase 1 tasks included an indoor air/vapor intrusion assessment to be completed prior to commencing Phase 2. Phase 2 tasks included site utility survey and site-wide screening and source identification through a membrane-interphase probe (MIP) investigation and temporary groundwater monitoring well installation and sampling. Phase 3 tasks included installation and sampling of permanent onsite monitoring wells and sampling of existing offsite monitoring wells. Based on the results of the Phase 3 tasks, proposed Phase 4 tasks are provided below.

Task 1 Additional Permanent Onsite Monitoring Well Installation

Based on the evaluation of the results of the monitoring well installation and sampling discussed in the Phase 3 scope, CDM Smith will install additional onsite permanent monitoring wells to complete a comprehensive site assessment. Four shallow and one bedrock onsite monitoring wells will be installed to monitor the groundwater table and fractured bedrock aquifer. In addition, one deep bedrock well will be installed down-gradient of the source area to determine the vertical extent of contamination. Initial proposed monitoring well locations are provided on **Figure 1**. Prior to well installation, proposed well locations will be field located and cleared of utilities by J.C. Waller and Associates. Actual locations may be modified based on utility locations and accessibility. CDM Smith will contract with a licensed drilling subcontractor to install the monitoring wells. Prior to installation, a Guilford County monitoring well

permit will need to be obtained. It is assumed that the City will coordinate procurement of the monitoring well permit and handle all associated permit costs.

The work to be provided by the drilling contractor will include the following items:

- Hollow-stem augering and air rotary or sonic drilling.
- Standard penetration testing and soil sample collection.
- Permanent monitoring well installation and development.

CDM Smith has obtained a quote from a drilling contractor based on the preliminary boring plan and estimated footages described below:

- Hollow-stem augering and Type II monitoring well installation– 200 feet.
- Hollow-stem augering and 6-inch surface casing to bedrock – 55 feet.
- Air rotary or sonic drilling and 6-inch well casing – 70 feet.
- Air rotary or sonic drilling and Type III monitoring well installation- 160 feet.

In order to log each boring, soil samples will be collected with standard split spoon. During drilling for the shallow wells, soil samples from up to four wells will be collected and submitted to the City's contracted analytical lab (ENCO) for analysis of total organic carbon (TOC) and chemical oxygen demand (COD). In addition, samples from up to four wells will be submitted to a geotechnical laboratory for grain-size analysis costs for geotechnical analysis are included in this proposal. For budgeting purposes, ENCO cost estimates associated with the well installation analytical work are $260.

Each monitoring well will be constructed using 2-inch diameter Schedule 40 PVC riser flush-threaded to 5 to 15 feet of 0.010-inch mill slotted Schedule 40 PVC screen, depending on subsurface conditions encountered during drilling. A filter pack consisting of Number 2 Standard sand will be installed 2 feet above the screen. A bentonite annular seal will be installed 2 feet above the filter pack and hydrated with potable water. The remainder of the borehole annulus will be completed with a bentonite grout slurry to 6-inches below land surface. Type III wells will be screened in the fractured bedrock and will be constructed similar to the Type II wells, but will have 6-inch PVC surface casing installed from land surface to 2-feet into the top of bedrock. The deeper well will have a 6-inch well casing installed from ground surface into bedrock to a depth of approximately 70 feet. All wells will be completed with a locking expansion plug, a 2-feet by 2-feet concrete pad, and a flush-mounted protective cover.

Following installation, each well will be developed to remove suspended solids from the water column until development water is visually clear. All development water will be containerized and stored onsite in secure location for later disposal at an appropriate facility. Following development and well completion, each newly installed well will be slug-tested to estimate hydraulic conductivity. Both rising-head (slug in) and falling head (slug out) tests will be performed.

Investigative-derived waste (IDW) generated during onsite drilling activities will consist of soil and rock, as well as water and mud from decontamination and development activities. Drilling IDW (soil and mud) will be containerized in a roll-off and characterized for disposal. Up to 2 composite samples will be collected from the roll-off to determine waste disposal characteristics. The composite soil samples will be analyzed for Ignitability and Corrosivity as well as using the Toxicity Characteristic Leaching Procedure (TCLP) for volatile organic compounds (VOC), semi-VOCs (SVOC), and RCRA metals. For this scope, it is assumed that IDW from the roll-off will be non-hazardous and will be disposed of at a permitted facility. Water generated during decontamination and development activities will be containerized in 55-gallon drums. IDW in the drums will be handled separately from the IDW in the roll-off. Samples will be collected from two representative drums and will be analyzed for VOC, SVOC, and RCRA metals prior to disposal at an appropriate facility. Costs for disposal as non-hazardous at an appropriate facility are included in this Task. Costs assume 20 cubic yards of soils and 16 drums of decontamination, development, and purge water for disposal as non-hazardous. All samples to be analyzed for IDW characterization will be analyzed by ENCO Laboratories in Cary, North Carolina and paid through the City's contract. For budgeting purposes, ENCO's costs associated with the IDW analytical work for the onsite well installation are estimated to be $1,670.

Following completion, the new monitoring wells will be surveyed by a registered surveyor with City of Greensboro MWBE certifications (J.C. Waller & Associates) for northing/easting and ground/top of casing elevations. All wells will be surveyed to North Carolina State Plane using the North American Datum of 1983.

Task 2 Additional Permanent Offsite Monitoring Well Installation

Based on the evaluation of the results of the offsite sampling discussed in the Phase 3 scope, CDM Smith will install additional offsite permanent monitoring wells to estimate the extent of groundwater contamination that has migrated offsite. Three shallow and three bedrock monitoring wells will be installed offsite to monitor the groundwater table and fractured bedrock aquifer downgradient of the Kitchen Building property. Proposed monitoring well locations are provided on **Figure 1**. Prior to well installation, proposed well locations will be field located and cleared of utilities by J.C. Waller and Associates. Actual locations may be modified based on utility locations and accessibility. CDM Smith will contract with a licensed drilling subcontractor to install the monitoring wells. Prior to installation, a Guilford County monitoring well permit will need to be obtained. It is assumed that the City will

coordinate procurement of the monitoring well permit and handle all associated permit costs. In addition, it is assumed that the City will procure access agreements, as needed.

The work to be provided by the drilling contractor will include the following items:

- Hollow-stem augering and air rotary or sonic drilling.
- Standard penetration testing.
- Permanent monitoring well installation and development.

CDM Smith has obtained a quote from a drilling contractor based on the preliminary boring plan and estimated footages described below:

- Hollow-stem augering and Type II monitoring well installation– 150 feet.
- Hollow-stem augering and 6-inch surface casing to bedrock – 165 feet.
- Air rotary or sonic drilling and Type III monitoring well installation- 180 feet.

In order to log each boring, soil samples will be collected with standard split spoon methods.

Each monitoring well will be constructed using 2-inch diameter Schedule 40 PVC riser flush-threaded to 5 to 15 feet of 0.010-inch mill slotted Schedule 40 PVC screen, depending on subsurface conditions encountered during drilling. A filter pack consisting of Number 2 Standard sand will be installed 2 feet above the screen. A bentonite annular seal will be installed 2 feet above the filter pack and hydrated with potable water. The remainder of the borehole annulus will be completed with a bentonite grout slurry to 6-inches below land surface. Type III wells will be screened in the fractured bedrock and will be constructed similar to the Type II wells, but will have 6-inch PVC surface casing installed from land surface to 2-feet into the top of bedrock. All wells will be completed with a locking expansion plug, a 2-feet by 2-feet concrete pad, and a flush-mounted protective cover.

Following installation, each well will be developed to remove suspended solids from the water column until development water is visually clear. All development water will be containerized and stored in secure location for later disposal at an appropriate facility. Following development and well completion, each newly installed well will be slug-tested to estimate hydraulic conductivity. Both rising-head (slug in) and falling head (slug out) tests will be performed.

IDW generated during offsite drilling activities will consist of soil and rock, as well as water and mud from decontamination and development activities. Drilling IDW (soil and mud) will be containerized in a roll-off and characterized for disposal. Two composite samples will be collected from the roll-off to

determine waste disposal characteristics. The composite samples will be analyzed for Ignitability and Corrosivity as well as TCLP for VOC, SVOC, and RCRA metals. For the purpose of this scope, it is assumed that IDW from the roll-off will be non-hazardous and will be disposed of at a permitted facility. Water generated during decontamination and development activities will be containerized in 55-gallon drums. IDW in the drums will be handled separately from the IDW in the roll-off. Samples will be collected from two representative drums and will be analyzed for VOC, SVOC, and RCRA metals prior to disposal at an appropriate facility. Costs for disposal as non-hazardous are included in this Task. Costs assume 15 cubic yards of soils and 16 drums of decontamination/development/purge water for disposal as non-hazardous. All samples to be analyzed for IDW characterization will be analyzed by ENCO Laboratories in Cary, North Carolina and paid through the City's contract. For budgeting purposes, ENCO's costs associated with the IDW analytical work for the offsite well installation are estimated to be $1,670.

Following completion, the new offsite monitoring wells will be surveyed by a registered surveyor with City of Greensboro MWBE certifications (J.C. Waller & Associates) for northing/easting and ground/top of casing elevations. All wells will be surveyed to North Carolina State Plane using the North American Datum of 1983.

Task 3 – New and Existing Monitoring Well Sampling

Following a period of at least one week after permanent monitoring well development of the Phase 4 onsite and offsite wells, the new wells and existing (both onsite and offsite) monitoring wells will be sampled for volatile organic compounds (VOC) by Environmental Protection Agency Method 8260 as well as the following:

- Field measurements of temperature, conductivity, pH, redox potential, dissolved oxygen, and turbidity
- Alkalinity, chloride, total dissolved solids (TDS), sulfate, and nitrate,
- TOC, COD, and dissolved organic carbon,
- Calcium, ferrous iron, total iron, manganese, potassium, and sodium.
- Groundwater samples will be collected from MW-30S and MW-29D and analyzed for dissolved gases (ethene, ethane, and methane) and Census – Chlorinated ethenes (Dehalococcoides, Dehalobacter, and Dehalogenimonas).

The additional groundwater data will be used to evaluate potential remediation strategies for the site. For the purpose of this proposal, it is assumed that samples will be collected from 12 new wells and 11 existing wells.

Each groundwater well will be purged a minimum of three well volumes prior to sample collection. Purging will be accomplished by pumping with a submersible pump. Groundwater samples will be collected from the wells using EPA approved low-flow techniques. Prior to groundwater sampling activities, water levels will be measured at each well using an electronic water level indicator with an accuracy of 0.01 feet. Water quality parameters including pH, conductivity, temperature, dissolved oxygen, and oxidation-reduction potential will be monitored during purging using a multi-parameter water quality meter. Following stabilization of the purge parameters, groundwater samples will be collected.

All samples to be analyzed for VOC, alkalinity, chloride, total dissolved solids (TDS), sulfate, nitrate, TOC, COD, dissolved organic carbon, MEE (methane, ethene, and ethane), calcium, ferrous iron, total iron, manganese, potassium, and sodium will be analyzed by ENCO Laboratories in Cary, North Carolina and paid through the City's contract. For budgeting purposes, ENCO's costs associated with the proposed groundwater sampling are estimated to be $11,025.

A specialty lab will be utilized for analysis and reporting of the census – chlorinated ethenes. Costs for the specialty laboratory analytical work are included in this proposal.

All purge water generated during monitoring well sampling will be containerized and placed in 55-gallon drums. Samples of the collected purge water will be collected prior to disposal at an appropriate facility with IDW from the installation activities. Costs assume 6 drums of purge water for disposal as non-hazardous.

Task 4 – Phase I and II Remedial Investigation and Reports

In anticipation of eventual inclusion of the site in the North Carolina Inactive Hazardous Sites Branch (IHSB) Registered Environmental Consultant (REC) program, CDM Smith will prepare Phase I and subsequent Phase II Remedial Investigation Reports.

Phase I Remedial Investigation

In accordance with the IHSB Guidance document (October 2015), the Phase I Remedial Investigation Report will be designed to identify contaminants and areas of concern. The Phase I report will include at a minimum:

- A site description that includes a discussion of previous and current site occupants, activities, owners, and conditions.
- An evaluation of the property and adjacent parcels for the presence of environmentally sensitive areas.

- A discussion of the site ownership and permitting history from original development to current, including a discussion of previous and ongoing environmental investigations at the site and regulatory involvement.
- A discussion of future proposed methods of investigation to characterize the site geologic and hydrogeologic conditions and identify and delineate each contaminant source for each affected environmental medium.
- A discussion for proposed methods, locations, procedures, and justifications for all monitoring wells and future sample collection and related laboratory analysis, as well as proposed field and lab procedures for quality assurance/quality control.
- A proposed schedule for site activities and reporting.

The Phase I Remedial Investigation Report will be submitted to the City of Greensboro for review and comment and a Final Report will then be generated.

Phase II Remedial Investigation Report

Following completion of the Phase I report, CDM Smith will commence with completion of the Phase II Remediation Report. The Phase II report will be structured to meet the requirements in the IHSB guidance and will include discussions of investigation methodology, site geology and hydrogeology, previous soil and groundwater sampling results, as well as recent well installation and sampling results. The Phase II report will also include bore logs and well construction diagrams for all existing on and off-site groundwater monitoring wells, groundwater contour maps for both the shallow and fractured bedrock aquifers and isocontour maps for identified contaminants of concern.

The results will be compared to the applicable State remediation standards and areas exceeding the standards will be estimated, along with the areas of uncertainty defined. Based on these areas and site-specific land uses, a conceptual exposure/risk evaluation will be completed and the exposure pathways will be evaluated. This will ultimately result in the development of a site conceptual model that will communicate where, how, and why future remediation plans should be developed.

Supplemental Task 5 – Internal Feasibility Assessment

CDM Smith also proposes to complete an initial assessment of potentially applicable remedial technologies for the site. This assessment will be used for internal planning purposes only and will be highly beneficial in planning future work for the site. The assessment will first evaluate technologies reasonably believed to be appropriate for the site based on the site-specific data and the technologies will be initially ranked according to technical considerations. The highest ranked technologies will then

be evaluated in more detail, including conceptual costs. This process will conclude with the City's input and a preferred technology or a subset of technologies identified for future consideration.

Supplemental Task 6 – REC Program Initiation

Based on conversations about the site, it is understood that the City would like to enter to into an Administrative Agreement with the Inactive Hazardous Sites Branch (IHSB) through the Registered Environmental Consultant (REC) program. CDM Smith has included costs to submit the initial application into the program and generate the initial Remedial Investigation report. In addition, CDM Smith will attend 1 meeting with the City and IHSB staff to discuss the site and program. This cost assumes that the IHSB will determine that the site is eligible for the REC Program and the City will pay all application and Program fees.

CDM Smith will complete Tasks 1 through 4 of the proposed Phase 4 Investigation as described above for a cost of $238,125. CDM Smith and subcontractor costs to complete the Phase 4 tasks are provided below:

Task	CDM Smith Cost	Subcontractor Cost
Task 1 – Onsite Monitoring Well Installation	$34,915	$62,750
Task 2 – Offsite Monitoring Well Installation	$37,595	$67,820
Task 3 – Monitoring Well Sampling	$7,600	$1,815
Task 4a – Phase I Remedial Investigation Report	$9,860	--
Task 4b – Phase II Remedial Investigation Report	$15,770	--
Total	$238,125	

If requested, CDM Smith will complete Supplemental Tasks 5 and 6 as described above for a cost of $39,790. CDM Smith and subcontractor costs to complete the Supplemental Phase 4 tasks are provided below:

Supplemental Task	CDM Smith Cost	Subcontractor Cost
Task 5 – Internal Feasibility Assessment	$17,190	--
Task 6 – REC Program Initiation	$22,600	--
Total	$39,790	

It is assumed that available historic and previous investigation data and reports, as well as the information collected during the proposed Phase 4 scope will be sufficient to generate Phase I and II Remedial Investigation Reports that follow IHSB guidance. If the results do not support this assumption, additional Remedial Investigation work may be required. If additional Remedial Investigation Phases are necessary, separate proposals will be provided.

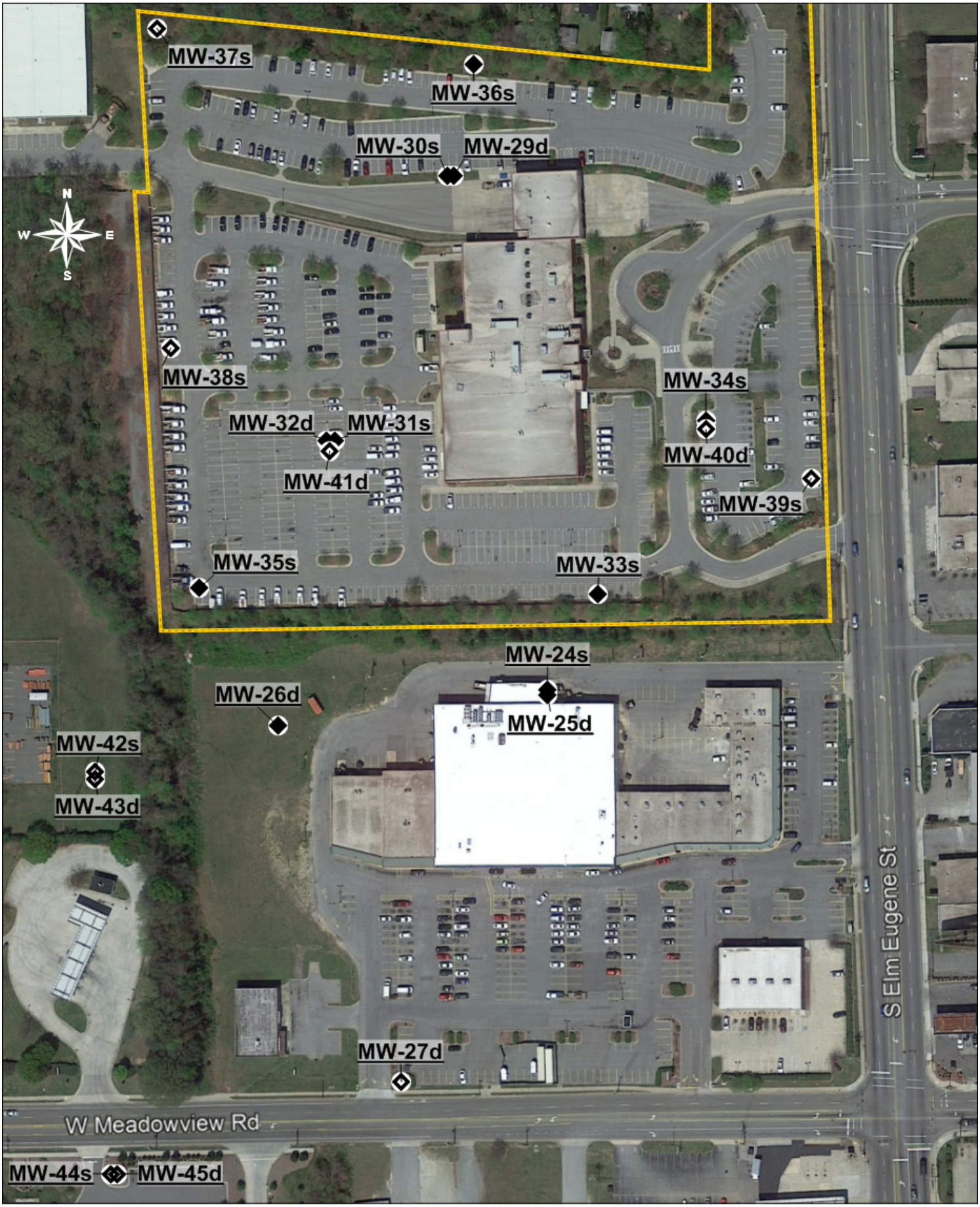
CDM Smith appreciates the opportunity to continuing to work with the City of Greensboro on this important site and to provide this proposal for the fourth phase of work. If you have any questions or require any additional information, please do not hesitate to contact me at (919) 325-3569 or by email to ColoneMF@cdmsmith.com.

Sincerely,

Mathew F. Colone, P.G.
Project Manager
CDM Smith Inc.

Kevin C. Irby, P.E.
Vice President
CDM Smith Inc.

cc: Tom Duffey, CDM Smith Inc.



Scale in Feet

0 100 200

Legend

- Existing Groundwater Monitoring Well Location
- Proposed Groundwater Monitoring Well Location
- Property Boundary

CDM Smith

Figure 1
Proposed Well Locations
Kitchen Building
City of Greensboro, North Carolina