EXHIBIT A
PROFESSIONAL ENGINEERING SERVICES
for the
CITY OF HENDERSONVILLE
WWTF BIOSOLIDS THERMAL DRYER PROJECT

I. PROJECT UNDERSTANDING AND PURPOSE

The following presents the scope of work to provide professional engineering services for the Wastewater Treatment Facility (WWTF) Biosolids Thermal Dryer Project. McKim & Creed, Inc. will provide the following major services for the improvements to the facility:

- NCDEQ Division of Water Infrastructure CWSRF Funding Assistance
- Preparation of a Basis of Design Report
- Preliminary Design
- Final Design
- Permitting Assistance
- Solids Management Program Contracting Assistance
- Prequalification of Bidders Assistance
- Formal Bid & Award Services
- Construction Administration
- Construction Observation
- Post-Construction Services

The scope of services described herein is based upon providing treatment for waste activated sludge generated at the City of Hendersonville's WWTF, to produce a thermally dried Class A biosolids product suitable for distribution and marketing. The proposed Biosolids Thermal Drying Facility is intended to reduce the City's vulnerability from reliance on landfills for disposal of biosolids. The Biosolids Thermal Drying Facility will be designed to adhere to the requirements of Title 40 Code of Federal Regulations Part 503 for disposal of Class A biosolids, and will adhere to the requirements of the City's Distribution of Class A Residuals Permit No. WQ0011381.

Major components of the project are anticipated to include:

- Rehabilitation or replacement of the existing dewatered cake conveyor
- Modifications to the existing dewatering building processing room for the installation of a new dryer feed hopper for dewatered cake from the belt filter presses
- New Dryer Feed Hopper
- New Dryer Feed Conveyance Equipment
- New Biosolids Thermal Dryer
- New Dried Biosolids Conveyance Equipment
- Modifications to the existing biosolids covered storage area to enclose a portion of the structure to house the new thermal dryer and associated equipment

- Modifications to the existing biosolids covered storage area to construct new concrete push walls and curtain walls on the eastern and southern sides for the storage of dried biosolids
- Installation of a new photovoltaic (PV) solar energy system on the roof of the biosolids covered storage shelter
- Replacement of the existing biosolids covered storage shelter roofing

The services required to assist the City will generally include funding assistance, preliminary evaluations, surveying, subsurface utility engineering, geotechnical investigations, materials testing, permitting, final design, permitting, bidding and award assistance, solids management contracting assistance, construction administration, construction observation, and post-construction services. The project is composed of the following phases and tasks:

PHASE 1:

1. Funding Assistance
2. Preliminary Engineering
3. Final Design
4. Permitting
5. Bidder Prequalification Assistance
6. Bidding and Award Phase
7. Unallocated Project Budget (Phase 1)

PHASE 2:

8. Solids Management Program Contracting Assistance
9. Construction Phase Services
10. Post-Construction Phase Services
11. Unallocated Project Budget (Phase 2)

This scope of services is to provide Phase 1 professional engineering services only. Phase 2 services are to be provided as a future amendment to this contract. Phase 2 services are estimated and are subject to change depending on project requirements at the time of amendment execution.

II. SCOPE OF SERVICES

PHASE 1

TASK 1 – FUNDING ASSISTANCE

Assist the City with the funding application process through the NCDEQ Division of Water Infrastructure (DWI) Clean Water State Revolving Fund (CWSRF). Provide assistance with completing the funding application and consultations with NCDEQ DWI as may be needed. It is noted that the City will have to provide specific documentation and information to complete the application package. Task 1 deliverables will include the completed application forms and priority rating system forms, supporting narratives for the priority rating system form, engineering computations, opinions of probable cost, anticipated schedules, and permit requirements for inclusion in the application package. Additional assistance with other funding options may be provided as additional services if requested by the City.

TASK 2 – PRELIMINARY ENGINEERING

2.1 Design Survey Services

McKim & Creed will coordinate with our surveying subconsultant Stewart to provide design survey services as described below. Survey work will be performed to the Standards of Practice for Land Surveying in North Carolina. Horizontal survey control will be referenced to NC Grid NAD 83 or otherwise specified. Vertical control will be referenced to NAVD88 or otherwise specified. The scope of survey shall include:

1. Set horizontal and vertical control at the WWTF.
2. Limited topographic survey of existing grade immediately to the east of the existing biosolids covered storage area and dewatering building, and between the biosolids covered storage area and the dewatering building. This area is estimated at approximately 0.5 acres.
3. Collection of horizontal and vertical location of existing utilities located surrounding the biosolids covered storage area and dewatering building. Horizontal location and inverts of existing gravity utilities will also be collected. Invert information for the following existing gravity utilities is expected to be collected:
    a. MH 14
        i. 18″ SS in from MH 15
        ii. 18″ SS out to MH 13
    b. MH 15
        i. 12″ SS in from JB 1
        ii. 12″ SS in from DDI 1
        iii. 18″ SS out to MH 14
    c. MH 18
        i. 8″ SS in from Dewatering Building

ii. 12″ SS in from MH 19
iii. 12″ out to JB 1

d. MH 19
i. 12″ SS in from Dewatering Building
ii. 12″ SS out to MH 18

e. JB 1
i. Trench drain invert in
ii. 12″ SS in from MH 18
iii. 12″ SS out to MH 15

f. DDI 1
i. 12″ SS in from Dewatering Building
ii. 12″ SS in from MH 16
iii. 12″ SS out to MH 15

4. Perform 3D laser scanning of the existing biosolids covered storage area and the existing dewatering building to collect existing dimensional data for the existing structures and document as built conditions for the purposes of design. McKim & Creed will utilize the 3D scans of the existing structures to develop base drawings with sufficient accuracy to allow completion of engineered design drawings for the specific infrastructure designs described by this agreement. The scope of 3D scanning shall include:
   a. All interior areas under the biosolids covered storage area
   b. The interior of the dewatering building including the belt filter press room, polymer room, electrical room, slaker/slurry room, control room, and processing room.
   c. Deliverables in Autodesk Revit format.

2.2 Design Subsurface Utility Engineering (SUE) Services

McKim & Creed will provide SUE services as described below:

1. Provide SUE Level B and A services to determine horizontal and vertical locations of existing utilities in the immediate vicinity of the existing biosolids covered storage area and dewatering building. Utilities expected to be located include:
   a. Two 8″ Waste Sludge Force Mains along the east side of the biosolids covered storage area
      i. Two level A test holes adjacent to the biosolids covered storage area, one on each 8″ force main
   b. Two 4″ line slurry pipelines between the dewatering building and the existing gravity thickeners
      i. Level B only
   c. 6″ non-potable water main and branch connections to the dewatering building
      i. One level A test hole on the east side of the biosolids covered storage area

d. 6″ potable water main along west side of paved driveway
    i. Level B only
e. Existing natural gas main along west side of paved driveway
    i. One level A test hole
f. Electrical power, lighting, and controls circuit duct banks
    i. One level A test hole on the existing power feeder duct bank on the east side of the biosolids covered storage area

2. The subsurface utilities will be identified with inverted spray paint and the following color code:
    a. Red = Electric
    b. Blue = Water
    c. Orange = Telecommunications
    d. Yellow = Natural Gas
    e. Green = Sanitary Sewer
    f. White = Unknown utility
3. SUE services will be performed in accordance with the standards as set forth by the American Society of Civil Engineers in publication CI/ASCE 38-02 – Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data.
4. Horizontal and vertical locations of located utilities will be incorporated into the design drawings.

2.3 Geotechnical Investigations

McKim & Creed will coordinate with our geotechnical subconsultant, S&ME, to provide a limited geotechnical investigation of the subgrade conditions adjacent to the existing biosolids covered storage area to provide data needed to design structural foundations. The geotechnical investigations will include:

1. Explore subsurface conditions by performing two soil test borings directly adjacent to the existing biosolids covered storage area, on the east side of the structure, to depths of 30 feet below the existing ground surface, for a total of 60 feet of soil test boring.
2. Laboratory testing will be performed to verify soil classification and obtain soil strength parameters for construction and structure foundation design recommendations.
3. A findings report will be prepared which will include the following:
    a. Site and exploration location plan
    b. Soil test boring logs and generalized subsurface profiles
    c. Recommendations for foundation bearing for the structures and equipment
    d. Recommendations for site preparation and construction of structural compacted fills
    e. Recommendations for control of groundwater or drainage systems if necessary

2.4 Materials Testing

McKim & Creed will coordinate with our materials testing subconsultant, S&ME, to provide non-destructive and destructive materials testing services to assist in the structural evaluation of the existing biosolids covered storage area concrete slab and footings, and the dewatering building processing room floor slab and supporting beams. The materials testing services will include:

1. Core samples of the existing biosolids covered storage area cast-in-place concrete floor slab will be taken for compressive strength testing according to ASTM C42. Two core samples will be taken from the slab in the area of the proposed thermal dryer equipment, and core holes will be repaired with 5,000 psi high early strength non-shrink grout.
2. Swiss Hammer tests will be performed to estimate the compressive strength of the existing cast-in-place reinforced concrete floor slab and supporting walls and beams of the dewatering building processing room. The Swiss Hammer tests will be performed in accordance with ASTM C805.
3. Preparation of a materials testing report summarizing the procedures, results, and analysis of findings.

2.5 Basis of Design (BOD) Document Development

McKim & Creed will prepare a BOD document which will include the following tasks:

1. Collect Historical Biosolids Data: Obtain and evaluate historical biosolids generation, operational, and analytical data for the past three years (2020 to current).
2. Develop Biosolids Generation Projections: Develop updated biosolids generation projections for a 20-year planning period, assumed to span from 2025 through 2045. Updated biosolids generation projections will be developed based on the historical biosolids generation, operational, and analytical data provided by the City, the biosolids generation projections previously developed as part of the Solids Management Plan Evaluation, information from the WWTF Master Plan, and future population projections for the WWTF's service area provided by the City. It is assumed that the future flow projections included in the City's WWTF Master Plan are valid through 2040 and will be utilized for equipment sizing. It is assumed that the future flow projections for the WWTF from 2040 to 2045 will be prepared using the population projections provided by the City and the methodology described in the City's Sanitary Sewer Asset Inventory and Assessment (SSAIA) Master Plan Report.
3. Coordinate Biosolids Sampling and Analysis: Assist in the coordination of sampling and analysis of the dewatered sludge cake to collect information needed for design and permitting purposes, including:
    a. EPA Part 503 metals

b. Nutrient content
c. Volatile solids content
d. Total solids
e. Toxicity Characteristic Leaching Procedure (TCLP) analysis
f. Corrosivity test
g. Ignitability test
h. Reactivity test
i. PFAS (EPA Method 1633)

4. Coordinate WTF Residuals Sampling and Analysis: Assist in the coordination of sampling and analysis of the Water Treatment Facility residuals to collect information needed for Solids Management Program contracting assistance, including:
    a. Nutrient content
    b. Volatile solids content
    c. Total solids
    d. PFAS (EPA Method 1633)
    e. Pathogens (fecal coliform and salmonella)
5. Condition Assessment of Existing Structures and Equipment: Conduct a condition assessment of the existing biosolids covered storage area and dewatering building to evaluate the feasibility of modifying the existing structures to accommodate the new biosolids thermal drying equipment and associated feed and conveyance equipment. The scope of the condition assessments will include:
    a. Review of existing biosolids covered storage area cast-in-place reinforced concrete slab, vertical and horizontal structural members, and roof decking.
        i. This scope of work assumes that the existing biosolids covered storage shelter structural members and footings are adequate to allow for installation of a PV solar energy system on the roof and for modification of the structure to enclose a portion of the structure to house the new thermal dryer equipment. If structural issues or inadequacies are identified, design improvements to modify the existing structural members and footings will be considered additional services.
        ii. This scope of work assumes that the existing floor slab under the biosolids covered storage area will need to be replaced due to condition and to provide adequate support for the proposed wall and equipment foundations.
    b. Review of existing dewatering building processing room cast-in-place reinforced concrete floor slab and supporting beams/walls below.
        i. This scope of work assumes that the existing processing room floor slab and supporting beams/walls below are adequate to support the proposed dryer feed hopper and associated equipment. If structural issues or

inadequacies are identified, design improvements to modify the structure will be considered additional services.

c. Coordination with the existing dewatered cake conveyor manufacturer to evaluate rebuild or replacement needs to ensure continued operation.
d. Review of existing power distribution equipment to identify modifications necessary to accommodate the new equipment.
e. Review of existing controls systems to identify modifications necessary to accommodate the new equipment.

6. Biosolids Management Market Analysis: Perform a biosolids management market analysis to gauge local interest in the Class A dried biosolids product, identify costs and potential revenues, identify market demands for product quality, and to assist in the selection of thermal drying equipment to meet market and regulatory demands. The scope of the biosolids management market analysis will include:
    a. Coordination with the City to identify local stakeholders and potential end users. Local stakeholders are assumed to primarily reside within Henderson County, but may include stakeholders residing in adjacent counties. Market research will include:
        i. Lower value markets – Parks departments, landscapers, garden centers, and bulk soil blenders.
        ii. High value markets – fertilizer distributors and blenders (manufacturing both agricultural and horticultural fertilizer products), specialty agriculture and turf.
    b. In-person meetings with local stakeholders and potential end users to review expected product quality and value, gauge interest, and identify end user concerns. It is assumed that these meetings will occur over two (2) consecutive days and will be limited to stakeholders primarily located in Henderson County. Additional stakeholder meetings may be provided at the City's request as additional services.
    c. Local stakeholders and potential end users may include but not be limited to:
        i. Agribusiness Henderson County
        ii. NCDOT Highway Division 14
        iii. Henderson County Parks and Recreation Department
        iv. Super-Sod
    d. Contacting third-party contracted biosolids haulers and management firms to evaluate contracted management operations, identify market demands on product quality, identify program costs, and evaluate the potential for revenue sharing.
        i. Market research will be focused on larger bulk customers and will assume that the future Class A biosolids product will possess desirable physical and nutrient characteristics. Additional information will be

obtained through contacting the agricultural extension service, and other horticulture and agricultural experts.

ii. Data regarding storage capabilities, historical usage of biosolids fertilizers, preferred product characteristics (physical granule and soil requirements), other product quality issues (such as nutrient content), seasonality of use, usage volumes, product value, and product biases will be obtained from the survey. During the market research process, potential large-scale end users, as well as marketing partners (e.g. distribution brokers) will be identified to gauge demand for the Class A biosolids product.

e. Provide a summary of the findings and recommendations. The report will include:
   i. Market research findings
   ii. Preferred product characteristics and likely value, based on end use type
   iii. Concepts for product distribution and marketing
   iv. List of potential new customers and marketing partners
   v. Processing recommendations identified during survey

7. Equipment Evaluation: Perform an evaluation of equipment alternatives for biosolids thermal drying equipment, potential sludge dewatering system improvements to reduce thermal dryer sizing, and equipment alternatives for PFAS removal from the dried biosolids. The scope of the equipment evaluation will include:
   a. Work with dewatering equipment manufacturers and representatives to evaluate the dewaterability of the WWTF's thickened waste activated sludge (TWAS) and identify up to three (3) potential dewatering system improvements alternatives to reduce biosolids thermal dryer equipment sizing. Dewatering system improvements may include replacement of existing polymer makedown skids, modifications to the existing belt filter presses, modifications to belt filter press operations, or replacement with new dewatering equipment.
      i. McKim & Creed will assist the City in coordinating the collection and shipment of sludge samples for analysis by equipment suppliers to assess dewaterability characteristics under different conditions (e.g. polymer dose and dewatering technology)
   b. Conduct an equipment evaluation workshop with the City to review the categories and types of biosolids thermal drying equipment available, review expected product quality from various biosolids thermal dryer technologies, review the categories and types of PFAS removal systems available, and review biosolids thermal dryer equipment compatibility with PFAS removal systems. Input from City staff will be incorporated as part of the project design.
   c. Work with biosolids thermal dryer equipment manufacturers and representatives identified during the equipment evaluation workshop to develop

preliminary equipment selection and sizing, procurement schedules, budgetary estimates, and operation and maintenance costs. Up to five (5) thermal drying technologies will be included in this evaluation.

d. Compare dewatering system improvements, thermal drying equipment alternatives, and PFAS removal equipment alternatives using a triple bottom line approach to identify the selected process equipment based on cost and non-cost factors. The evaluation criteria for the equipment alternatives are assumed to include capital costs, present value of 20-year O&M costs, constructability, property impacts, system performance, compatibility with the WWTF Master Plan, system flexibility, carbon footprint, and community impacts. Evaluation criteria and weighting will be developed with the City in the equipment evaluation workshop. Alternative scoring will be reviewed with the City and input from City staff will be incorporated into the final scoring of alternatives.

8. Process Design Computations: Develop process design computations for unit treatment processes.
9. Select and Size Auxiliary Equipment: Develop preliminary electrical, SCADA, and HVAC systems.
10. Maintenance of Plant Operations (MOPO) Plan: Develop preliminary construction sequence and MOPO plan for the construction of the new biosolids thermal drying facility.
11. Basis of Design Document Preparation and Submittal: Prepare the Basis of Design document including the information, findings, and recommendations developed from the tasks described above. The Basis of Design document will be prepared in accordance with NCDEQ DWI Clean Water State Revolving Funds (CWSRF) guidelines and requirements for the preparation of an Engineering Report/Environmental Information Document (ER/EID), if applicable subject to project funding requirements. The Basis of Design Document meeting ER/EID requirements will be submitted to NCDEQ DWI for review and comments, if applicable. Comments received from NCDEQ will be incorporated and a final Basis of Design Document will be prepared and submitted.
    a. It is assumed that the previous biosolids management alternatives developed in the Solids Management Plan Evaluation will be utilized for the alternatives analysis required to meet the ER/EID guidelines.
    b. A Categorical Exclusion is assumed as the basis for the EID. If an EA is required, it will be prepared per Unallocated Project Budget Task 7.1, and the EA will be used as the EID.

2.6 30% Preliminary Design

McKim & Creed will develop the 30% Preliminary Design, which will consist of the following tasks:

1. Process Flow Diagram: Prepare a system schematic and flow diagram for the proposed biosolids thermal dryer equipment and associated conveyance equipment.
2. Biosolids Thermal Dryer Facility Site Plan: Prepare a preliminary site plan showing the location of major treatment units, structures, process piping, and conveyance systems on the site. This scope of work assumes that the existing biosolids covered storage area can be repurposed to house the new thermal drying equipment.
3. Electrical: Prepare preliminary sizing, one-line diagrams and/or schematics for electrical design of the proposed equipment and photovoltaic (PV) systems. This scope of work assumes that the PV system to be installed on the biosolids covered storage shelter will be sized at approximately 215 kW (DC), and will consist of a ballasted racking system and electrical metering equipment. This scope of work assumes an arc flash analysis will be performed for the new electrical equipment, modifications to existing electrical equipment, and the PV system.
4. Instrumentation & Controls: Prepare preliminary process and instrumentation diagrams (P&IDs) as required for integration for the new equipment to be monitored and controlled through the City's SCADA.
5. Preliminary Engineer's Opinion of Probable Construction Cost: Prepare a preliminary construction cost opinion using the various preliminary design documents to improve the accuracy of the initial, conceptual construction cost opinion.
6. Submit Preliminary Design Documents for Review: Compile and submit the Basis of Design Document, 30% design drawings, and cost opinion to the City for review and approval as part of the 30% stage of design completion. Technical specifications are not included as part of the 30% preliminary design submittals.
7. Conduct Workshop Meeting to Review 30% Submittal with City: Meet with the City staff to review, discuss, and receive owner input on the Basis of Design document and 30% design submittal.
8. Revise and Address City Comments on 30% Submittal: Revise the appropriate preliminary design documents (as necessary within the original scope of the project) to address the City's 30% design review comments. The Basis of Design document will be finalized and included as part of the Authorization to Construct (ATC) application package to be submitted at final design.

TASK 3 – FINAL DESIGN

Upon receiving authorization from the City, McKim & Creed will proceed with the Final Design Phase, including the following efforts:

60%, 90%, 100%, and Issued For Bids

1. Prepare 60%, 90%, 100%, and final Issued For Bids design drawings and construction documents based on a single prime construction contract. The final design documents will generally include the following:

a. Civil/Site
b. Mechanical
c. Electrical
d. Instrumentation & Controls
e. Structural
f. HVAC
g. Plumbing
h. Fire Protection

2. 60%, 90%, and 100% Design Submittals: Prepare and submit design drawings and construction documents at completion stages for review by the City at 60%, 90%, and 100% Design stages.
3. Workshop Review Meetings: McKim & Creed will conduct formal workshop review meetings with the City's staff at the 60%, 90%, and 100% Design stages to provide status updates, review project submittal documents, and receive City comments on project submittal documents.
4. Prepare Opinions of Probable Cost: Updated opinions of probable cost will be prepared for the project to be submitted at the 60%, 90%, and 100% Design submittal stages.
5. Prepare Technical Specifications: Technical specifications will be prepared for the construction contract. The documents shall include a comprehensive table of contents followed by technical specifications to be included in the Construction Documents.
6. Biosolids Thermal Drying Equipment Preselection RFP Package: Assist the City in developing an equipment preselection RFP package for the biosolids thermal drying equipment. The biosolids thermal drying equipment preselection RFP package is anticipated to include preliminary drawings and specifications applicable to the biosolids thermal drying equipment. Preliminary drawings will include the process flow diagram, site plan, process mechanical general arrangement plans and sections, and process and instrumentation diagrams developed based on the information gathered from biosolids thermal dryer equipment manufacturers in the preliminary design phase. It is assumed that the biosolids thermal drying equipment will be preselected based on capital cost for the equipment and associated services from the manufacturer (field inspection services during installation, start-up services, testing, and training), life cycle operations and maintenance costs, and non-cost criteria including manufacturer qualifications. McKim & Creed will assist the City in developing the RFP submittal requirements, non-cost selection criteria, and evaluation criteria weighting. It is assumed that the biosolids thermal drying equipment preselection RFP package will be advertised at the 60% design level.
    a. RFP Advertisements: McKim & Creed will assist the City in managing the advertisement process, including the following:
        i. Issue electronic RFP documents to plan rooms and the City's QuestCDN on-line advertisement and bidding service.

ii. Conduct the pre-proposal conference and prepare and issue minutes.
iii. Assist in answering bidders' questions concerning elements designed by McKim & Creed and prepare technical information as necessary for inclusion in addenda if required.
iv. Prepare addenda as appropriate to interpret, clarify, or further define the RFP Documents. Addenda will be issued by McKim & Creed upon the City's approval.
v. Attend and/or conduct the bid opening.
vi. Review proposal packages and prepare the certified bid tabulations.
vii. Provide written letter of recommendation of award to the City.

b. Following award of the equipment preselection package, it is assumed that the selected biosolids thermal drying equipment manufacturer will be responsible for providing shop drawings and technical information to the City and McKim & Creed to support the completion of final design.
c. It is assumed that an allowance will be included in the project bid form for the general contractor to purchase the preselected equipment as detailed in the contract documents prepared in coordination with the selected biosolids thermal drying equipment vendor.

7. Bidding & Contract Documents: Prepare appropriate bid and contract documents for the construction contract based on current City of Hendersonville standards and requirements.
8. Prepare "Released for Regulatory Review" drawings based upon City review comments from the 90% submission.
9. Issued For Bids Submittal: Upon completion of the 100% submittal and responses to the City's comments and concerns on the 100% submittal, and following the project permitting process, McKim & Creed will finalize contract documents for procurement. This task will include the following:
    a. Incorporate permit approval conditions in contract documents
    b. Prepare the final Engineer's Opinion of Probable Construction Cost
    c. Prepare recommended schedule for bidding and construction
    d. Submit final Issued For Bids contract documents to the City

Quality Assurance and Quality Control

The Consultant will include an in-house quality assurance/quality control (QA/QC-Value Engineering Review) review with staff members not involved in the project. The QA/QC review will be entirely separate from the normal in-house reviews conducted by the project team and the City's staff. The QA/QC review will be conducted after the 30%, 60%, and 90% design submittals and its findings presented to the design team along with comments from the City's 30%, 60%, and 90% design review. Prior to bid, a final QA/QC will be conducted for the Contract Documents.

TASK 4 – PERMITTING

The Consultant will assist the City with obtaining all permits required for the project. The permits required for this project are anticipated to include the following:

- NPDES Authorization to Construct
- Major Modification to Distribution of Class A Residuals Permit No. WQ0011381

It is anticipated that the project will be exempt from air permitting requirements per 15A NCAC 02Q .0102. The scope assumes that no air permitting will be required for the project.

The Consultant will prepare the applications and following execution by the City of Hendersonville, will submit the applications to the appropriate agency for approval. The Consultant will address comments from the agencies and assist the City with negotiations concerning permitting issues that may arise. The cost of all application fees will be paid for by the Consultant and will be reimbursed by the City.

TASK 5 – BIDDER PREQUALIFICATION ASSISTANCE

The Consultant will assist the City in conducting a prequalification process for potential bidders to develop a list of qualified general contractors for the project. The prequalification process will adhere to the City's standard processes. Specific tasks include the following:

1. Assist in the preparation of an Invitation to Prequalify for Bidding advertisement for the project.
2. Provide recommendations to the City to determine criteria for projects to be considered similar in size and nature to the WWTF Biosolids Thermal Dryer project.
3. Review the list of prequalification standard requirements with City staff and incorporate suggested revisions to the list that may be beneficial to the project.
4. Place formal advertisement of the prequalification package in the agreed upon advertisement media. McKim & Creed will pay for all fees associated with advertisement of the prequalification package, which will be reimbursed by the City.
5. Issue electronic prequalification documents to prospective bidders via the City's QuestCDN on-line advertisement and bidding service.
6. Schedule and conduct a virtual pre-submittal meeting, receive questions from prospective attendees, prepare and distribute minutes.
7. Respond to prospective bidder inquiries and prepare Addenda as required.
8. Receive prospective bidder submittals on specified and appropriate closing date.
9. Review prospective bidder documentation and request clarifications to determine if prospective bidder has met the requirements of the prequalification solicitation.
10. Review the list of proposed prequalified bidders with the City and make any final edits and revisions to the list of prequalified bidders. McKim & Creed will work jointly with City staff to assist in developing the prequalified bidders list; however, the City shall be

responsible for the final determination of which bidders will be deemed as prequalified. Additional assistance or responses to protests from prospective contractors is not included in this scope of work and is considered an additional service. If required, additional services will be provided utilizing the Unallocated Project Budget phase upon written authorization from the City.

11. Notify all prospective bidders of the final approved list of pre-qualified bidders.

TASK 6 – BIDDING AND AWARD PHASE

The bid documents will consist of the plans (drawings) and specifications for the WWTF Biosolids Thermal Dryer Project. The bid documents will be used by the contractor to prepare bids for the work detailed on the plans and described in the specifications. The bid documents will include specifications and contractual requirements associated with pre-purchased equipment and materials. Other tasks to be performed by the Consultant will include preparation of a final opinion of construction cost.

Our scope of work for Bid Phase services is premised on our understanding that McKim & Creed will be responsible for managing the bids and contracting process for one (1) single prime construction contract.

Bidding and Award Phase tasks performed by the Consultant will include:

1. Provide necessary information to the City for the preparation of the project bid advertisement.
2. Issue electronic bid documents to plan rooms and the City's QuestCDN on-line advertisement and bidding service.
3. Conduct the pre-bid conference and prepare and issue minutes.
4. Assist in answering bidders' questions concerning elements designed by McKim & Creed and prepare technical information as necessary for inclusion in addenda if required.
5. Prepare addenda as appropriate to interpret, clarify, or further define the Contract Documents. Addenda will be issued by McKim & Creed upon the City's approval.
6. Consult with and advise the City to determine the acceptability of substitute materials and equipment proposed by bidders when substitution prior to the award of contracts is allowed by the contract documents.
7. Attend and/or conduct the bid opening.
8. Review bid packages and prepare the certified bid tabulations.
9. Provide written letter of recommendation of award to the City.
10. Assist the City in the contract award process.

11. Prepare and issue conformed documents to incorporate addenda issued during the bidding process into the contract documents to be used by the contractor for construction.
12. Provide for three (3) sets of conformed documents for execution for the City, Engineer, and Contractor.

The Bidding and Award Phase will conclude upon the City's issuance of a notice of award to the selected construction contractor. If a re-bid is required, this effort shall be considered additional services. If required, additional services will be provided utilizing the Unallocated Project Budget phase upon written authorization from the City.

TASK 7 – UNALLOCATED PROJECT BUDGET (PHASE 1)

Task 7 is included as a contingency for unforeseen conditions or changes in the scope of work. McKim & Creed will not utilize or expend effort on Task 7 without prior written authorization from the City of Hendersonville.

Task 7.1: Environmental Assessment

If required by NCDEQ per 15A NCAC 01C .0306, McKim & Creed will prepare an Environmental Assessment in accordance with current NCDEQ Environmental Assessment guidelines. The EA will be submitted to the City for review and comment and subsequently submitted to NCDEQ for review upon incorporating staff input. Comments received from NCDEQ will be incorporated and a final EA document will be prepared and submitted. If an EA is required, it will be prepared to suit the requirements of an ER/EID.

PHASE 2

TASK 8 – SOLIDS MANAGEMENT PROGRAM CONTRACTING ASSISTANCE

The Consultant will assist the City in preparing Request for Proposal (RFP) packages for the contracted management of hauling and disposal of the thermally dried biosolids, and contracted dewatering, hauling, and disposal of the Water Treatment Facility residuals.

1. WWTF Thermally Dried Biosolids: The RFP package for the WWTF's thermally dried biosolids will be prepared based on the findings of the biosolids disposal market analysis completed in Task 2. The RFP package will include the sampling information collected during Task 2 to document the expected quality and characteristics of the thermally dried biosolids. The draft RFP will be prepared and submitted to the City for review and comments. The comments received will be incorporated into a final RFP package which will be submitted to the City for approval.
2. WTF Residuals: The RFP package for the WTF's residuals will be prepared based on the recommendations of the City of Hendersonville's Solids Management Plan Evaluation, to include contracted dewatering at the WTF, hauling, and disposal of dewatered

residuals. The RFP package will include the sampling information collected during Task 2 to document the expected quality and characteristics of the dewatered residuals. The draft RFP will be prepared and submitted to the City for review and comments. The comments received will be incorporated into a final RFP package which will be submitted to the City for approval.

3. RFP Advertisements: McKim & Creed will assist the City in managing the advertisement process, including the following for both RFP packages:
    a. Issue electronic RFP documents to plan rooms and the City's QuestCDN on-line advertisement and bidding service.
    b. Conduct the pre-proposal conference and prepare and issue minutes.
    c. Assist in answering bidders' questions concerning elements designed by McKim & Creed and prepare technical information as necessary for inclusion in addenda if required.
    d. Prepare addenda as appropriate to interpret, clarify, or further define the RFP Documents. Addenda will be issued by McKim & Creed upon the City's approval.
    e. Consult with and advise the City to determine the acceptability of substitute materials and equipment proposed by bidders when substitution prior to the award of contracts is allowed by the contract documents.
    f. Attend and/or conduct the bid opening.
    g. Review proposal packages and prepare the certified bid tabulations.
    h. Provide written letter of recommendation of award to the City.

TASK 9 – CONSTRUCTION PHASE SERVICES

Construction Administration

Our scope of work for Construction Administration services assumes one (1) single prime construction contract over an agreed upon construction contract period. The construction period will be based on an agreed upon duration to reach substantial completion and an additional 2 months to reach final completion. If the contract duration extends beyond the agreed upon construction period, or is delayed, McKim & Creed shall be entitled to adjustment of the scope and fee associated with this task. If required, additional services associated with construction administration will be provided utilizing the Unallocated Project Budget phase upon written authorization from the City.

Our construction administration services will include:

1. Conduct the pre-construction meeting on-site at the WWTF, or virtually via Microsoft Teams, and issue meeting minutes.
2. Schedule and hold regular monthly construction progress meetings with the City and contractor. These meetings are assumed to be held on-site at the WWTF, or virtually via

Microsoft Teams. Prepare and distribute construction meeting minutes to document discussions and responsibilities.

3. Receive, log, track and perform shop drawing reviews. Compare shop drawings to the plans and technical specifications, note deficiencies or compliance issues, and issue comments to the contractor within 10 business days of receipt.
4. Receive, log, track, & respond to contractor's written requests for information or clarification of the contract documents.
5. Provide clarification of requirements as indicated on the construction plans and specifications if/when questions arise during construction.
6. Receive, log, track, & respond to notifications from contractor of changes to work conditions and requests for change orders.
7. Review materials testing for conformance to the specifications. This scope of work assumes that the City will provide for third party construction materials testing services as required by the Contract Documents.
8. Receive, log, track, & review contractor's monthly invoices and make recommendations for payment.
9. Conduct site visits with City staff as often as necessary to review project status, and confirm/certify that work is progressing in accordance with the approved construction documents.
10. Attend system startup and commissioning and provide technical guidance and assistance to the City in support of the startup and commissioning process. This task includes coordination with the City, the Contractor, and equipment manufacturers to provide operator training on new equipment.
11. Schedule and conduct the substantial completion evaluation. Prepare the substantial completion punch list and submit to the City for concurrence, and work with the Contractor to ensure outstanding work is completed.
12. Upon satisfactory completion of the substantial completion punch list and after reviewing test results from the Contractor, prepare the Engineer's Substantial Completion Certification.
13. Schedule and conduct the final completion evaluation. Prepare the final completion punch list and submit to the City for concurrence, and work with the Contractor to ensure work is fully complete.
14. After the Contractor has satisfactorily completed the final punch list, submitted all test results, as-built redlined drawings, O&M manuals, and release of waivers and claims, McKim & Creed will prepare the Engineer's Final Completion Certification.

Construction Observation

McKim & Creed will provide a Resident Project Representative (RPR) who is well-qualified and experienced in constructing municipal water and wastewater treatment facilities. The scope of work assumes an average of 20 hours per week for the agreed upon construction period. If the contract duration extends beyond the agreed upon construction period or is delayed, McKim & Creed shall be entitled to adjustment of the scope and fee associated with this task. If required, additional services associated with construction observation will be provided utilizing the Unallocated Project Budget phase upon written authorization from the City. McKim & Creed will provide the following services:

1. Preparation of daily reports for each day construction observation services are provided.
2. Maintain a photographic record during construction to document aspects of the construction process.
3. Document field conditions and maintain a record of the weather, Contractor's personnel on-site, Contractor's equipment on-site, and the specific work task(s) completed since the last site visit.
4. The RPR will immediately call the contractor's attention to work that is being completed that <u>does not comply</u> with the approved plans and specifications. Should the contractor fail to remedy the situation, then the RPR will immediately contact the Engineer.
5. The RPR shall confirm that Contractor as-built documents are continuously being kept up-to-date and being completed to the minimum standards of care.
6. The RPR shall review the Contractor's monthly pay requests to confirm that quantities are accurate and that lump sum percentages are representative of the current progress of lump sum work.
7. The RPR shall participate in monthly construction meetings and will represent the Engineer in responding to technical questions.
8. The RPR will participate in the substantial completion and final completion evaluations.

TASK 10 – POST-CONSTRUCTION SERVICES

Upon authorization from the OWNER, the ENGINEER shall perform the following post-construction services:

1. <u>Record Drawings</u>
   Our effort for Record Drawing preparation services is premised on the understanding that the contractor will be responsible for continuously maintaining the red-lined "as-built" markups on the approved construction drawings. McKim & Creed will utilize the red-lined markups provided by the contractor to prepare the final Record Drawings. Record Drawings will be submitted to the City upon completion. After City review and

approval, digital copies (AutoCAD and PDF format) of the Record Drawings will be delivered to the City.

2. <u>One Year Assistance</u>
   McKim & Creed will assist the City with operational and warranty assistance on a time and materials basis as may be needed. Generally, the services will be as follows:
   a. Provide for a mid-year warranty inspection with the City and the contractor to develop a warranty punch list and then review the completed work of the contractor to verify items have been corrected.
   b. Provide for final warranty inspection with the City and the contractor at 11 months after substantial certification to develop a warranty punch list and then review the completed work of the contractor to verify items have been corrected.
   c. Provide process support assistance and associated administrative support to assist with operational questions and optimization of the plant process.

TASK 11 – UNALLOCATED PROJECT BUDGET (PHASE 2)

Task 11 is included as a contingency for unforeseen conditions or changes in the scope of work. McKim & Creed will not utilize or expend effort on Task 11 without prior written authorization from the City of Hendersonville.

III. COMPENSATION

McKim & Creed will perform the services outlined in this Exhibit A as indicated below. Services will be billed monthly on an hourly time and expense basis in accordance with the hourly rate schedule included as an attachment to this Exhibit A.

Item	Fee
PHASE 1	
Task 1: Funding Assistance	$16,530.00
Task 2: Preliminary Engineering	$402,504.00
Task 3: Final Design	$429,505.00
Task 4: Permitting	$53,629.00
Task 5: Bidder Prequalification Assistance	$19,543.00
Task 6: Bidding and Award Phase	$43,453.00
Task 7: Unallocated Project Budget (Phase 1)	$50,000.00
PHASE 2	
Task 8: Solids Management Program Contracting Assistance	TBD
Task 9: Construction Phase Services	TBD
Task 10: Post-Construction Services	TBD
Task 11: Unallocated Project Budget (Phase 2)	TBD
Total Estimated Fee, Not To Exceed (PHASE 1 ONLY)	**$1,015,164.00**

Not To Exceed = To be billed on an hourly time and expense basis
TBD = To be determined and provided for in a future amendment for Phase 2 services

IV. ANTICIPATED PROJECT SCHEDULE

The following is the estimated schedule for the scope outlined above:

Task	Anticipated Duration from NTP (Calendar Days)	Anticipated Task Duration (Calendar Days)
PHASE 1		
Notice to Proceed	0	0
Project Kickoff	10	10
BOD Document	130	120
30% Design Submittal	130	120
City Review and 30% Review Workshop	145	15
60% Design Submittal	235	90
City Review and 60% Review Workshop	250	15
90% Design Submittal/Submit Permit Applications	340	90
City Review and 90% Review Workshop	355	15
100% Design Submittal	385	30
City Review and 100% Review Workshop	400	15

Receive Permits	400	60
Bid Documents Submittal	430	30
Advertise for Bids	475	45
Open Bids	475	0
PHASE 2		
Contract/Bonds Preparation/NTP	535	60
Construction Substantially Complete/ Equipment Start-up	TBD	TBD
Construction Final Completion	TBD	60
Record Drawings Submittal	TBD	60
Warranty Period Complete	TBD	365

Note: The schedule provided is approximate and may vary depending on City review, regulatory approval, equipment and material lead times, and unforeseen conditions.

V. ADDITIONAL SERVICES

If authorized in writing by the City, McKim & Creed shall furnish or obtain from others Additional Services of the types listed below. These services will be paid for by the City on an hourly rate basis in accordance with the current Hourly Rate Schedule. If required, additional services will be provided utilizing the Unallocated Project Budget phase upon written authorization from the City.

1. Expert witness or technical support concerning property surveying or engineering matters for which the Engineer has no direct liability.
2. Assistance with protests by prospective bidders associated with the City's prequalification process.
3. Providing assistance for air permitting.
4. Easement mapping or easement surveys.
5. Providing for additional soil borings or geotechnical analyses beyond the identified scope of work.
6. Providing for detailed investigations and/or surveys for archeological sites, protected/threatened/endangered species of shellfish, fish, wildlife, and natural vegetation.
7. Providing for determining, evaluating, and assistance with contaminated soils for the project area.
8. Providing assistance for wetland mitigation.
9. Providing for assistance with easement acquisitions.
10. Preparing for, coordinating with, participating in and responding to structured independent review processes for construction management, cost estimating, value engineering and constructability reviews requested by the City and performing or furnishing services required to revise studies, reports, drawings, specifications, or other bidding documents as a result of such review processes.

11. Providing for any re-designs requested by the City after final design drawings have been approved.
12. Boundary or easement surveys for the wastewater treatment facility site.
13. Construction survey and staking.
14. Preparing for multi-prime contracts and bidding.
15. Development of design or bid documents to comply with alternate funding agencies or other funding mechanisms.
16. Engineer-led operator training on equipment, processes, or other miscellaneous training related to the existing or proposed facilities.
17. Providing for Special Inspections (North Carolina State Building Code) if required by the Local Inspections Departments.
18. Providing for third party construction materials testing services.
19. Assistance in connection with Bid protest, re-bidding, or renegotiation contracts for construction, materials, equipment, or services.
20. Preparing to serve or serving as a consultant or witness for the City in any litigation, arbitration or other dispute resolution process related to the project.
21. Other services performed or furnished by McKim & Creed not otherwise provided for in this Agreement. These services are to be identified as additional services for City approval prior to McKim & Creed performing the service.

VI. OWNER'S RESPONSIBILITIES

The following items shall be the responsibility of the City:

1. Provide McKim & Creed with all criteria and full information as to the City's requirements for the project, including design objectives and constraints, space, capacity and performance requirements, flexibility and expandability, and any budgetary limitations; and furnish copies of all design and construction standards which the City will require to be included in the Drawings and Specifications; and furnish copies of the City's standard forms, conditions and related documents for McKim & Creed to include in the Bidding Documents, when applicable.
2. The timely provision of all available information, data, reports, records, and maps to which the City has access and which are needed by McKim & Creed for the performance of the services provided herein.
3. Providing assistance and cooperation for McKim & Creed in obtaining any other needed material which the City does not have in its possession.
4. Making available the services of the City as may be necessary to obtain information as needed to perform the work program set forth in the Scope of Services.
5. The designation of a single representative who will be authorized to make necessary decisions required on behalf of the City and will serve to provide the necessary direction and coordination for the project.

6. Advise McKim & Creed of the identity and scope of services of any independent consultants employed by the City to perform or furnish services in regard to the project, including, but not limited to, cost estimating, project peer review, value engineering and constructability review.
7. Attend the pre-bid conference, bid opening, pre-construction conferences, construction progress and other job-related meetings and Substantial Completion, final payment, and warranty reviews.

VII. MISCELLANEOUS PROVISIONS

1. Opinion of Probable Construction Costs: Engineer's opinions of probable construction costs are based on assumed labor costs and approximate quantities of material and equipment, and therefore is of a conditional character. The Engineer cannot and does not guarantee the cost of work to be performed by others since market or bidding conditions can change at any time and changes in the scope or quality of the project may affect estimates. The City waives and releases McKim & Creed from any loss, liability, or claim arising out of or in any way related to the Engineer's opinion of probable construction costs.
2. McKim & Creed's current hourly rate schedule is attached. Hourly rates are subject to adjustment on January 1st of each calendar year.

END OF EXHIBIT A

Water Market 2023 Schedule of Hourly Rates

Employee Classification	(Rate/Hour)
Engineering	
Principal	$300.00
Engineering Manager	$270.00
Project Manager III	$230.00
Project Manager II	$210.00
Project Manager I	$190.00
Technical Specialist III	$280.00
Technical Specialist II	$270.00
Technical Specialist I	$240.00
Project Engineer IV	$220.00
Project Engineer III	$205.00
Project Engineer II	$175.00
Project Engineer I	$155.00
Engineer Intern	$140.00
I&C Specialist III	$205.00
I&C Specialist II	$185.00
I&C Specialist I	$155.00
Programmer III	$190.00
Programmer II	$175.00
Programmer I	$145.00
Designer IV	$160.00
Designer III	$140.00
Designer II	$130.00
Designer I	$110.00
Sr. CAD Technician	$100.00
CAD Technician	$85.00
Sr. Project Administrator	$105.00
Project Administrator	$90.00
Administrative Assistant	$80.00
Construction	
Construction Administrator IV	$185.00
Construction Administrator III	$165.00
Construction Administrator II	$150.00
Construction Administrator I	$125.00
Project Representative III	$145.00
Project Representative II	$125.00
Project Representative I	$110.00
Field Services	
Field Technician I	$90.00
Field Technician II	$120.00
Field Services Manager	$145.00

Employee Classification	(Rate/Hour)
Surveying	
Sr. Surveyor/Project Manager III	$250.00
Sr. Surveyor/Project Manager II	$216.00
Sr. Surveyor/Project Manager I	$185.00
Project Surveyor	$160.00
Sr. Survey CAD Technician	$120.00
Survey CAD Technician	$100.00
Survey Field Supervisor	$110.00
Project Coordinator I	$100.00
Project Coordinator II	$110.00
Project Coordinator III	$130.00
Field Survey Party 1 Person Crew	$120.00
Field Survey Party 2 Person Crew	$190.00
Field Survey Party 3 Person Crew	$245.00
Subsurface Utility Engineering	
Regional SUE Director.	$300.00
Director of SUE.	$250.00
Utility Engineering Sr. Project Manager	$230.00
Utility Engineering Project Manager	$188.00
Utility Coordinator I	$110.00
Utility Coordinator II	$130.00
Utility Engineering Technician I	$79.00
Utility Engineering Technician II	$94.00
Utility Engineering Analyst	$106.00
Utility Engineering Specialist	$141.00
Utility Engineering Party (2 Person Crew)	$188.00
Geospatial Information Systems	
GIS Specialist	$121.00
GIS Technician II	$99.00
GIS Technician I	$79.00
GIS Analyst I	$115.00
GIS Analyst II	$125.00
LiDAR Field Technician	$94.00
LiDAR Technician I	$84.00
LiDAR Technician II	$113.00
LiDAR Technician III	$135.00
Photogrammetric Technician	$109.00
Photogrammetrist	$160.00

Rates are valid through December 31, 2023

Expenses

In addition to labor, McKim & Creed bills for the following project related costs at a contractually agreed markup: printing; conference calling charges; document review, permit or recording fees paid on behalf of the client; shipping; bid advertisement; specialty materials, software or equipment rental; sub-consultant fees; costs of project related employee travel including meals, lodging, airfare and miscellaneous travel costs such as tolls, parking etc.; mileage for all company-owned vehicles (trucks) will be billed at $0.85/mile; employee owned vehicles used for transportation related to the project will be charged at the prevailing federal mileage rate allowed by the IRS at the time the travel occurs.

McKim & Creed also bills for the cost of internal reproduction and the use of specialized equipment related to subsurface utility vacuum excavation, mobile scanning (LIDAR), and hydrographic surveying.