AGREEMENT FOR PROFESSIONAL SERVICES

Project No. _____

This AGREEMENT made and entered into this 22nd day of May, 2012 by and between Norman Utilities Authority, (hereinafter "OWNER"), and **Carollo Engineers, Inc.**, (hereinafter "ENGINEER").

WITNESSETH:

WHEREAS, the OWNER and the ENGINEER wish to enter into an Agreement (hereinafter "Agreement") for the furnishing of Engineering Services in connection with

Phase II Water Treatment Plant Improvements

Design, Bidding and Construction

(Owner and Project Description)

(hereinafter "Project"), and

WHEREAS, ENGINEER is qualified and prepared to perform the necessary professional services in connection with the Project.

NOW THEREFORE, in consideration of the mutual promises and covenants of the parties hereto, it is agreed as follows:

SECTION 1 - PROFESSIONAL SERVICES

1.1 ENGINEER shall provide professional engineering services in all phases of the Project to which this Agreement applies. The services furnished by the ENGINEER will be defined by Task Orders which will set forth the Engineer's Services, Time of Performance, and Payment.

1.2 It is intended that each Task Order, after execution by both parties shall become a supplement to and a part of this Agreement.

SECTION 2 - PAYMENT TO ENGINEER

2.1 As consideration for providing the services referred to in Section 1, the OWNER shall pay ENGINEER on the basis to be established in the Task Order for Services.

2.2 The ENGINEER is not responsible for damage or delay in performance caused by events beyond the control of ENGINEER. In the event ENGINEER's services are suspended, delayed or interrupted for the convenience of the OWNER or delays occur beyond the control of ENGINEER, an equitable adjustment in ENGINEER's time of performance and cost of ENGINEER's personnel and subcontractors shall be made.

2.3 OWNER reserves the right to direct revision of ENGINEER's services as may be necessary. When ENGINEER

is directed to make revisions under this section of the agreement, ENGINEER shall advise OWNER of the probable costs involved in completing engineering services and the time of performance for such completion. Extra services also include those that are required for defense of claims, in which event ENGINEER shall bill OWNER on an hourly basis together with cost of material.

2.4 In the event OWNER and ENGINEER cannot agree on equitable compensation for services rendered in making revisions, then, at OWNER's option, ENGINEER shall either continue performance under the revised Agreement and an equitable adjustment in ENGINEER's time of performance and cost of ENGINEER's personnel shall be made at completion of the revised work or ENGINEER shall not be obligated to continue performance under this Agreement.

2.5 If ENGINEER's work products require revisions prior to construction bidding due to ENGINEER's errors or omissions, the exclusive remedy will be limited to revisions made by ENGINEER without compensation.

2.6 The ENGINEER shall bill the OWNER monthly indicating the services performed and the cost of such services.

OWNER agrees to pay invoices within 45 days of their date. Payments not received by ENGINEER within 45 days shall be considered delinquent and subject to a finance charge of 1 percent per month for each month unpaid after the date of invoice. ENGINEER may suspend services should an invoice remain delinquent for 75 days from date of invoice.

2.7 All notices shall be made in writing and may be given by personal delivery or by mail. Notices sent by mail shall be addressed to the designated responsible person or office:

TO OWNER:

Mr. Chris Mattingly, PE

Norman Water Treatment Plant

3000 East Robinson Ave.

Norman, OK 73071

TO ENGINEER:

Mr. Thomas Crowley, PE

Carollo Engineers

903 East 104th Street, Suite 320

Kansas City, MO 64131

and when so addressed, shall be deemed given upon deposit in the United States Mail, postage prepaid. In all other instances, notices and invoices shall be deemed given at the time of actual delivery.

All payments are to be mailed to:

Carollo Engineers, Inc.
P.O. Box 4932
Houston, TX 77210-4932

unless otherwise informed on the face of the invoice.

SECTION 3 - MISCELLANEOUS

3.1 The OWNER shall furnish the ENGINEER available studies, reports and other data pertinent to ENGINEER's services; obtain or authorize ENGINEER to obtain or provide additional reports and data as required; furnish to ENGINEER services of others required for the performance of ENGINEER's services hereunder, and ENGINEER shall be entitled to use and rely upon all such information and services provided by OWNER or others in performing

ENGINEER's services under this Agreement.

3.2 The OWNER shall arrange for access to and make all provisions for ENGINEER to enter upon public and private property as required for ENGINEER to perform services hereunder.

3.3 Documents, including drawings and specifications, prepared by ENGINEER pursuant to this Agreement are not intended or represented to be suitable for reuse by OWNER or others for this Project or on any other project. Any reuse of completed documents or use of partially completed documents without written verification or concurrence by ENGINEER for the specific purpose intended will be at OWNER's sole risk and without liability or legal exposure to ENGINEER; and OWNER shall indemnify and hold harmless ENGINEER from all claims, damages, losses and expenses, including attorney's fees arising out of or resulting therefrom.

3.4 The ENGINEER maintains, at its own expense, Worker's Compensation and Employers Liability, Comprehensive General Liability, Automobile Liability and Professional Liability policies with limits at or above that which is reasonably required of other engineering firms and will, upon request, furnish insurance certificates to OWNER.

SECTION 4 - LEGAL RELATIONS

4.1 The ENGINEER shall be responsible for professional negligence, which is failure to exercise skill and ability as ordinarily required of engineers under the same or similar circumstances. The ENGINEER shall not be responsible for warranties, guarantees, fitness for a particular purpose or breach of fiduciary duty and shall only indemnify for failure to perform in accordance with the generally accepted engineering and consulting standards.

4.2 OWNER and ENGINEER shall each defend, indemnify and hold harmless the other and their respective principals, directors, officers and employees from and against claims, loss, liability, suits and damages, including attorney's fees, caused in whole or in part by either party's negligent acts, errors or omissions, willful misconduct or OWNER's lawful responsibility respectively or, anyone directly or indirectly employed by either of them or anyone for whose acts they may be liable regardless of whether or not such claim, loss, liability or damage is caused in part by a party indemnified hereunder.

In the event that both OWNER's and ENGINEER's wrongful act or lawful responsibility is the proximate cause of any liability or damages, then in such event, each party shall be liable for a portion of the damages and claim costs resulting therefrom equal to such party's comparative share of the total negligence or lawful responsibility for such damages and claim costs. Notwithstanding the foregoing, a party's defense obligation hereunder shall be limited to reimbursement of the other party's reasonable defense costs which are judicially determined to have been incurred as a result of the first party's negligence.

4.3 Hazardous materials or asbestos may exist at a site where there is no reason to believe they could or should be present. The ENGINEER and OWNER agree that the discovery of unanticipated hazardous materials or asbestos constitutes a changed

condition mandating a renegotiation of ENGINEER's services.

4.4 The ENGINEER has no control over the cost of labor, materials, equipment or services furnished by others, or over Contractor's methods of determining prices, or other competitive bidding or market conditions, practices or bidding strategies. Cost estimates are based on ENGINEER's opinion based on experience and judgment. ENGINEER cannot and does not guarantee that proposals, bids or actual Project construction costs will not vary from cost estimates prepared by ENGINEER.

4.5 If the project involves construction of any kind, the parties agree that OWNER and ENGINEER shall be indemnified to the fullest extent permitted by law for all claims, damages, losses and expense including attorney's fees arising out of or resulting from Contractor's performance of work including injury to any worker on the job site except for the sole negligence of OWNER or ENGINEER. Both OWNER and ENGINEER shall be named as additional primary insured(s) by Contractor's General Liability and Builders All Risk insurance policies without offset and all Construction Documents and insurance certificates shall include wording acceptable to the parties herein with reference to such provisions.

4.6 ENGINEER shall not be responsible for the means, methods, techniques, sequences, or procedures of construction selected by contractors or the safety precautions and programs incident to the work of contractors and will not be responsible for Contractor's failure to carry out work in accordance with the Contract Documents.

4.7 The services to be performed by ENGINEER are intended solely for the benefit of the OWNER. No person or entity not a signatory to this Agreement shall be entitled to rely on the ENGINEER's performance of its services hereunder, and no right to assert a claim against the ENGINEER by assignment of indemnity rights or otherwise shall accrue to a third party as a result of this Agreement or the performance of the ENGINEER's services hereunder.

4.8 The ENGINEER's instruments of service hereunder are the printed hard copy drawings and specifications issued for the Project, whereas electronic media, including CADD files, are tools for their preparation. As a convenience to the OWNER, the ENGINEER shall furnish to the OWNER both printed hard copies and electronic media. In the event of a conflict in their content, the printed hard copies shall take precedence over the electronic media.

Because data stored in electronic media form can be altered, inadvertently, it is agreed that the OWNER shall hold ENGINEER harmless from liability arising out of changes or modifications to ENGINEER's data in electronic media form in the OWNER's possession or released to others by the OWNER.

SECTION 5 - TERMINATION OF AGREEMENT

5.1 If this Agreement is terminated with or without cause, in either event, OWNER shall provide:

a. not less than five (5) working days' written notice of intent to terminate, and

b. an opportunity for good faith consultation prior to termination.

SECTION 6 - DISPUTE RESOLUTION

6.1 Disputes arising during the course of this Agreement shall be promptly addressed at completion of construction when professional services, together with construction evaluation can be reasonably and fully assessed. The parties shall use best efforts to reach final resolution of disputes through meetings and negotiations required to resolve the dispute before any other forms of dispute resolution.

SECTION 7 - ENTIRE AGREEMENT

7.1 This Agreement, including attachments incorporated herein by reference, represents the entire Agreement and understanding between the parties and any negotiations, proposals or oral agreements are intended to be integrated herein and to be superseded by this written Agreement. Any supplement or amendment to this Agreement to be effective shall be in writing and signed by the OWNER and ENGINEER.

SECTION 8 - GOVERNING LAW

8.1 This Agreement is to be governed by and construed in accordance with the laws of the State of Oklahoma.

IN WITNESS WHEREOF, duly authorized representatives of the parties have signed in confirmation of this Agreement, with effective date the day and year first above written.

CAROLLO ENGINEERS, INC.

By: Thomas O. Crowley
Vice President

PE# OK 21073

By:
Executive Vice President

PE# MI 6201 055959

OWNER

By: Cindy S Rosenthal

NORMAN UTILITIES AUTHORITY OFFICIAL SEAL OKLAHOMA

ATTEST:

Brenda Hall
Secretary

May 22, 2012

APPROVED BY CITY OF NORMAN LEGAL DEPARTMENT
BY _____ DATE 5/21/12

TASK ORDER NO. 1

NORMAN UTILITIES AUTHORITY
OWNER

AND

CAROLLO ENGINEERS, INC.

This Task Order is issued by the OWNER and accepted by ENGINEER pursuant to the mutual promises, covenants and conditions contained in the Agreement between the above named parties dated the 22nd day of April, 2012, in connection with:

Phase II Water Treatment Plant Improvements
(Project)

PURPOSE

The purpose of this Task Order is to authorize engineering services associated with the performance of a pilot study to determine the sizing and location of a future ozone system for primary disinfection and taste and odor control. In addition, engineering services to determine the impact of proposed sludge lagoon improvements the 100 year flood limits of Rock Creek will be authorized by this Task Order.

Finally, this Task Order authorizes the design and bidding phase services of a portion of the Phase II improvements to install a new chlorine and ammonia feed system and associated building, construct a new backwash holding lagoon, rehabilitate and remodel the existing maintenance building and other miscellaneous improvements. It is understood that, as of the date of the agreement, not all of the design and bidding phase services associated with the Phase II Improvements have been defined and additional task order(s) will be required to include scope of work and associated fee following the completion of the pilot study report.

ENGINEER'S SERVICES

See Exhibit A – ENGINEER's Scope of Services

TIME OF PERFORMANCE

See Exhibit A – ENGINEER's Scope of Services

PAYMENT

Payment shall be a lump sum amount of $1,546,600 and shall be billed based upon the Tasks provided in Exhibit B.

EFFECTIVE DATE

This Task Order No. 1 is effective as of the 22nd day of ~~April~~ May 2012.

IN WITNESS WHEREOF, duly authorized representatives of the OWNER and of the ENGINEER have executed this Task Order No. 1 evidencing its issuance by OWNER and acceptance by ENGINEER.

CAROLLO ENGINEERS, INC.

By: _____
Vice President

By: _____
Executive Vice President

OWNER

Accepted this 22nd day of April, 2012

By: _____
Officer

ATTEST:

_____
Secretary (Deputy)

NORMAN UTILITIES AUTHORITY OFFICIAL SEAL OKLAHOMA

Exhibit A to Task Order No. 1
FINALScope of Services
Water Treatment Plant Phase II Expansion
Norman, Oklahoma

Task 200 - Project Management. Engineer shall complete project management tasks to include the following:

a. Subtask 200.1 - Budget and schedule monitoring
b. Subtask 200.2 - Workshop planning and development
c. Subtask 200.3 - Preparation of Work and Quality Management Plans and Checklists

The anticipated duration between project notice to proceed and delivery of the final bidding sets for advertisement is 21 months.

Task 210 Agency Coordination:

Engineer shall coordinate work completed as part of this Amendment with the Oklahoma Department of Environmental Quality, COMCD, and the City of Norman Codes Department. The ENGINEER shall be responsible for the coordination of the applicable final design elements with the following agencies within the City and State.

a. Subtask 210.1 ODEQ Coordination– The Engineering Report associated with this project was submitted and approved by ODEQ as part of the Phase I work. However, the following coordination activities with ODEQ are included with this scope of services:

210.1.1 ODEQ Workshop: As part of this project, ENGINEER will be responsible for conducting a workshop to presents summarize the results of the Engineering Report as they pertain to the Phase II improvements and review the pilot study results.

210.1.2 ODEQ Construction Permit: ENGINEER will be responsible for preparing the application for the ODEQ construction permits associated with the project.

210.1.3 ODEQ Plan Review Comments: ENGINEER will be responsible for providing ODEQ with the requisite number of copies of the Final Design Submittal Documents, reviewing ODEQ comments, and incorporation of applicable comments into the bid set.

c. Subtask 210.2 - Oklahoma Gas and Electric (OG&E): ENGINEER shall coordinate with electrical utility company during design of High Pressure Zone Pump Station electrical gear and primary feed decommission.

d. Subtask 210.3 - Agency Coordination – City of Norman:

210.3.1 Code Compliance Meeting:
Consultant will meet with local fire and building code officials to review the proposed changes to the process and proposed classification of the new and existing buildings designed to enclose these systems. Consultant will provide a memorandum summarizing these discussions in include this with the project design notebook.

201.3.2 Interim Design Document Review Meeting:
Consultant will meet with local fire and building code officials to review the interim design submittal for each of the facilities and generate a memorandum summarizing the review comments and providing the recommended actions to address these comments. The meeting will be conducted in conjunction with the Interim Document Review Meeting with NUA Staff.

201.3.3 Final Design Document Review Meeting: Consultant will meet with local fire and building code officials to review the final design submittal for each of the facilities and generate a memorandum summarizing the review comments and providing the recommended actions to address these comments. Consultant will prepare submittal packages and permit applications in accordance with the City of Norman, OK standards.The meeting will be conducted in conjunction with the Final Design Document Review Meeting with NUA Staff.

Task 215 – Design Project Meetings and Workshops.

a. Subtask 215.1 – Bi-Monthly Project Meetings: Project progress meetings will be conducted between project team members on a bi-monthly basis via telephone conference call. These are anticipated to occur over a period of 12 months or a total of 24 meetings. These meetings will be attended by staff from ENGINEER and its Subconsultants an will include discussion of work progress, coordination issues, obtain City of Norman feedback, and discuss and resolve issues related to the progression of the work.

b. Subtask 215.2 – Design Workshops: In addition to the bi-monthly project meetings, design review meetings will be conducted with the City of Norman Staff and the Plan Review department to review the drawings and specifications for the purpose of soliciting comments. The following on-site meetings are anticipated during the course of the design: Each meeting is assumed to require Carollo on site for a maximum of two days:

- Preliminary Design: Shall consist of the review of preliminary on-lines, SCADA block diagrams, process flow diagrams, process instrumentation and control drawings, code compliance plans, building sketches, design criteria sheets, and site development drawings.

- Interim Design Submittal Review: Review of final site development drawings, one-lines, process instrumentation and control drawings, and 3 dimensional models of each new structure.
- Final Design Submittal Review: Review of final civil, architectural structural, process, HVAC/Plumbing, electrical and instrumentation drawings and specifications prior to submittal to ODEQ review and Bidding purposes.

Task 220 – Flood Study. Engineer shall develop a Hydrologic Engineering Center River Analysis System (HEC-RAS) model and utilize model to perform a hydraulic analysis of watercourse immediate south of the Norman WTP to determine appropriate location for new lagoon facilities and, if necessary, recommend and estimate costs for channel improvements projects that result in a no change in the 100-year flood elevation under present conditions. It is assumed that these projects will be designed and managed by others as part of the overall City stormwater improvements projects.

a. Subtask 220.1 – Data Collection and Review: Engineer shall review previous flood studies performed in the area and review FEMA Guidelines to help define the 100-year flow values of the targeted watercourse.
b. Subtask 220.2 – Runoff Flow Computation: The Engineer shall perform a hydrologic analysis to determine the 100-year runoff of the study area to be used to perform hydraulic analysis.
c. Subtask 220.3 – HEC-RAS Model Development: Engineer shall develop cross sections, flow lengths, and hydraulic structures through the use of field surveys in conjunction with the HEC-GeoRAS function. Manning's coefficient, expansion and contraction coefficients, boundary conditions, and ineffective flow area development will be based on field reconnaissance, available GIS information, and engineering judgment. Engineer shall budget for two (2) field reconnaissance trips, eight (8) hours each.
d. Subtask 220.4 – Field Survey: Engineer shall provide field survey information one (1) mile of targeted watercourse for model development.
    i. Subtask 220.4.1 – Engineer shall field survey channel cross sections at an interval of one hundred (100) feet on watercourse in the critical area, adjacent to WTP site. It is assumed that a total of ten (10) cross sections will be surveyed in this area. Engineer shall field survey channel cross sections at an interval of five hundred (500) feet on targeted watercourse outside of critical area. It is assumed that a total of eight (8) cross sections will be surveyed in this area.
    ii. Subtask 220.4.2 – Engineer shall field survey all hydraulic structures in the targeted watercourse. It is assumed that total of three (3) hydraulic structures (i.e. bridges, culverts) will be surveyed.
e. Subtask 220.5 – Hydraulic Analysis of Present Conditions: Engineer shall perform hydraulic analysis on targeted watercourse using the developed HEC-RAS model to determine the 100-year floodplain and floodway boundaries at without floodway encroachment. The present condition computed water surface elevations will be compared to existing high-water data and other

available flood plain management studies. This comparison will be presented to the City and other flood plain management agencies prior to preparing the ultimate conditions hydraulic analyses.

f. Subtask 220.6 – Hydraulic Analysis of Ultimate Conditions: Engineer shall adjust model to account for floodway encroachment (i.e. lagoon faculties). A hydraulic analysis on targeted watercourse will then be undertaken to determine the impacts to the 100-year floodplain and floodway boundaries.

g. Subtask 220.7 – Improvement Project Development: In cooperation with the developed HEC-RAS model, Engineer shall determine improvement projects and provide cost opinions necessary to reduce flood-water surface elevation in the event that floodway encroachment causes an increase in flood elevation above that determined under present conditions.

h. Subtask 220.8 –Flood Study Memorandum: This memorandum will summarize the development of the hydraulic model, hydraulic analysis of present and ultimate conditions, and recommended improvement projects, if any.

i. Subtask 220.9 – Agency Coordination: Engineering shall coordinate the findings and the recommendations within the technical memorandum with the various agencies within the City and the State.

Task 225 – Ozone/Biofiltration Pilot Plant Study: The purpose of the Ozone/Biofiltration Pilot plant study is to determine the anticipated ozone dose for disinfection and reduction of taste and odor and emerging contaminants of concern through the proposed biofiltration process. It will also be utilized to determine the required phosphoric acid and dechlorination chemical feed protocols for enhancing and control biofiltration to optimize filtration and biomass growth. The anticipated duration from delivery of the pilot system through the shipment of pilot plant equipment is eight (8) months.

a. Subtask 225.1 – Work Plan and Pilot Study Protocol: Engineer to develop a detailed plan including objectives, study schedule, performance metrics, and sampling plan and protocol will be provided to the City.

b. Subtask 225.2 – Equipment Selection and Procurement:

   i. Equipment Procurement: The engineer will be responsible for the equipment selection and procurement. The engineer will arrange and pay for delivery of equipment to the site. The dual train pilot plant equipment anticipated for this project is summarized in **Attachment A** to this proposal and includes the following:
      a. Pilot Module Enclosure
      b. Ozone Preoxidation Skids (2 total)
      c. Conventional Treatment Skid
      d. Biofiltration Skids (2 total) and associated media

   ii. Equipment Shipping: ENGINEER will be responsible for arranging shipment of pilot plant units to the Norman WTP.

iii. Equipment Unloading: The City will be responsible for receipt and unloading of equipment in the presence of the Engineers representative.
iv. Procurement of Ancillary Equipment: Engineer will be responsible for the procurement of the following ancillary equipment for the pilot system:
    a. Pilot Plant feed Pumps for raw water feed to pilot plant
    b. Chemical Metering Pumps, Drum Wands, and Valves
    c. Break Tanks
    d. Backwash water storage tanks
    e.
    f. All other piping, valves, supports, conduit, wire, and incidentals necessary for pilot plant installation will be provided by the City of Norman

c. Subtask 225.3 – Equipment Installation and Commissioning/Decommissioning:
    i. Engineers Responsibilities: Engineer will be responsible for the following:
        a. Preparation of one line diagrams indicating electrical installation requirements.
        b. Preparation of process flow schematics indicating pipe sizes, pipe materials, and interconnections required between pilot equipment.
        c. Installation of biofiltration media in pilot filtration equipment.
        d. On site visit (5 days) to assist staff with interconnection of equipment.
    ii. City Responsibilities:
        a. Providing Conduit, wire, breakers, supports and all other materials and labor required to provide and distribute power to the pilot units from the Filter Building.
        b. Providing all materials and labor required to install pump and raw water line to connect pilot units to raw water line prior to any chemical addition.
        c. Providing all materials and labor required to interconnect ENGINEER provided chemical feed equipment with the pilot units.
        d. Providing all materials and labor required to install settled water line and pump from clarifier effluent sample pipe to pilot units
        e. Providing all materials and labor required to install drain line from pilot skids to existing manhole to Lagoons.
        f. Procurement and payment of all chemical, lubricants, and other pilot plant consumables for the duration of the pilot study.

d. Subtask 225.3 – Pilot Plant Operation: Engineer will provide a part-time (5 days/week at 2 hours/day,) pilot plant operator to monitor pilot plant facilities, coordinate water quality sampling, and perform operational adjustments to facilitate study objectives for a period not to exceed 6 months.

Pilot plant operator, with the assistance of City Staff, will oversee pilot plant operation, coordinate sampling and document operation status, perform equipment adjustments, and perform in-house water quality testing as

described in Subtask 225.4. Engineer will provide City with a bimonthly report summarizing pilot plant operation and details concerning performance metrics, sampling data collected, and study status..

i. Subtask 225.4.2 – Pilot Plant Operator Coordination: Engineer to *provide guid*ance, sampling instruction, and remote supervision of pilot plant operator throughout the study period. Engineer to conduct One (1) mothly site visit for sixteen (16) hours each to facilitate pilot plant operation during the pilot plant testing period. Engineer to correspond with pilot plant operator twice a week via telephone to discuss pilot plant operation, coordinate sampling, and troubleshoot operational issues.

ii. Subtask 225.4.3 – Special Investigation – Ozone Decay/Demand: Conduct multiple ozone decay/demand analyses at various temperatures and raw water content

iii. Subtask 225.4.4 – Special Investigation - Acute Raw Water MIB Contamination: Conduct two (2) raw water 50 ng/l MIB spikes. Evaluate required ozone dosages, bromate formation, MIB reduction.

iv. Subtask 225.4.5 – Special Investigation – Bromate Formation Reduction: Investigate potential bromate mitigation techniques including pre-ozone ammonia and/or chloramines addition and pH manipulation.

v. Subtask 225.4.6 – Special Investigation – Nutrient Optimization: Survey influent carbon, nitrogen, and phosphorus concentration in raw water, post-ozonation, and post-biofiltration. Determine if supplemental nutrient solution needed to optimize full scale biofiltration facilities.

e. Subtask 225.4 – Water Quality Sampling and Testing:
   i. Prepare Sampling and Testing Protocol: Engineer will prepare draft and final water sampling and testing protocol to be utilize during the pilot testing. "In House City" Water Quality Sampling and Analysis: For these samples, the City will be responsible for providing all material, labor, equipment, instrumentation, and incidentals required to sample, test or analyze, and enter the results in the Engineer provided sample and analysis forms.
   ii. "In House Engineer" Water Quality Sampling and Analysis: For these samples, the City will be responsible for providing the sampling bottles and preservation chemicals for use by Engineer's Pilot Plant operations staff in the preparation of the samples. Engineer's pilot plant operator will be responsible for coordination of sampling times and dates for a period convenient to City laboratory staff.

   For the "in House Engineer" water quality analysis, the City will be responsible for furnishing the materials and equipment necessary to store, prepare and test the samples designated as "in House

Engineer" including the incubation devices required to conduct simulated distribution system (SDS) tests. The Engineer's pilot plant operations staff will be responsible for the analysis of those samples designated as "in House Engineer" using City provided analytical instruments and laboratory equipment. Engineer's pilot plant operator will be responsible for coordination of testing and analysis dates for a period convenient to City laboratory staff.

iii. Third Party" Water Quality Sampling and Analysis: The City will be responsible to provide and pay for all third party testing associated with the pilot plant sampling protocol. The Engineer will be responsible for providing the labor required to order sampling kits from City third party laboratory, storing sampling kits, sampling, preparing Chain of Custody documents, and shipping of the samples to the third party for analysis. The Engineer will be responsible for collecting and analyzing laboratory data. Engineer's pilot plant operators will be responsible for coordination of third party testing and analysis dates with City laboratory staff.

f. Subtask 225.6 – Pilot Plant Results and Recommendation Workshop: Upon completion of the pilot plant study, Engineer to conduct workshop with City Staff to discuss pilot plant study results, full scale process integration, and recommendations.

g. Subtask 225.7 – Pilot Plant Technical Memorandum: Upon completion of the pilot plant study, Engineer, in cooperation with pilot plant operator, will provide five (5) draft copies of a technical memorandum summarizing the pilot plant results. Technical memorandum will include the following sections:

i. Introduction
ii. Methods and Materials
iii. Results and Discussion
iv. Conclusions and Recommendations

Following City review, Engineer will revise the TM per the City's comments and provide five (5) final copies of the TM.

Task 230 - Field/Site Surveying. Surveying will be completed for the project as necessary to establish horizontal and vertical control tied to the State Coordinate System. A minimum of two survey control monuments shall be placed at judiciously selected locations at the well field and water treatment plant. Contractor will be required to perform surveying during construction. Engineer's fee assumes separate surveys will be conducted for each phase of the project, as exact survey requirements will not be known until each phase of the project has been developed in further detail.

Task 235 - Geotechnical Investigations at WTP

a. Subtask 235.1 – Geotechnical Investigation: Laboratory testing and analyses will be performed on soil samples to determine engineering criteria necessary for the design and construction on the project.

b. Subtask 235.2 – Geotechnical Report: A preliminary and final geotechnical report will be prepared that provides a general description of the subsurface conditions at the locations indicated, provides technical considerations for the design of subsurface installations, and general considerations for construction activities. Geotechnical investigations at the WTP will consist of the following:

1. New Structures (2 borings each structure)
2. New Buildings (3 borings each building)
3. General slope stability
4. Soil Corrosivity

Task 240 - Preparation of Drawings (Plans) for Project Construction. Drawings will be prepared using MicroStation XM software using ENGINEER's standard format. Final drawings will be delivered in both paper copy and electronic format to City. Engineer shall prepare construction documents (plans, specifications, and related information) to allow bidding and subsequent construction of the improvements to the Plant generally as summarized in the preliminary design. The elements of work to be included in the Project are identified in the tables below.

a. Subtask 240.1 - New Disinfection Building Housing Hypochlorite Generation and Liquid Ammonium Sulfate Systems: The existing chlorine and ammonia systems are in poor condition, lack redundancy, and creates concerns regarding safety of the personnel and surrounding community. It is desired that these systems be replaced with inherently safer technologies. Both systems will be housed in a building with a 2-hour fire rated wall for separation. Separate HVAC systems will be provided for these chemicals. The sodium hypochlorite system will be designed as a 12% bulk delivery sodium hypochlorite system. The onsite generation system will be bid as as a base bid with a deductive alternate for the 12% solution. The bulk hypochlorite system will include interior solution tanks, interior dilution panel, and interior feeder pumps. The onsite generation system will include exterior brine and solution tanks, while brine feeder and solution metering pumps, generators, blowers, softeners, and the rectifier will be stored inside a building and provided with a dilution system to permit dilution of hypochlorite to 0.8% solution. The ammonia system will utilize ammonium sulfate as a liquid of 40 percent solution. Ammonia sulfate system will be provided with interior storage of bulk liquid. Ammonia feed pumps will be contained within the disinfection building.

Subtask 240.1 **- New Disinfection Building Housing Bulk Hypochlorite and Ammonia Sulfate System**		
PROJECT ELEMENT	**DESCRIPTION**	**FEATURES**

Subtask 240.1 **- New Disinfection Building Housing Bulk Hypochlorite and Ammonia Sulfate System**		
PROJECT ELEMENT	**DESCRIPTION**	**FEATURES**
Chemical Feed Systems - Disinfection System		
Bulk/On-site Generation Sodium Hypochlorite System	➢ Onsite Hypochlorite Generation System designed to feed up to 4.0 ppm at 20 mgd. ➢ 30 days minimum storage of brine based upon anticipated average day and average dose. ➢ Solution storage tanks to be equipped with supplement bulk delivery unloading station and a minimum of 1.5 days storage for generation equipment failure event. ➢ Installation of piping and appurtenances for primary and secondary feed points (assumed 6 total).	➢ Brine storage capacity of 20 tons. ➢ Two 750 ppd generators. ➢ Softener and water heater/chiller for brine solution feed. ➢ One air cooled rectifier. ➢ Two interior sodium hypochlorite solution storage tanks with a capacity of 18,000 gals (each). ➢ Three (1-spare) peristaltic hose feeder pumps and two brine feed pump. ➢ Two hydrogen dilution blowers and one hypo dilution panel.
Liquid Ammonia Sulfate System	➢ System designed to feed up to 1.0 ppm at 20 mgd. ➢ Storage based upon anticipated average day and average dose. ➢ Installation of piping and appurtenances for primary and secondary feed points (assumed 4 total).	➢ New FRP interior 10000 gal ammonia storage tank. ➢ Ammonia feeders and associated dilution water softeners to be housed in on-site generation building
Chemical Systems - Primary Process Chemicals		
Chemical Building	➢ Building to House the following: • Brine feed pump • Sodium hypochlorite generators and associated equipment • Sodium hypochlorite feeder pumps • Ammonia feed pumps • Hypochlorite Storage Tanks and Containment Area. • Ammonium Sulfate	➢ Sloped Roof with steel bar joists and built-up membrane. ➢ 8-inch CMU with 4 - inch brick fascia to match existing brick. ➢ Double insulation glass windows to match chemical building. ➢ Electrical to be fed from Electrical Building.

Subtask 240.1 **- New Disinfection Building Housing Bulk Hypochlorite and Ammonia Sulfate System**		
PROJECT ELEMENT	**DESCRIPTION**	**FEATURES**
	• Storage tanks and Containment area. • Exterior slab cBrine storage. •	
Electrical System Improvements		
Disinfection and Ammonia 480V	➢ New 480V Distribution Equipment (MCC's and Switchboard) • MCC-DISIN-A, MCC-DISIN-B	➢ Install in Disinfection Building. ➢ New MCC's to operate facilities associated with both the ammonia feed system and the onsite hypo generation system. ➢ Master plan for Future Generation Equipment. ➢ MCC's to be fed from SWGR-1 in Electrical Building. ➢ Include provisions for city supplied security system.
Lighting Design	➢ Lighting Design for exterior Disinfection/Ammonia System and Disinfection Building interior.	➢ New exterior lighting for ammonia, brine, and hypo solution storage facilities. ➢ New exterior/interior lighting for Disinfection Building.
Grounding	➢ Grounding of Disinfection Building.	➢ New grounding grid will be installed.
Instrumentation And Control System		
Server and Network	➢ *No Improvements*	➢ *No Improvements*

Subtask 240.1 **- New Disinfection Building Housing Bulk Hypochlorite and Ammonia Sulfate System**		
PROJECT ELEMENT	**DESCRIPTION**	**FEATURES**
SCADA System Software	➢ SCADA System Software	➢ Complete integration of all new systems into existing SCADA system. ➢ Automatic transfer control system loads incorporation with existing generator.
Plant Network Communication System	➢ New Fiber Optic Loop to be tied into existing system Fiber Optic Loop.	➢ Fiber Optic Cables Between Electrical Building and Filter Building.
Plant Network PLC System	➢ Install PLC for Control of Chlorine and Ammonia Systems.	➢ PLC's shall be located in the Disinfection Building ➢ PLC to monitor and control Sodium Hypochlorite and Ammonia System. ➢
Instrumentation Upgrade	➢ New Instrumentation for Disinfection Building	➢ Softener hardness alarm ➢ Hypochlorite pH monitoring ➢ Onsite Hypochlorite Generator monitoring and alarms. ➢ Hydrogen gas detectors/alarming and blower alarms. ➢ Ammonia storage level monitoring. ➢ Metering pump, brine pump, blower, and ammonia feed pumps monitoring. ➢ Brine and hypochlorite storage monitoring. ➢ Scope includes design of 4 additional instruments.

Subtask 240.1 **- New Disinfection Building Housing Bulk Hypochlorite and Ammonia Sulfate System**		
PROJECT ELEMENT	**DESCRIPTION**	**FEATURES**
HVAC/Fire Protection System Improvements		
Disinfection Building Heating	➢ Separate Heating for SH and Ammonia Rooms.	➢ Low speed ventilation for 6 air changes/hour. ➢ Indirect fired tube heaters for corridor.
Disinfection Building Cooling	➢ Cooling for SH room only.	➢ Generators and rectifier to be cooled by HVAC during summer months.
Disinfection Building Ventilation.	➢ Ammonia room and SH room to have separate ventilation.	➢ 8-10 air changes per hour in summer ➢ 6 air changes per hour in winter. ➢ For Mechanical room, provide 6 air changes/hour.
Fire Protection	➢ Fire Protection System	➢ Install pre-action deluge or other system conforming to City Fire Marshall Standards.
Security System	➢ Coordinate with the City's designated security system installation contractor.	
Utility System Improvements		
Utility Water	➢ Design Supply Water System for hypochlorite/ammonia sulfate dilution piping	➢ ➢ Design connection to new main pressure zone pumps to bring in new 8-inch pipe to Disinfection building. ➢ Provide Prepackaged Booster Pump Station for Generation System Water.
Utility Air	➢ , route pneumatic piping to Disinfection Building for operation of pneumatic equipment.	

***Subtask 240.1* - New Disinfection Building Housing Bulk Hypochlorite and Ammonia Sulfate System**		
PROJECT ELEMENT	**DESCRIPTION**	**FEATURES**
Drainage	➢ Disinfection Building Drainage System.	➢ Building drains to sludge lagoons.

b. Subtask 240.2 - Ozone System for Disinfection and Taste and Odor Reduction:

To Be Negotiated Following Pilot Study Results..

c. Subtask 240.3 – Aging Infrastructure and Treatment Capacity Improvements: Numerous improvement projects to replace aging and deteriorating treatment infrastructure were outlined in the Norman WTP Expansion Engineer Report. In addition, the report highlighted other recommended improvements to increase treatment capacity of the facility. While some improvements were constructed as part of the Phase I expansion, many projects still remain including improvements to the lagoon/backwash collection facilities, high pressure service pump station, and alum storage and feed system. The City will be responsible for testing the thickness of the filter piping and determining which segments of the piping and valves require replacement or rehabilitation. The following table describes the improvements associated with this task.

Subtask 240.3 – Aging Infrastructure and Treatment Capacity Improvements		
PROJECT ELEMENT	**DESCRIPTION**	**FEATURES**
Raw Water System Improvements		
To be negotiated following Ozone Pilot Study results.	➢	➢
Solids Contact Clarification		
Solids Contact Clarifier No. 3	➢ Yard piping modifications to facilitate direct discharge to lagoon upon clarifier startup. ➢ Redundant lime feed	➢ Discharge to Common 12 inch line to lagoons (connect to existing SCC no 4 drain line. Add butterfly diversion valves. ➢ Redundant lime feed loop and pinch valve assembly.
Solids Contact Clarifier No. 4	➢ Yard piping modifications to facilitate direct discharge to lagoon upon clarifier startup. ➢ Redundant Lime feed	➢ Discharge to Common 12 inch line to lagoons (connect to existing SCC no 4 drain line. Add butterfly diversion valves. ➢ Redundant lime feed loop and pinch valve assembly (clarifier No. 3 and No. 4 only)
	➢	
Recarbonation Basins - Improvements		
Recarbonation Basin No. 1	➢ *No Improvements*	➢ *No Improvements*
Recarbonation basin No. 2	➢ *No Improvements*	➢ *No Improvements*

Subtask 240.3 – Aging Infrastructure and Treatment Capacity Improvements		
PROJECT ELEMENT	**DESCRIPTION**	**FEATURES**
Dual Media Filtration - Improvements		
Filters No. 1-8 Piping Modifications	➢ To be negotiated following Ozone pilot study and City testing of piping integrity.	
Filter Backwash Supply Modifications	➢ To be negotiated following Ozone Pilot Study.	➢
Filter Backwash Wastewater Collection	➢ Drain piping improvements to alleviate basement flooding. ➢ Install one new earthen lagoon for filter backwash collection. ➢ New yard piping, manhole structures, and piping modifications to existing to isolate backwash collection piping from sludge piping. ➢ Modify drain piping in the filter gallery as needed to accommodate new filter backwash collection system. ➢ Security fence relocation.	➢ Dedicated Backwash Water Collection Lagoon ➢ Lagoon/backwash collection yard piping modifications to include the construction of a diversion structure with automated valves/gates for backwash collection diversion and optional flushing. SCADA monitoring and control of diversion structure to be included. ➢ Assumes stream improvements, if necessary to permit construction of lagoon, will be done by others.
Filter Backwash Wastewater Pump Station	➢ Install new backwash water return pump station constructed within lagoon to return water to the head of the plant utilizing the existing 6-in sludge decant force main. ➢ New yard piping to convey decant to existing 6-in sludge decant forcemain.	➢ New backwash water return pump station to be prepackaged with electrically actuated plug valves and flow meter. SCADA monitoring and control of pump station to be included. ➢ Station equipped with quick disconnects.
Finished Water Storage and Pumping		
Reservoir No. 1	➢ Replace drain valves.	
Reservoir No. 2	➢ Replace drain valves.	

Subtask 240.3 – Aging Infrastructure and Treatment Capacity Improvements		
PROJECT ELEMENT	**DESCRIPTION**	**FEATURES**
High Pressure Zone Pump Station	➢ Install two new 3 mgd pumps with Inverter Duty Motors	➢ Structural improvements, if any, to wet well to accommodate new pumps.
Finished Water Transmission Main	➢ *No Improvements*	➢ *No Improvements*
Solids Handling Improvements		
New Lagoon Storage	➢ Install one new earthen lagoon for sludge storage. ➢ New yard piping, manhole structures, and modifications to existing sludge piping for gravity flow of sludge from treatment facilities to new sludge storage lagoon. ➢ New yard piping and modifications to existing decant piping for gravity flow of decant water from new sludge storage lagoon to decant pump station. ➢ Security fence relocation.	➢ Lagoon yard piping modifications to include the valving to manually isolate new sludge lagoon. ➢ Lagoon to be equipped with inlet and decant structures.
New Lagoon Decant Pump Station	➢ OWNER to procure and install New Decant Pump Station. Utilize existing 6-in forcemain. ➢ Install flow meter on 6-in forcemain.	➢ Provide automated shutoff valves and fiber optic control to lagoon pump station. ➢ SCADA monitoring and control of pump station. ➢ Station equipped with quick disconnects.
Existing Sludge Lagoons	➢ Outlet gate valve replacement on each existing lagoon.	➢ Design as alternate.

Subtask 240.3 – Aging Infrastructure and Treatment Capacity Improvements		
PROJECT ELEMENT	**DESCRIPTION**	**FEATURES**
Sanitary Sewer	➢ New SS Grinder and Lift Station for plant sanitary system and brine reject from ion exchange units. ➢ New gravity yard piping as needed. ➢ Tie into City sanitary sewer collection system.	➢ Lift Station will be designed to pump either to new sanitary sewer. ➢ Existing septic tank and leach field will be removed. ➢ SCADA monitoring of lift station.
Chemical Feed Systems - Disinfection System		
Chlorine Feed System	➢ Decommission of existing chlorine storage and feed system.	➢ Decommission of existing chlorine system.
Ammonia Feed System	➢ Decommission of existing ammonia storage and feed system.	➢ Decommission of existing ammonia system.
Chemical Systems - Primary Process Chemicals		
Pebble Quicklime Storage and Feed System	➢ Relocate existing aging tank, slurry loop pump, and emergency loop pump to chlorine room in Chemical Building. ➢ Installation of redundant lime aging tank in chlorine room. ➢ Installation of Redundant Loop and Metering Valves to Clarifiers No. 3 and No. 4.	➢ Modifications to lime slurry piping to accommodate new aging tank locations. ➢
Liquid Aluminum Sulfate Storage and Feed System	➢ Replacement of storage Tanks ➢ Replacement of fill and pump suction piping for feed system. ➢ Replacement of metering pumps and associated appurtenances. ➢ New storage level measurement devices. ➢ Construction of chemical storage containment wall and sump pump. ➢ Emergency eyewash installation.	➢ New Tanks and fill, vent, drain, and withdrawal piping with associated valving. ➢ New metering pumps for increased reliability.
Carbon Dioxide Feed System Improvements	➢ No Improvements	➢ No Improvements ➢
Chemical Feed Systems - Secondary Systems		

Subtask 240.3 – Aging Infrastructure and Treatment Capacity Improvements		
PROJECT ELEMENT	**DESCRIPTION**	**FEATURES**
Temporary PAC Storage and Feed System	➢ Install support structure for hoist.	
Sodium Fluorosilicate System	➢ No Improvements.	➢ No Improvements
Electrical System Improvements		
Backup or Redundant Primary Power System	➢ Demolition of existing generator and NEMA 6 panel in Chemical Building	➢ ,
Main Service 480 V Switchgear Improvements	➢ *No Improvements*	➢ *No Improvements*
High Pressure Zone 480 V MCC improvements	➢ Four new soft starts. ➢ Decommission of existing exterior electrical gear and primary feed.	➢ Re-feed pumps from electrical gear located in Electrical Building. ➢ OG&E coordination for decommission of primary feed to existing service.
Chemical Building 480V MCC Improvements	➢ *No Improvements*	➢ *No Improvements*
Filter Building Lighting Improvements	➢ to be negotiated following Ozone Pilot Study.	➢ To Be Determined ➢
Chemical Building Lighting Improvements	➢ *No Improvements*	➢ *No Improvements*
	➢	➢
Site Lighting Improvements	➢ To be negotiated following ozone pilot study	➢ To be determined..
Instrumentation And Control System		
Well Field System Telemetry	➢ *No Improvements*	➢ *No Improvements*
Server and Network	➢ *No Improvements*	➢ *No Improvements*
SCADA System Software	➢ Complete integration of all new systems into existing SCADA system	➢ Upgrade SCADA system as necessary to handle new demands. ➢ Provide full monitoring and control of all new systems.
Filter PLC System	➢ To be negotiated following Ozone Pilot Study	
Plant Network Communication System - SCC	To be negotiated following Ozone Pilot Study	

Subtask 240.3 – Aging Infrastructure and Treatment Capacity Improvements		
PROJECT ELEMENT	**DESCRIPTION**	**FEATURES**
Plant Network Communication System – Chemical Processes	➢ Fluoride improvements	➢ Fluoride automatic flow pacing.
Plant Network PLC System	➢ Install new PLC's for monitoring and control of all new equipment.	➢ PLCs to be provided with UPS
Instrumentation Upgrade	➢ New instrumentation where recommended.	➢
HVAC System Improvements		
Filter Building	➢ To be negotiated following Ozone Pilot Study	➢
Main Service Pump Station	➢ To be negotiated following Ozone pilot study.	
General Site Work		
Chemical Trench	➢ Installation of new covers on old chemical trench. ➢ Installation of new chemical trench for pneumatic piping and chemical solution feeds for ammonia and chlorine. ➢ Additional chemical trench improvements to be negotiated following Ozone Pilot study.	
Sample Line	➢ Install sample line from Old High Service Pumps (downstream of Well No. 5) line to lab. ➢	➢ Include turbidity and chlorine monitoring.
Utility System Improvements		
Utility Water	➢ to be negotiated following Ozone Pilot Study.	➢ To be Determined..
Utility Air	➢ To be negotiated following Ozone Pilot Study.	

d. Subtask 240.4 – Remodel Maintenance Shop and Create New Storage Area: The existing maintenance shop space will be remodeled to incorporate office space, conference space, restroom facilities and expand the areas utilized for maintenance in accordance with the preliminary plan provided in Attachment B. A new storage building will be created as part of the improvements to incorporate ozone into the Norman WTP.

***Subtask 240.4* – Maintenance Shop Remodel and New Storage Building**		
PROJECT ELEMENT	**DESCRIPTION**	**FEATURES**
Architectural		
Remodeling of Maintenance Shop	➢ Demo/relocate rigid maintenance equipment/facilities. ➢ Remodel for additional office space.	➢ See Attachment B.
Electrical System		
New Power Feed	➢ New 480 V service from Electrical Building	➢ Backup Generation ➢ New 480V panelboard and Transformer (exterior) ➢ New 480V welder Outlets (2)
Lighting	➢ New Building Interior Lighting	➢ New Fixtures, ballasts and lights for all areas.
	➢	
	➢	➢
Instrumentation And Control System		
	➢ *Not Included*	➢ *Not Included*
HVAC/Fire Protection System Improvements		
Building Heating and Cooling	➢ Office Space (Heating/cooling) ➢ Maintenance area	➢ MAU (electric) for heating cooling in offices and conf room. ➢ Heating (electric or nat gas tube). 8-10 ACH for summer and welding ventilation.
Security System	➢ Coordinate with the City's designated security system installation contractor.	
Utility System Improvements		
Potable Water	➢ New plumbing and drain system for building..	
Drainage	➢ Building Drainage System.	➢ To New grinder station.

The preliminary drawing list for the improvements identified in Subtasks 240.1, 240.3, and 240.4 are included in Attachment C within this Amendment. These drawings represent the best estimate of the anticipated work at the time of this Amendment and it is recognized that this list will undergo changes and refinements as the project progresses.

DELIVERABLES
Specific deliverables associated with the design drawings and specifications include the following:

1. Meeting minutes from progress meetings and workshops with the City.
2. Flood Study Memorandum detailing HEC-RAS model development, results of hydraulic analysis, and recommended improvement projects.
3. Pilot Study Report detailing results of ozone/biofiltration pilot study and recommendations for full scale design.
4. List of proposed manufacturer's of major equipment items.
5. Project Work Plan (summarizing design protocol, communications protocol, document filing system, team member roles, and responsibilities, etc.)
6. Engineering Plans (Interim Design Submittal and Final Design Submittal) for City staff review.
7. Final Construction Documents (engineering plans and specifications) ready for advertisement and bid.
8. Engineer's estimate of probable construction cost at Interim and Final stages of project development.

Scope of Service Work Tasks: The following scope of work tasks will be included with the final design portion of this phase of the project.

Task 245 - Design and Preparation of Project Specifications. Engineer shall complete the engineering design and prepare specifications to include the following: (1) Division 00 - Bidding Requirements, Contract Forms, General Conditions, and Supplementary Conditions, (2) Division 01 - General Requirements, and (3) Divisions 02 through 17 - Technical Specifications. Included in these specifications will be a description of known constraints on the Contractor's construction sequencing plan that identifies the requirements of the contractor to allow uninterrupted production of water from the Plant at the minimum levels prescribed by the specifications. The specifications will be based upon the use of State Revolving Fund (SRF) loans and will conform to the requirements of ODEQ. Fee does not assume use of ARRA funds for the construction of the improvements listed herein.

Task 250 – Prepare Estimates of Probable Construction Costs. Engineer shall prepare an interim estimate of probable construction costs at the Intermediate Design Submittal stage of completion and a final estimate prior to bidding the project.

Task 255 – Contractor Prequalification. Engineer shall provide advisement documentation and solicit for Contractor Prequalification Package submittals with regard to General Contractor, Electrical Contractor, and Instrumentation and Controls Contractor. Engineer shall review received prequalification packages and provide recommendations to the City. Upon City approval of recommended Contractors, Engineer shall provide notices to all Contractors.

Task 260 – Project Advertisement and Bidding. Following completion of design and prequalification services, Engineer shall provide the following bidding phase services:

a. Subtask 260.1 – Pre-Bid Meeting: Provide assistance at Pre-Bid Meeting, including a tour of the project site with prospective bidders.

b. Subtask 260.2 – Bid Period Inquiries: Respond to written questions by plan holders or others regarding the technical aspects of the work, contract requirements for prospective bidders, subcontractors, and suppliers during the period of advertisement. Prepare written plan clarifications as may be necessary.

c. Subtask 260.3 – Issuance of Addenda: Prepare addenda to the contract drawings and/or specifications to clarify and modify project requirements.

d. Subtask 260.4 – Bid Evaluation: Review the apparent lowest responsible bidder and summarize findings with respect to engineering aspects of the bids to assist the award of the construction contract. The review will include preparation of a bid tabulation, verification of conformance with the technical contract requirements as presented in the bid forms, verification of the low bidder's references and a letter summarizing the results of the engineering evaluation.

Included in Engineer's bidding phase services are the printing and sale of Contract Documents to interested contractors or other interested parties. It is assumed that **10 sets** of documents will be printed and distributed.

Time of Completion Final Design and Bidding Services (all Items)

Approximate Duration of Tasks		**Weeks after NTP**
Notice To proceed		-
Prepare Pilot Testing Protocol	4.00	4.00
Order and Deliver Pilot Testing Units	4.00	4.00
Install/Setup Pilot Unit	4.00	8.00
Pilot Testing	24.00	32.00
Decommissioning	2.00	34.00
Pilot Testing TM Preparation	8.00	42.00
Geotechnical Investigations	4.00	30.00
Preliminary Design of Improvements	TBD	TBD
Review and Acceptance	TBD	TBD
Interim Design Submittal	TBD	TBD
Review and Acceptance	TBD	TBD
Final Design Submittal	TBD	TBD
Review and Acceptance	TBD	TBD
Bid Phase Services	TBD	TBD

TBD – To Be Determined following ozone pilot study

Attachment A- Anticipated Pilot Study Equipment
Draft Final Scope of Services
Norman, OK Phase II Design

Granular Media Filtration Pilot Module F200

Module consists of two constant rate filters with individual feed pumps, an air scour system, and a backwash system. Each filter is independent with automatic flow control. Backwashing is performed manually by an operator. Only one filter may be backwashed at a time. Automatic data logging of key parameters is included. Each filter has multiple sample ports throughout the media depth.

Specifications

Maximum Total Flow Rate: 6.0 gpm (22.7 L/min)
Filters: 2 @ 6 inch diameter (150 mm)
Maximum Media Depth: 75 inch (1.90 m)
Filtration Rate: 1.3…15.3 gpm/sf (3.2…37.4 m/h)
Backwash Rate: 2.5…25.0 gpm/sf (6.1…61.0 m/h)
Backwash Tank Volume: 165 gal (625 L)
Air Scour Rate: 0.6…6.0 scfm/sf (10.9…108.9 m/h)
Max Sustainable Air Scour Rate: 2.6 scfm/sf (46.7 m/h)
Power: 1 phase, 7.5 A @ 120 VAC

Instrumentation

Flow Rate (each filter)*
Headloss (each filter)*
Effluent Turbidity (each filter)*
Backwash Flow Rate

*Data Logged

Granular Media Filtration Pilot Module F300

Module consists of four constant rate filters with individual feed pumps, an air scour system, and a backwash system. Each filter is independent with automatic flow control. Backwashing is automatic and is initiated manually by an operator in the manual mode, or on runtime, headloss, or effluent turbidity in the automatic mode. Only one filter may be backwashed at a time. Other features include automatic data logging of key parameters, remote monitoring and control using a standard web browser, and email alarm notification.

Specifications

Maximum Total Flow Rate: 8.0 gpm (30.3 L/min)
Filters: 4 @ 6 inch diameter (150 mm)
Maximum Media Depth: 74 inch (1.88 m)
Filtration Rate: 2.0…10.2 gpm/sf (5.0…25 m/h)
Backwash Rate: 4.0…50.0 gpm/sf (9.8…122 m/h)
Backwash Tank Volume: 150 gal (568 L)
Air Scour Rate: 0.68…6.8 scfm/sf (12.4…124 m/h)
Power: 1 Phase, 16.5 A @ 120 VAC

Instrumentation

Flow Rate (each filter)*
Headloss (each filter)*
Effluent Turbidity (each filter)*
Air Scour Flow
Backwash Flow*
Backwash Tank Level*

*Data Logged

Granular Media Filtration Pilot Module F400

The pilot module consists of four constant rate filters with individual feed pumps and chemical pumps. The air scour and backwash systems are shared by all filters. Each filter is independent with automatic PID flow control. The backwash and air scour flow rates are also automatically controlled using PID loops. The chemical pumps are automatically

paced to the filter feed flows associated with each chemical pump. A fifth chemical pump system is provided to pace between either the combined filter feed flows or the backwash flow rate. An improved backwash process is included, providing superior performance when operating biological filtration processes. Backwashing is initiated manually by an operator in the manual mode, or on runtime, run volume, headloss, or effluent turbidity in the automatic mode. Only one filter may be backwashed at a time. Other features include automatic data logging of key parameters, remote monitoring and control using a standard web browser, and email alarm notification.

Specifications
Maximum Total Flow Rate: 8.0 gpm (30.3 L/min)
Filters: 4 @ 6 inch diameter (150 mm)
Maximum Media Depth: 75 inch (1.90 m)
Filtration Rate: 2.6…10.2 gpm/sf (6.4...25 m/h)
Backwash Rate: 5.1…51.0 gpm/sf (12.5...125 m/h)
Backwash Tank Volume: 150 gal (568 L)
Air Scour Rate: 2.6...10.2 scfm/sf (47.6…187 m/h)
Power: 1 phase, 19.1 A @ 120 VAC

Instrumentation
Flow Rate (each filter)*
Headloss (each filter)*
Effluent Turbidity (each filter)*
Underdrain DP (each filter)*
Air Scour Flow*
Backwash Flow*
Backwash Tank Level*
Filter Column Level*

*Data Logged

~~**Granular Media Filtration Pilot Module F500**~~
~~Module consists of an influent reaction tank, three constant rate pressure filters, an air scour system, and a backwash system. Each filter is independent with automatic flow control and can be configured for online or standby operation. Backwashing is automatic and is initiated manually by an operator in the manual mode, or on runtime or headloss in the automatic mode. Only one filter may be backwashed at a time. Other features include automatic data logging of key parameters, remote monitoring and control using a standard web browser, and email alarm notification.~~

~~Specifications~~
~~Maximum Total Flow Rate: 210 gpm (795 L/min)~~
~~Filters: 3 @ 30 inch diameter (762 mm)~~
~~Maximum Media Depth: 42 inch (1.07 m)~~
~~Filtration Rate: 2.0…14.3 gpm/sf (5.0…35 m/h)~~
~~Backwash Rate: 6.1…20.0 gpm/sf (15.0…49.0 m/h)~~
~~Air Scour Rate: 1.0…3.0 scfm/sf (18.3…55.0 m/h)~~
~~Reaction Tank Volume: 90 gal (340 L)~~
~~Power: 3 phase, 11.7 A @ 208 VAC, 12.9 A @ 230 VAC, 5.8 A @ 480 VAC~~

~~Instrumentation~~
~~Flow Rate (each filter)*~~
~~Headloss (each filter)*~~
~~Influent Turbidity*~~
~~Effluent Turbidity*~~
~~Air Scour Flow~~
~~Backwash Flow~~
~~Backwash Tank Level*~~

~~*Data Logged~~

Flocculation / Sedimentation Pilot Module S100
Module consists of a feed pump, one stage rapid mix, three stage flocculation, inclined plate sedimentation, a sludge removal system, and five chemical feed systems. The feed

flow is controlled automatically. Mixers are variable speed with direct entry of mixing gradient setpoint. Inclined plates can be added or removed as necessary. Sludge can be removed continuously or intermittently. Chemical feed pumps are flow paced with direct entry of chemical dosage. Other features include automatic data logging of key parameters, remote monitoring and control using a standard web browser, and email alarm notification.

Specifications
Feed Flow Rate: 1...6.2 gpm (3.8...23.5 L/min)
Rapid Mix Basin: 1 @ 5.0 gal (19.0 L)
Rapid Mixer: 60...1091 s^{-1}
Flocculation Basin: 3 @ 60.9 gal (230.0 L)
Flocculation Mixers: 3...60 s^{-1}
Chemical Feed Pumps: 5 @ 0.10...25 gpd (0.27...66 mL/min)
Chemical Feed Tanks: 5 @ 7 gal (26.5 L)
Sludge Flow Rate: 0.03...0.16 gpm (114...606 mL/min)
Settling Plates: 2...25 @ 1.62 sf each (0.151 m^2)
Power: 1 phase, 120 VAC, 13.2 A

Instrumentation
Feed Flow*
Feed pH*
Feed Turbidity*
Settled Water pH*
Settled Water Turbidity*
Temperature*

*Data Logged

Flocculation / Sedimentation Pilot Module S200

~~Module consists of a feed pump, two-stage rapid mix, three-stage flocculation, inclined plate sedimentation, a sludge removal system, and five chemical feed systems. The feed flow is controlled automatically. Mixers are variable speed with direct entry of mixing gradient setpoint. Inclined plates can be added or removed as necessary. Sludge can be removed continuously or intermittently. Chemical feed pumps are flow paced with direct entry of chemical dosage. Other features include automatic data logging of key parameters, remote monitoring and control using a standard web browser, and email alarm notification.~~

~~Specifications~~
~~Flow Rate: 1...6.5 gpm (3.8...24.6 L/min)~~
~~Rapid Mix Basin: 2 @ 3.4 gal (13.2 L)~~
~~Rapid Mixers: 33...1037 s^{-1}~~
~~Flocculation Basin: 3 @ 50.7 gal (192.0 L)~~
~~Flocculation Mixers: 7...117 s^{-1}~~
~~Chemical Feed Pumps: 5 @ 0.11...42 gpd (0.3...110 mL/min)~~
~~Chemical Feed Tanks: 5 @ 7 gal (26.5 L)~~
~~Sludge Flow Rate: 0.14...1.4 gpm (530...5300 mL/min)~~
~~Settling Plates: 2...30 @ 1.49 sf each (0.138 m^2)~~
~~Power: 1 phase, 120 VAC, 11.1 A~~

~~Instrumentation~~
~~Feed Flow*~~
~~Feed pH*~~
~~Feed Turbidity*~~
~~Settled Water pH*~~
~~Settled Water Turbidity*~~
~~Temperature*~~

~~*Data~~ Logged

~~**Ozonation Pilot Module Z100**~~

~~Module consists of a feed pump, five contact chambers, an ozone generator and an ozone destruct unit. The feed flow is controlled automatically. Contact chambers have twenty-five volumetrically-spaced ports for sampling dissolved ozone. The ozone generator is air-cooled with an integral oxygen concentrator for creating ozone from ambient air, and shuts down automatically if a leak is detected. Other features include automatic data logging of key parameters, remote monitoring and control using a standard web browser, and email alarm notification.~~

~~Specifications~~
~~Flow Rate: 1.0...8.0 gpm (3.8...30.3 L/min)~~
~~Contactors: 5 @ 13.9 gal (52.6 L)~~
~~Ozone Delivery: 0.25...11 g/h~~
~~Power: 1 phase, 13.9 A @ 120 VAC~~

~~Instrumentation~~
~~Feed Flow*~~
~~Ozone Feed Gas Concentration*~~
~~Ozone Off Gas Concentration*~~
~~Dissolved Ozone Concentration*~~
~~Ozone Feed Gas Flow~~
~~Ambient Ozone Concentration*~~
~~Ozone Feed Gas Pressure~~
~~Ozone Feed Gas Temperature~~

*Data Logged

Ozonation Pilot Module Z200

Module consists of a feed pump, four contact chambers, the ozone control panel, and an ozone destruct unit. The feed flow is controlled automatically. Depending on the contactor configuration, contact chambers have either sixteen or twenty-four volumetrically-spaced ports for sampling dissolved ozone. The ozone generator is air-cooled with an integral oxygen concentrator for creating ozone from ambient air, and shuts down automatically if a leak is detected. Ozone delivery is flow paced with direct entry of ozone dosage. Ozone gas zero calibration can be performed either manually or automatically based on runtime without interruption of ozone delivery to the contactors. Other features include automatic data logging of key parameters, remote monitoring and control using a standard web browser, and email alarm notification.

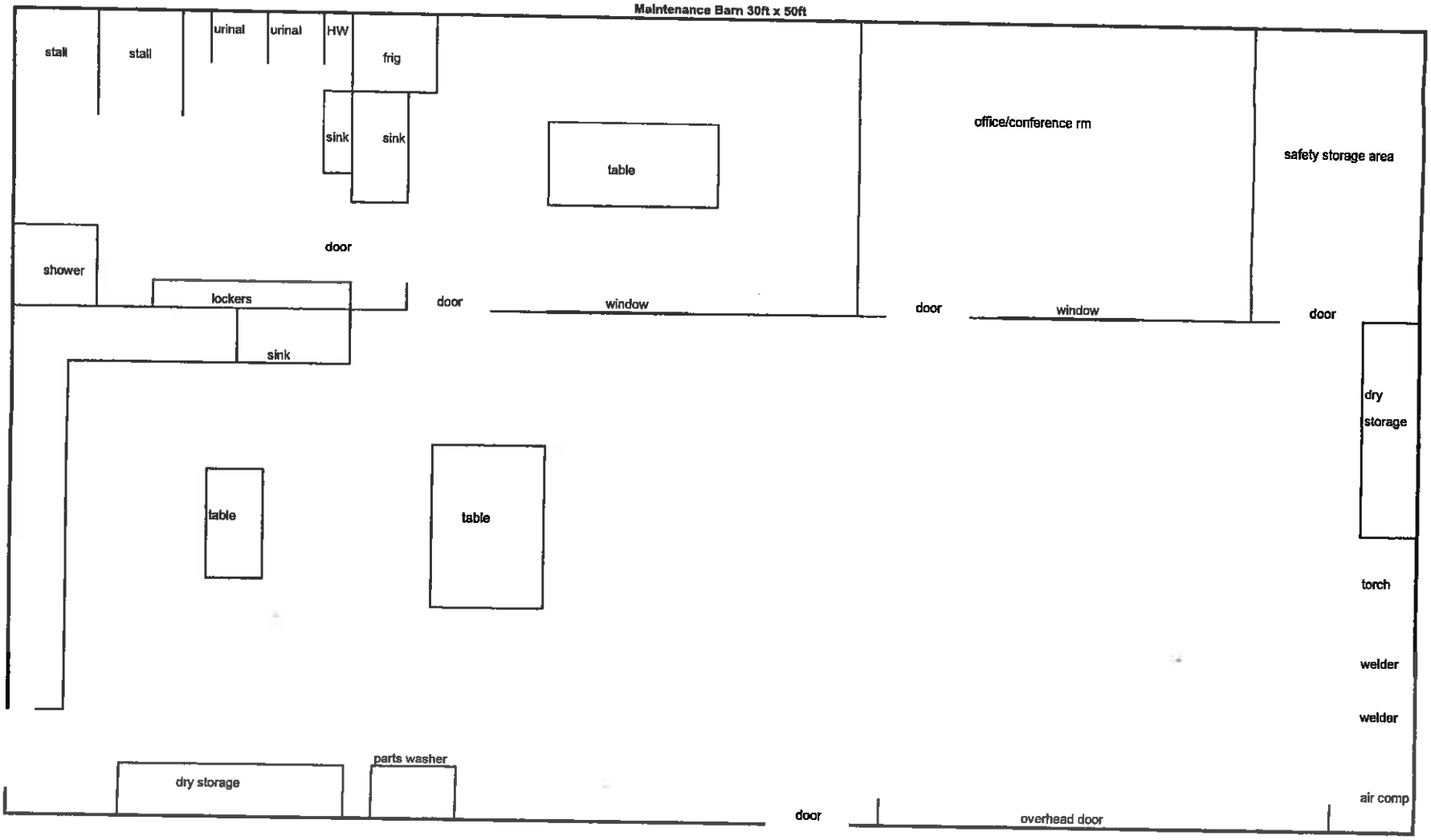
Specifications
Flow Rate: 1.0…8.0 gpm (3.8...30.3 L/min)
Contactors: 4 @ 19.5 gal (73.8 L)
or: 4@ 13.2 gal (50.0 L)

Ozone Delivery: 0.1...6.5 g/h
Power: 1 phase, 10.0 A @120 VAC

Instrumentation
Feed Flow*
Ozone Feed Gas Concentration*
Ozone Off Gas Concentration*
Ozone Feed Gas Flow (mass flow)*
Dissolved Ozone Concentration*
Ambient Ozone Concentration*

*Data Logged

Attachment B – Preliminary Maintenance Barn Layout
Draft Final Scope of Services
Norman, OK Phase II Design


Maintenance Barn 30ft x 50ft
stall
stall
urinal
urinal
HW
frig
sink
sink
table
office/conference rm
safety storage area
door
shower
lockers
door
window
door
window
door
sink
dry
storage
table
table
torch
welder
welder
parts washer
dry storage
air comp
door
overhead door

Attachment C – Estimated Drawing List (excluding Ozone)
Draft Final Scope of Services
Norman, OK Phase II Design

Projected Drawing List (single Construction Project)
Task 240.1 New Disinfection Building
Norman WTP Phase II Expansion
Norman Utilities Authority

Area	**10**			**Sitework**
1	10 C		01	Yard piping Area Plan - Disinfection Building
2	10 C		02	Duct Bank Profile I - Power to Building and Main Service PS
3	10 C		03	Chemical Trench profile and details (Disinfection Building)
4	10 E		01	Electrical feed area plan - disinfection building
5	10 E		02	lighting and grounding plan disinfection building
Area	**65**			**Disinfection and Ammonia Building**
				Architectural Drawings
6	65 A	-	01	Code Compliance Plan
	65 A	-	02	Disinfection and Ammonia Building - Door, Window, Finish
7				Schedule
8	65 A	-	03	Building Floor Plan
9	65 A	-	04	Building Roof Plan
10	65 A	-	05	Exterior Elevations I
11	65 A	-	06	Exterior Elevations II
12	65 A	-	07	Building Sections I
13	65 A	-	08	Building Sections II
14	65 A		09	Roof and Stair Details
				Structural Drawings
15	65 S	-	01	Building Foundation Plan
16	65 S		02	Building Roof Plan
17	65 S	-	03	Building Sections I
18	65 S	-	04	Building Sections II
19	65 S	-	05	Building Sections and Details
19	65 S	-	06	Details
				Process Drawings
20	65 M	-	01	Sodium Hypochlorite Brine and softening Schematic - Base Bid
21	65 M	-	02	Sodium Hypochlorite Generation Schematic - Base Bid
22	65 M	-	03	Storage and Metering System Schematic
23	65 M	-	04	Building Floor Plan - Generation
24	65 M	-	05	Building Floor Plan - Hypochlorite Storage & Metering
25	65 M	-	06	Building Floor Plan - Ammonium Sulfate Storage & Metering
25	65 M	-	07	Building Sections I
26	65 M	-	08	Building Sections and Details
				HVAC Drawings
27	65 H	-	01	HVAC Equipment Schedules
28	65 H	-	02	HVAC Plan and Details I
29	65 P	-	01	Fire Protection Plan and Details
30	65 P	-	02	Plumbing Plan and Isometric
				Electrical Drawings
31	65 E	-	01	Building One Line MCC A &B
32	65 E	-	02	Elevation MCC A&B
33	65 E	-	03	480 V Power and Control Plan - Hypochlorite
34	65 E	-	04	480V Power and Control Plan - Ammonia
35	65 E	-	05	480 V Power and Control Plan - Electrical Room
36	65 E	-	06	Lighting and Receptacle Plan
37	65 E	-	07	Roof Plan
38	65 E	-	08	Grounding Plan
40	65 N	-	01	AMMONIUM SULFATE STORAGE TYPICAL STORAGE TANK
41	65 N	-	02	AMMONIUM SULFATE METERING TYPICAL
42	65 N	-	03	SODIUM HYPOCHLORITE - TYPICAL BRINE TANK
43	65 N	-	04	SODIUM HYPOCHLORITE - WATER SUPPLY AND DRAINAGE SYSTEM
44	65 N	-	05	SODIUM HYPOCHLORITE - TYPICAL GENERATOR AND HYDROGEN DILUTION
45	65 N	-	06	SODIUM HYPOCHLORITE - TYPICAL STORAGE TANK
46	65 N	-	07	SODIUM HYPOCHLORITE - TYPICAL METERING PUMP
47	65 N	-	08	BUILDING SYSTEMS - HVAC SYSTEMS
48	65 N	-	09	BUILDING SYSTEMS - FIRE PROTECTION AND SECURITY
49	65 GN	-	01	PCM DISINFECTION LAYOUT
39	65 GN	-	02	CONTROL SCHEMATICS I
40	65 GN	-	03	CONTROL SCHEMATICS I
				SUBTOTAL

HVAC Control Panels
Control Panels Alarms

NOTES:
1 GENERAL DRAWINGS TO BE LISTED WITH OZONE FACILITY IMPROVEMENTS
2 TYPICAL DETAIL DRAWINGS TO BE LISTED WITH OZONE FACILITY IMPROVEMENTS

TO BE DETERMINED FOLLOWING OZONE PILOT STUDIES

Area 00 GENERAL

1	00 GN	-	01	BLOCK DIAGRAM I
2	00 GN	-	02	BLOCK DIAGRAM II
3	00 GN	-	02	PLC AND INSTRUMENT POWER

AREA 10 SITEWORK

4	10 D	-	01	SITE DEMOLITION (SEPTIC SYSTEMS AND SANITARY MH	
5	10 C	-	01	GRINDER LIFT STATION PLAN AND SECTION	
6	10 C	-	02	GRINDER LIFT STATION FM PLAN AND PROFILE I	
7	10 C	-	03	GRINDER LIFT STATION FM PLAN AND PROFILE II	
8	10 C	-	04	SCC NO 3 AND 4 DRAIN LINE PLAN AND PROFILE	
9	10 C	-	05	HDD PLAN AND PROFILE FILTER BUILDING DRAINS	
10	10 C	-	06	HDD PLAN AND PROFILE FILTER BUILDING DRAINS	
11	10 ED	-	01	SITE ELECTRICAL	DEMOLITION PLAN AND DETAILS
12	10 E	-	01	GRINDER LIFT STATION PART	480 v CONTROL POWER AND P
13	10 E	-	02	LAGOON LIFT STATION PARTI	480 v CONTROL POWER AND P
14	10 N	-	01	GRINDER LIFT STATION	P&ID
15	10 N	-	02	LAGOON LIFT STATION	P&ID

Area 60 EXISTING CHEMICAL BUILDING

Architectural Drawings

16	60 D	-	01	Chemecial Building Demolitio	demo LAS system, generator, air comp
17	60 A	-	02	Building Elevations and detail	window and door replacement
18	60 A	-	03	Building Elevations and detail	window and door replacement

Structural Drawings

19	60 S	-	01	Structural Details	Repair of wall where generator remove
20	60 S	-	01	Structural plan and section	containment area wall and sump pump

Process Drawings

21	60 D	-	01	Chemical Building Demolition Details	
22	60 M	-	01	Coagulant System Schematic	
23	60 M	-	02	Lime Feed System Schematic	
24	60 M	-	03	Chemical Building Plan -lime a	show lime ageing tank installation
25	60 M	-	04	Chemical Building Plan - Alum	show alum instalation
26	60 M	-	05	Sections and Details - Lime area	
27	60 M	-	06	Sections and Details - Alum area	

HVAC Drawings

28	60 H	-	1	HVAC Plan and Details

Electrical and I&C Drawigns

29	60 ED	-	01 Electrical Demolition	Chlorine/ammonia/co2 and alum
30	60 E	-	01 480V Power and Control Plan - Alum Area	
31	60 E	-	02 480V Power and Control Plan - Lime Area	
32	60 E		03 HVAC Control Schematics	
33	60 N	-	01 Lime Ageing Tank P&ID	Lime area
34	60 N	-	02 Lime Redundant Loop P&ID	Lime area
35	60 N	-	03 Aluminum Sulfate Storage	Typical Storage Tank P&ID
36	60 N	-	04 Aluminum Sulfate Metering	Typical Metering Pump P&ID
37	60 N	-	05 Misc process control	

AREA 72 HIGH PRESSURE ZONE PS

Structural Drawings

38	72 S		01 MISCELLANEOUS STRUCTURAL	

Mechanical Drawings

39	72 M		01 HIGH PRESSURE ZONE PS PLANS	
40	72 M		02 HIGH PRESSURE ZONE PS SECTIONS AND DETAILS	

Electrical and I&C Drawings

41	72 ED		01 HIGH PRESSURE ZONE PS	DEMOLITION
42	72 E		01 HIGH PRESSURE ZONE PS	POWER, CONTROL, & GROUNDING PLAN
43	72 N		01 PROCESS & INSTRUMENTATION	HIGH PRESSURE PUMP AND VALVE NO. 1
44	72 N		02 PROCESS & INSTRUMENTATION	HIGH PRESSURE PUMP AND VALVE NO. 2
45	72 N		03 PROCESS & INSTRUMENTATION	HIGH PRESSURE PUMP AND VALVE NO. 2
46	72 N		04 PROCESS & INSTRUMENTATION	HIGH PRESSURE PUMP AND VALVE NO. 2

AREA 90 Backwash and Solids Handling Lagoons

47	90 D		01 EXISTING LAGOON PLAN	) REPLACEMENT OF VALVES AND P
48	90 C		02 NEW LAGOON PLAN	NEW CONTURES OF LAGOONS
49	90 C		03 NEW LAGOONS CUT AND F	CUT AND FILL OF DIRT
50	90 C		04 NEW LAGOONS CUT AND F	CUT AND FILL OF DIRT
51	90 C		05 NEW LAGOONS DETAILS	

Structural Drawings

52	90 S	-	01 Valve Vault Plan & Section	Diversion Structure Vault
53	90 S	-	02 Lagoon Inlet and Outlet Plans	
54	90 S	-	03 Sections and Details	PUMP STATION VALVE VAULTS

Process Drawings

55	90 M	-	01 Lagoon PS Plan and Section	Replace existing
56	90 M	-	02 New BW Lagoon PS Plan and Section	
57	90 M	-	03 New Lagoon Inlet/Outlet Details	

Electrical and Instrumentation

58	90 E	-	01 **Lagoon area electrical 480V**	Overall Electrical Plan of Lagoon area
59	90 E	-	01 **Diversion vault 480V power**	diversion vault

60	90 E	-	01	**lagoon pump station 480V p**	lagoon pump station
61	90 E	-	01	**bw pump station power and**	new bw ww return ps
62	**90 N**	-	01	**Diversion structure control**	**control panel for bw diversion**
63	**90 N**	-	01	**Lagoon Return PS P&ID**	
64	**90 N**	-	01	**Diversion Structure P&ID**	
65	**90 N**	-	01	**BW Pump Station P&ID**	

Task 240.4 Maintenance Building Rehabilitation
Norman WTP Phase II Expasnsion
Norman Utilities Authority

Area **95** MAINTENANCE BUILDING REHABILITATION

			Architectural Drawings
1	95 A	-	01 Code compliance plan
1	95 A	-	02 Existing Maintenance Shop Demolition Plan
2	95 A	-	03 Existing Maintenance Shop Remodel Plan
3	95 A	-	04 Building Sections and Details
4	95 A	-	05 Window, Finish, and Door Schedules
			Structural Drawings
5	95 s	-	01 miscellaneous structural
			Mechanical - HVAC/Plumbing
6	95 M	-	01 HVAC Building Plan
7	95 M	-	02 Building plumbing isometrics
			Electrical
1	95 E	-	01 Lighting Plan
2	95 E	-	02 480V Power, control plan

TASK ORDER NO. 1

CONTRACT K-1112-124

EXHIBIT B
Phase II Water Treatment Expansion
City of Norman, OK
Estimated Fee for Design Related Services (excludes services during construction and Ozone System Design and Bidding)

	Base Elements	With Ozone	TOTAL
Pilot Plant Study Begins	26-Apr-12	26-Apr-12	26-Apr-12
Pilot Plant Study Ends	20-Dec-12	20-Dec-12	20-Dec-12
Duration (Months)	8.50	8.50	8.50
Design Begins	22-Nov-12	TBD*	TBD*
Design Ends	30-May-13	TBD*	TBD*
Bidding Phase Services End	25-Jul-13	TBD*	TBD*

Task Code	Description	Estimated Fee Base Elements	Estimated Fee Ozone Facilities		Anticipated Construction Cost		
PILOT PLANT STUDY SERVICES							
200	Project Management (During Pilot and Post Study)	$ 8,500	$0	$8,500			
225	Pilot Plant Study	$ 634,700	$0	$634,700			
220	Land Study	$ 47,900	$0	$47,900			
	Subtotal	$ 691,100	$ -	$ 691,100	Not Applicable		
FINAL DESIGN SERVICES							
200	Project Management	$ 32,000	TBD(1)	TBD			
210	Agency Coordination	$ 8,700	TBD(2)	TBD			
215	Design Project Meetings and Workshops	$ 55,800	TBD (3)	TBD			
235	Geotechnical Investigations	$ 29,600	$ -	$ 29,600			
240	Preparation of Drawings -						
	240.1 New Disinfection Building	$ 286,400	$ -	$ 286,400	$ 3,412,300		8.39%
	240.2 Ozone System	$ -	TBD(4)	TBD	TBD		TBD
	240.3 Existing Infrastructure	$ 325,500	TBD(5)	TBD	$ 2,786,000		12%
	240.3 Maintenance Shop Remodel	$ 35,000	$ -		$ 162,600		22%
245	Preparation of Specifications	$ 28,000	TBD	TBD			
250	Contractor Prequalification	$ 10,000	$ -	$ 10,000			
255	Cost Estimates	$ 24,500	TBD(6)	TBD			
260	Project Advertising and Bidding	$ 20,000	TBD(7)	TBD			
	Subtotal	$ 855,500	TBD	TBD	$ 6,360,900		13.45%
TOTAL DESIGN AND PILOT STUDY SERVICES		$ 1,546,600	TBD	TBD			
CONSTRUCTION INSPECTION		TBD	TBD	TBD			
CONSTRUCTION ADMINISTRATION		TBD	TBD	TBD			

NOTES:

1 ADDITIONAL PROJECT MANAGEMENT COSTS WILL BE INCURRED TO INCLUDE OZONE SYSTEM WITH DESIGN PACKAGE AS THIS WILL EXTEND LENGTH OF PROJECT.

2 CURRENT ESTIMATE DOES NOT INCLUDE MEETINGS WITH CODES DEPARTMENT. SINCE OZONE IS A CLASS III OXIDIZER, OZONE DESIGN ESTIMATE WILL INCLUDE MEETINGS WITH CODES STAFF.

3 ADDITIONAL MEETINGS AND WORKSHOPS WILL BE NEEDED FOR FINAL OZONE SYSTEM DESIGN

4 CURRENT ESTIMATE DOES NOT INCLUDE DESIGN OF OZONE SYSTEM AS SIZE AND CONFIGURATION DEPENDANT UPON RESULTS OF PILOT INVESTIGATIONS

5 THE ESTIMATE DOES NOT INCLUDE THE FOLLOWING IMPROVEMENTS AS THESE ARE DEPENDANT UPON 1) OZONE SYSTEM CONFIGURATION AND 2) OWNER INVESTIGATION OF FILTER PIPING :

A. YARD PIPING (CONNECTION IOF OZONE SYSTEM IN PROCESS)
B. STORAGE FACILITY (WILL BE DESIGNED AS APPENDAGE TO OZONE BUILDING
C. YARD LIGHTING
D. FILTER BUILDING PIPING AND VALVE IMPROVEMENTS
E. FILTER AIR SCOUR SYSTEM
F. FILTER BUILDING LIGHTING AND HVAC IMPROVEMENTS

6 THE DESIGN SERVICES FEE DOES NOT INCLUDE THE PREPARATION OF COST ESTIMATES FOR THE OZONE SYSTEM AND ALL OTHER IMPROVEMENTS DEPENDANT UPON THE OZONE SYSTEM AS DEFINED HEREIN.

7 THE DESIGN SERVICES FEE DOES NOT INCLUDE THE BID PHASE SERVICES FOR THE OZONE SYSTEM AND ALL OTHER IMPROVEMENTS DEPENDANT UPON THE OZONE SYSTEM AS DEFINED HEREIN.