

CREEK NITRIFICATION ANALYSIS

EXHIBIT A – SCOPE OF SERVICES

14124.00 – July 1, 2015

This project will include the analysis of nitrification occurring in the process units of Cabin Creek Water Pollution Control Plant (CC). PCG will gather process information from operators and existing data pertaining to how nitrogen is cycled in the CC. An analysis of the process units will be performed. These results will then be verified with additional data collection, if necessary. After the analysis has been verified, a strategy will be developed to show how CC will be able to meet future ammonia limits. The analysis and strategy will be presented to the OWNER in the form of a Nitrification Analysis Report and recommendations. The work consists of the following major components:

- Data review
- Process analysis
- Strategy development
- Engineer's Probable Construction Cost Estimate for implementation of Strategies

Phase 1 – Background and Data Review:

PCG will review existing data provided by the OWNER and determine additional data necessary for the determination of how nitrogen cycles in the CC. If additional data are required, PCG will request the data be collected and paid for by the OWNER. PCG will clarify to OWNER the purpose of additional data collection. This additional data will then be analyzed and incorporated into the original data set.

Phase 2 – Process Analysis:

PCG will analyze the reviewed data in conjunction with the process units to determine how nitrogen is cycled through the CC. This will be a two-step process where PCG will perform a hydraulic analysis of the process units followed by a nitrogen cycling analysis. During the analysis, PCG will determine if additional data will be necessary to validate the findings. This additional data need will be presented to and discussed with the OWNER. If additional data are required, PCG will request the data be collected and paid for by the OWNER. This additional data will then be incorporated into the process analysis.

Phase 3 – Strategy Development:

PCG will develop a strategy for the CC to meet future ammonia limits. The strategy will be based on findings from the Process Analysis. This strategy will be discussed with the OWNER and comments will be incorporated. PCG will complete an Engineer's Probable Construction Cost Estimate for implementation of the developed strategy.

Phase 4 – Final Documentation:

PCG will prepare final documentation including a Nitrification Analysis Report as a pdf document describing the results of the data and process analysis', the recommended strategy, and the Engineer's Probable Construction Cost Estimate. The final documentation will include quality assurance and quality control prior to submittal.

Documentation to be provided by OWNER

1. Plans and Specifications for CC including operating equipment.
2. Operational data.
3. Standard operating procedures.
4. Any existing data pertaining to nitrogen (and its components), dissolved oxygen, and BOD availability.

Communication will be as needed with OWNER by PCG through electronic means.

Deliverables will be provided in digital format including Word, Excel, PDF and any other electronic formats. These include all calculations, processes and engineering documents which become the property of the OWNER for use on this project. Reuse of these documents on other projects is solely at the risk of the OWNER.

EXHIBIT B – BASIS OF COMPENSATION

The compensation limits are based on the scope of services described in EXHIBIT A and include the Cabin Creek Nitrification Analysis.

Phase 1 – Background and Data Review

Professional Services Fee: Not to Exceed: \$7,490 (reference attached man-hour and budget worksheet) Scope of Work: Included in EXHIBIT A

Phase 2 – Process Analysis

Professional Services Fee: Not to Exceed: \$7,300 (reference attached man-hour and budget worksheet) Scope of Work: Included in EXHIBIT A

Phase 3 – Strategy Development

Professional Services Fee: Not to Exceed \$4,460 (reference attached man-hour and budget worksheet) Scope of Work: Included in EXHIBIT A

Phase 4 – Final Documentation

Professional Services Fee: Not to Exceed \$2,655 (reference attached man-hour and budget worksheet) Scope of Work: Included in EXHIBIT A

Sub-Total of the estimated fees from Phases 1 through 4 is \$21,905.

**SUPPLEMENT TO
MASTER SERVICES AGREEMENT**

**CITY OF GRIFFIN, GEORGIA
AND
PARAGON CONSULTING GROUP, INC.**

THIS SUPPLEMENTAL AGREEMENT is made as of July 1, 2015 Between City of Griffin, GA, Owner, and Paragon Consulting Group, Inc., Engineer (PCG).

OWNER AND ENGINEER have previously executed a Master Services Agreement dated April 3, 2003 ("Original Agreement") that defines general terms under which ENGINEER will furnish General Consulting Services and Project Engineering Services to OWNER. OWNER now wishes to engage ENGINEER to provide services in connection with a Project known as:

CABIN CREEK NITRIFICATION ANALYSIS

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- Data review
- Process analysis
- Strategy development
- Engineer's Probable Construction Cost Estimate for implementation of Strategies

This estimate does not include design, construction management, and installation of any new or recommended equipment.

ENGINEER has prepared a Scope of Work for each project, attached herein as EXHIBIT A, and Basis of Compensation, attached herein as EXHIBIT B, to provide the services contemplated in this Supplemental Agreement.

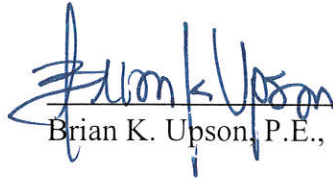
IN WITNESS WHEREOF, the parties hereto have made and executed this Agreement as of the day and year first above written.

OWNER:

ENGINEER:

CITY OF GRIFFIN

PARAGON CONSULTING GROUP, INC.

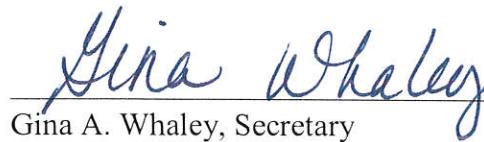


Brian K. Upson, P.E., President

Attest:

Attest:

Manager



Gina A. Whaley, Secretary

MAN-HOUR AND BUDGET WORKSHEET

Cabin Creek Nitrification Analysis

City of Griffin July 1, 2015

DESCRIPTION	MANHOURS AND COSTS										
	MANHOURS						COST				
	PR	SE	WWSM	Staff Engineer	SLA/P LAN	AA	DRAFT	SUB	TOTAL HOURS	DIRECT LABOR COST	TOTAL LABOR COST
Background and Data Review	135	135	135	115	135	50	75	135			
Review Existing Data	0	0	18	44	0	0	0	0	62	\$7,490	\$7,490
Data Analysis			6	16					22	\$2,650	
Additional Data Gathering and Analysis			6	20					26	\$3,110	
			6	8					14	\$1,730	
Process Analysis	2	0	18	40	0	0	0	0	60	\$7,300	\$7,300
Hydraulic analysis of process units			6	24					30	\$3,570	
Nitrogen Cycling Analysis			6	16					22	\$2,650	
QAQC	2		6						8	\$1,080	
Strategy Development	0	0	16	20	0	0	0	0	36	\$4,460	\$4,460
Strategy Development			8	8					16	\$2,000	
Plan and Discussion			4	4					8	\$1,000	
Engineer's Construction Cost Estimation			4	8					12	\$1,460	
Final Documentation	2	0	10	9	0	0	0	0	21	\$2,655	\$2,655
Final Report			8	8					16	\$2,000	
QAQC	2		2	1					5	\$655	

Project Cost Estimate \$21,905 \$21,905