



PROFESSIONAL SERVICES AGREEMENT

THIS **PROFESSIONAL SERVICES AGREEMENT** (“Agreement”) is made as of the Effective Date by and between **Weaver Boos Consultants, LLC – Southwest**, hereinafter called "ENGINEER", and the **City of Farmers Branch, Texas**, hereinafter called "OWNER".

RECITALS

WHEREAS, OWNER desires ENGINEER to perform certain work and services set forth in Section 1, Scope of Work.

WHEREAS, ENGINEER has expressed a willingness to perform said work and services, hereinafter referred to only as "services", specified in said Scope of Work, and enumerated under Section 1, of this Agreement.

NOW, THEREFORE, for and in consideration of the covenants and promises made one to the other herein, OWNER and ENGINEER agree as follows:

Section 1. Scope of Work

Upon issuance of a written Notice to Proceed by OWNER, ENGINEER agrees to provide to OWNER the necessary professional engineering and surveying services related to the preparation of plans, specifications, bid, and contract documents, and services related to bid review, construction management, and construction quality assurances for the **Slurry Wall Construction: Camelot Landfill, Denton County, Texas** (“the Project”) as set forth in the Scope of Work attached hereto as Exhibit “A” and incorporated herein by reference (“the Scope of Work”).

Section 2. Term of Agreement

The term of this Agreement shall begin on the last date of execution hereof (the “Effective Date”) and shall continue until ENGINEER completes the services required herein to the satisfaction of OWNER, unless sooner terminated as provided in Section 8, below.

Section 3. Engineer Obligations

A. ENGINEER shall devote such time as reasonably necessary for the satisfactory performance of the work under this Agreement. Should OWNER require additional services not included under this Agreement, ENGINEER shall make reasonable effort to provide such additional services at mutually agreed charges or rates,

and within the time schedule prescribed by OWNER; and without decreasing the effectiveness of the performance of services required under this Agreement.

B. To the extent reasonably necessary for ENGINEER to perform the services under this Agreement, ENGINEER shall be authorized to engage the services of any agents, assistants, persons, or corporations that ENGINEER may deem proper to aid or assist in the performance of the services under this Agreement with the prior written approval of OWNER. The cost of such personnel and assistance shall be a reimbursable expense to ENGINEER only if authorized in writing in advance by OWNER.

C. ENGINEER shall furnish and pay for all labor, tools, materials, equipment, supplies, transportation and management necessary to perform all services set forth in the Scope of Work.

Section 4. Payment

A. OWNER agrees to pay ENGINEER for all services authorized in writing and properly performed by ENGINEER in accordance with the Payment Schedule set forth in the Scope of Work, subject to additions or deletions for changes or extras agreed upon in writing. All fees paid to ENGINEER, by OWNER, shall be based on invoices submitted by ENGINEER for work performed monthly by ENGINEER, less any previous payments. Payments shall be made within 30 days of receipt of invoice by OWNER.

B. OWNER reserves the right to delay, without penalty, any partial payment when, in the opinion of OWNER, ENGINEER has not made satisfactory progress on the design of this Project based on the Scope of Work and the Completion Schedule Estimate.

C. The Total Engineering Fee shall be as specified in the Scope of Work, which shall not exceed **Three Hundred Forty-Nine Thousand Six Hundred Fifteen and No/100 Dollars (\$349,615.00)**. OWNER may deduct from any amounts due or to become due to ENGINEER any sum or sums owing by ENGINEER to OWNER. In the event of any breach by ENGINEER of any provision or obligation of this Agreement, or in the event of the assertion by other parties of any claim or lien against OWNER, or the OWNER's premises, arising out of ENGINEER's performance of this Agreement, OWNER shall have the right to retain out of any payments due or to become due to ENGINEER an amount sufficient to completely protect the OWNER from any and all loss, damage or expense therefrom, until the breach, claim or lien has been satisfactorily remedied or adjusted by ENGINEER.

Section 5. Responsibilities

A. ENGINEER shall be responsible for the professional quality, technical accuracy, and the coordination of all designs, drawings, specifications, plans and other services furnished by ENGINEER under this Agreement. ENGINEER shall, without

additional compensation, correct or revise any errors or deficiencies in the design, drawings, specifications, plans and other services.

B. Neither OWNER's review, approval or acceptance of, nor payment for any of the services required under this Agreement, shall be construed to operate as a waiver of any rights under this Agreement or of any cause of action arising out of the performance of this Agreement, and ENGINEER shall be and remain liable to OWNER in accordance with applicable law for all damages to OWNER caused by ENGINEER's negligent performance of any of the services furnished under this Agreement.

C. The rights and remedies of OWNER under this Agreement are as provided by law.

Section 6. Time For Performance

A. ENGINEER shall perform all services as provided for under this Agreement in a proper, efficient and professional manner in accordance with OWNER's requirements. Such services shall be completed as provided in a timely manner commencing after written Notification to Proceed from OWNER to ENGINEER, exclusive of OWNER and other governmental review time.

B. In the event ENGINEER's performance of this Agreement is delayed or interfered with by acts of the OWNER or others, ENGINEER may request an extension of time for the performance of same as hereinafter provided, but shall not be entitled to any increase in fee or price, or to damages or additional compensation as a consequence of such delays.

C. No allowance of any extension of time, for any cause whatever, shall be claimed or made to ENGINEER, unless ENGINEER shall have made written request upon OWNER for such extension within forty-eight (48) hours after the cause for such extension occurred, and unless OWNER and ENGINEER have agreed in writing upon the allowance of additional time to be made.

Section 7. Documents

A. All surveys, studies, proposals, applications, drawings, plans, specifications and other documents, including those in electronic form, prepared by ENGINEER and its consultants, subcontractors, agents, representatives, and/or employees in connection with this Agreement ("Project Documents") are intended for the use and benefit of OWNER. ENGINEER and its consultants, subcontractors, agents, representatives, and/or employees shall be deemed the authors of their respective part of the Project Documents. Notwithstanding, OWNER shall own, have, keep and retain all rights, title and interest in and to all Project Documents, including all ownership, common law, statutory, and other reserved rights, including copyrights (except copyrights held by ENGINEER) in and to all Project Documents, whether in draft form or final form, which are produced at OWNER's request and in furtherance of this

Agreement. OWNER shall have full authority to authorize contractor(s), subcontractors, sub-subcontractors, OWNER consultants, and material or equipment suppliers to reproduce applicable portions of the Project Documents to and for use in their execution of the work or for any other purpose. All materials and reports prepared by ENGINEER in connection with this Agreement are “works for hire” and shall be the property of OWNER. OWNER shall have the right to publish, disclose, distribute and otherwise use Project Documents in accordance with the Engineering Practice Act of the State of Texas (Texas Occupation Code, Chapter 1001, as amended) and/or Texas Occupations Code, Chapter 1051, as amended. ENGINEER shall, upon completion of the services and full payment for the ENGINEER’S services by the OWNER, or earlier termination and appropriate compensation as provided by this Agreement, provide OWNER with reproductions of all materials, reports, and exhibits prepared by ENGINEER pursuant to this Agreement in a TIFF, JPEG or PDF format, and a DXF format in current version of AutoCAD with NAD-83 coordinate format of all such instruments of service to the OWNER.

B. All instruments of service (including plans, specifications, drawings, reports, designs, computations, computer programs, estimates, surveys, other data or work items, etc.) prepared under this Agreement shall be submitted for approval of OWNER. All instruments of service shall be professionally sealed as may be required by law or by OWNER.

C. Acceptance and approval of the Project Documents by OWNER shall not constitute nor be deemed a release of the responsibility and liability of ENGINEER, its employees, associates, agents and Engineers for the accuracy or competency of their designs, working drawings and specifications, or other documents and work; nor shall such approval be deemed to be an assumption of such responsibility by OWNER for any defect in the designs, working drawings and specifications, or other documents prepared by ENGINEER, its employees, contractor, agents and engineers.

Section 8. Termination

A. OWNER may suspend or terminate this Agreement for cause or without cause at any time by giving written notice to ENGINEER. In the event suspension or termination is without cause, payment to ENGINEER, in accordance with the terms of this Agreement, will be made on the basis of services reasonably determined by OWNER to be satisfactorily performed to the date of suspension or termination. Such payment will be due upon delivery of all instruments of service to OWNER.

B. Should OWNER require a modification of this Agreement with ENGINEER, and in the event OWNER and ENGINEER fail to agree upon a modification to this Agreement, OWNER shall have the option of terminating this Agreement and ENGINEER's services hereunder at no additional cost other than the payment to ENGINEER, in accordance with the terms of this Agreement, for the services reasonably determined by OWNER to be properly performed by ENGINEER prior to such termination date.

Section 9. Insurance

A. ENGINEER shall during the term hereof maintain in full force and effect the following insurance:

(i) a comprehensive general liability policy of insurance for bodily injury, death and property damage insuring against all claims, demands or actions relating to the ENGINEER's performance of services pursuant to this Agreement with a minimum combined single limit of not less than \$4,000,000.00 per occurrence for injury to persons (including death), and for property damage;

(ii) A policy of automobile liability insurance covering any vehicles owned and/or operated by ENGINEER, its officers, agents, and employees, and used in the performance of this Agreement with policy limits of not less than \$1,000,000.00 combined single limit and aggregate for bodily injury and property damage;

(iii) statutory Worker's Compensation Insurance at the statutory limits and Employers Liability covering all of ENGINEER's employees involved in the provision of services under this Agreement with policy limit of not less than \$500,000.00; and

(iv) Professional Liability covering negligent acts, errors and omissions in the performance of professional services with policy limit of not less than \$4,000,000.00 per claim and \$4,000,000.00 in the aggregate.

B. All insurance and certificate(s) of insurance shall contain the following provisions: (1) name OWNER, its officers, and employees as additional insureds as to all applicable coverage with the exception of Workers Compensation Insurance and Professional Liability; and (2) provide for at least thirty (30) days prior written notice to OWNER for cancellation or non-renewal of the insurance; (3) provide for a waiver of subrogation against OWNER for injuries, including death, property damage, or any other loss to the extent the same is covered by the proceeds of insurance, except for Professional Liability Insurance. ENGINEER shall provide written notice to OWNER of any material change of or to the insurance required herein.

C. All insurance companies providing the required insurance shall be authorized to transact business in Texas and rated at least "A" by AM Best or other equivalent rating service.

D. A certificate of insurance evidencing the required insurance and all endorsements shall be submitted prior to commencement of services.

Section 10. Indemnification For Injury and Performance

OWNER shall not be liable for any loss, damage, or injury of any kind or character to any person or property arising from the services of ENGINEER pursuant to this agreement. ENGINEER hereby waives all claims against OWNER, its officers and employees (collectively referred to in this section as “OWNER”) for damage to any property or injury to, or death of, any person arising at any time and from any cause other than the negligence or willful misconduct of OWNER or breach of OWNER’s obligations hereunder. ENGINEER agrees to indemnify and save harmless OWNER from and damages (including court costs and reasonable attorneys’ fees and costs of investigation) and actions of any kind by reason of injury to or death of any person or damage to or loss of property to the extent caused by ENGINEER’s negligent performance of services under this Agreement or by reason of any negligent act or omission on the part of ENGINEER, its officers, directors, servants, employees, representatives, consultants, licensees, successors or permitted assigns (except when such liability, claims, suits, costs, injuries, deaths or damages arise from or are attributed to negligence of OWNER, in whole or in part, in which case ENGINEER shall indemnify OWNER only to the extent or proportion of negligence attributed to professional as determined by a court or other forum of competent jurisdiction). ENGINEER’s obligations under this section shall not be limited to the limits of coverage of insurance maintained or required to be maintained by ENGINEER under this Agreement. This provision shall survive the termination of this Agreement.

Section 11. Assignment

ENGINEER shall not assign or sublet this Agreement, or any part thereof, without the prior written consent of OWNER.

Section 12. Applicable Laws

ENGINEER shall comply with all Federal, State, County and Municipal laws, ordinances, regulations, safety orders, resolutions and building codes relating or applicable to services to be performed under this Agreement. The laws of the State of Texas shall govern this Agreement; and venue for any action concerning this Agreement shall be in the State District Court of Dallas County, Texas. The parties agree to submit to the personal and subject matter jurisdiction of said court

Section 13. Default of ENGINEER

In the event ENGINEER fails to comply or becomes disabled and unable to comply with the provisions of this Agreement as to the quality or character of the service or time of performance, and the failure is not corrected within ten (10) days after written notice by OWNER to ENGINEER, OWNER may, at its sole discretion without prejudice to any other right or remedy:

A. Terminate this Agreement and be relieved of the payment of any further consideration to ENGINEER except for all work determined by OWNER to be satisfactorily completed prior to termination. Payment for work satisfactorily completed shall be for actual costs, including reasonable salaries and travel expenses of ENGINEER to and from meetings called by OWNER at which ENGINEER is required to attend, but shall not include any loss of profit of ENGINEER. In the event of such termination, OWNER may proceed to complete the services in any manner deemed proper by OWNER, either by the use of its own forces or by resubletting to others.

B. OWNER may, without terminating this Agreement or taking over the services, furnish the necessary materials, equipment, supplies and/or help necessary to remedy the situation, at the expense of ENGINEER.

Section 14. Adjustments in Services

No claims for extra services, additional services or changes in the services will be made by ENGINEER without a written agreement with OWNER prior to the performance of such services.

Section 15. Execution becomes Effective

This Agreement will be effective upon execution of the Agreement by and between ENGINEER and OWNER.

Section 16. Agreement Amendments

This Agreement contains the entire understanding of the parties with respect to the subject matter hereof and there are no oral understandings, statements or stipulations bearing upon the meaning or effect of this Agreement which have not been incorporated herein. This Agreement may only be modified, amended, supplemented or waived by a written instrument executed by the parties except as may be otherwise provided therein.

Section 17. Severability.

In the event any one or more of the provisions contained in this Agreement shall for any reason be held to be invalid, illegal, or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provisions, and the Agreement shall be construed as if such invalid, illegal, or unenforceable provision had never been contained in it.

Section 18. Independent Contractor.

It is understood and agreed by and between the parties that ENGINEER, in satisfying the conditions of this Agreement, is acting independently, and that the OWNER assumes no responsibility or liabilities to any third party in connection with ENGINEER's actions. All services to be performed by ENGINEER pursuant to this

Agreement shall be in the capacity of an independent contractor, and not as an agent or employee of OWNER. ENGINEER shall supervise the performance of its services and shall be entitled to control the manner and means by which its services are to be performed, subject to the terms of this Agreement. There is no intended third party beneficiary to this Agreement.

Section 19. Right-Of-Access.

OWNER will obtain and/or furnish right-of-access on any project site for ENGINEER to perform any required studies, surveys, tests or other necessary investigations in relation to any Task Order. ENGINEER will take reasonable precautions to minimize damage to the personal or real property in the performance of such surveys, tests, studies and investigations.

Section 20. Notice.

Any notice required or permitted to be delivered hereunder may be sent by first class mail, overnight courier or by confirmed telefax or facsimile to the address specified below, or to such other party or address as either party may designate in writing, and shall be deemed received three (3) days after delivery set forth herein:

If to OWNER:
(Physical Address) Shane Davis, Solid Waste Administrator
City of Farmers Branch
13000 William Dodson Pkwy
Farmers Branch, TX 75234

(Mailing address): P.O. Box 819010
Farmers Branch, TX 75381

(With copies to): Peter G. Smith
Nichols, Jackson, Dillard, Hager & Smith, L.L.P.
500 North Akard, Suite 1800
Dallas, Texas 75201

Randy Walhood, Director of Public Works
City of Farmers Branch
13000 William Dodson Pkwy
Farmers Branch, TX 75234

If to ENGINEER: Matt K. Stutz, P.E.
Weaver Boos Consultants LLC-Southwest
6420 Southwest Blvd., Suite 206
Fort Worth, TX 76109

Section 21. Counterparts.

This Agreement may be executed by the parties hereto in separate counterparts, each of which when so executed and delivered shall be an original, but all such counterparts shall together constitute one and the same instrument. Each counterpart may consist of any number of copies hereof each signed by less than all, but together signed by all of the parties hereto.

Section 22. Exhibits.

The exhibits attached hereto are incorporated herein and made a part hereof for all purposes.

Section 23. Survival of Obligations.

Any of the representations and obligations of the parties, as well as any rights and benefits of the parties pertaining to a period of time following the termination of this Agreement shall survive termination.

(Signature page to follow)

SIGNED AND AGREED this _____ day of February, 2015.

Owner: City of Farmers Branch, Texas

By: _____
Gary D. Greer, City Manager

ATTEST:

Angela Kelly, City Secretary

APPROVED AS TO FORM:

City Attorney

SIGNED AND AGREED this _____ day of _____, 2015.

Engineer: Weaver Boos Consultants, LLC – Southwest

By: _____

Name: _____

Its: _____

**EXHIBIT A
SCOPE OF WORK AND COST ESTIMATE
FOR
CQA/CONSTRUCTION SERVICES
SLURRY WALL CONSTRUCTION
CAMELOT LANDFILL
DENTON COUNTY, TEXAS**

Prepared for
City of Farmers Branch
January 2015

Prepared by
Weaver Boos Consultants, LLC–Southwest
TBPE Registration No. F-3727
6420 Southwest Blvd., Suite 206
Fort Worth, Texas 76109
817-735-9770

CONTENTS

1	INTRODUCTION	1-1
2	SCOPE OF SERVICES	2-1
2.1	Task 1 – Construction Plans and Bid Package	2-1
2.2	Task 2 – Advertisement and Award	2-1
2.3	Task 3 – Construction Management	2-2
2.4	Task 4 – Developed Backfill Mix Design	2-2
2.5	Task 5 – Unweathered Shale Verification Boreholes	2-2
2.6	Task 6 – Construction Quality Assurance (CQA) Services	2-3
	2.6.1 Task 6.1 – Field Observations	2-4
	2.6.2 Task 6.2 – Material Testing	2-4
	2.6.3 Task 6.3 – Engineering Site Visits	2-4
	2.6.4 Task 6.4 – Construction Reporting	2-5
	2.6.5 Task 6.5 – Surveying	2-6
2.7	Task 7 – Observation Well Installation Services	2-6
3	PROPOSAL ASSUMPTIONS	3-1
4	ADDITIONAL SERVICES	4-1
5	ESTIMATED BUDGET	5-1

1 INTRODUCTION

This proposal presents a scope of services, cost estimate, and associated information for providing construction documents (i.e., construction plans and bid package), exploratory drilling to locate the depth of shale, and construction quality assurance (CQA) services during construction of the slurry wall at the Camelot Landfill.

The slurry wall is approximately 5,605 feet long, 27 to 32 feet deep, and is located along the southern and eastern perimeter of the current disposal area.

The slurry wall will meet the following construction criteria:

- The bottom of the trench and soil bentonite slurry wall will be keyed into the shale a minimum of 3 feet;
- The trench and soil bentonite slurry wall will be a minimum of 3 feet wide and have a permeability of 1×10^{-7} cm/sec or less; and
- An impervious clay cap (2-foot-thick minimum) will be constructed on top of the installed soil bentonite slurry wall.

Construction quality assurance, testing, and project management costs are based on the conventional slurry wall construction method.

The proposed scope of work, budget estimate, and other relevant information are presented in the following sections.

2 SCOPE OF SERVICES

2.1 Task 1 – Construction Plans and Bid Package

This task includes the preparation of construction plans and bid package for the slurry wall. Specifications and bid items will be developed for both the conventional slurry wall construction method and the One Pass trenching method. The construction plans will consist of the following.

- 95 Percent Submittal – This submittal will include the following:
 - Cover Sheet
 - General Notes and Legend
 - Site Plan
 - Profiles (4)
 - Slurry Wall Details

A 95 percent complete set of construction plans and bid package will be submitted to the City of Farmers Branch (City) for review and approval.

- Quantity estimates (e.g., excavation, soil-bentonite slurry backfill, clay cap, etc.) will be developed as part of this task. The quantity estimates will be incorporated into the bid package discussed below.
- 100 Percent Submittal – After incorporating the City’s comments, WBC will incorporate the plans into the bid package. The bid package/construction plans will be submitted to the City via hard copy (2) and electronically for the bidding process.

2.2 Task 2 – Advertisement and Award

Under this task, WBC will assist the City throughout the bid advertisement and award phase for the slurry wall construction. WBC will coordinate with the City for advertisement of the project in local newspapers, as well as notifications to contractors experienced with this type of construction project. WBC will prepare the Invitation to Bidders for the City’s use in placing the notice in the newspapers.

A Pre-Bid Conference will be conducted by WBC at the site for all interested bidders. WBC will also respond to any questions from bidders during the bidding phase and prepare and distribute any addenda, if required.

In addition, WBC will participate in the bid opening if desired by the City. Afterwards, WBC will tabulate the bids and evaluate the qualifications of the low bidder. A recommendation of award will then be provided to the City.

2.3 Task 3 – Construction Management

Under this task, WBC will provide construction management to the City. Included in this task are the following activities:

- Attendance at a pre-construction meeting.
- Review and approval of all contractor material submittals and shop drawings.
- Provide technical clarifications or interpretations of the work to the Contractor, as needed.
- Attendance at four additional meetings during the course of the project.
- Review and recommendation for approval of all pay requests by the Contractor.
- Review and recommendation of any change order requests issued by the Contractor.
- Preparation and issuance of any field changes or change orders issued by the City.
- Attendance at the final inspection and the preparation of a final punch list.

2.4 Task 4 – Developed Backfill Mix Design

Under this task, WBC will review previous completed soil boring log information and collect representative soil samples for the slurry wall backfill mix design testing. Additionally, WBC will collect a sample of the water source proposed to be used for the slurry wall construction. WBC will make a composite soil sample from the soil samples collected. WBC will develop a backfill mix design based on the compatibility of the proposed water source with bentonite, and the amount of bentonite required to be mixed with the composite soil sample to achieve the design hydraulic conductivity for the slurry wall backfill.

Upon completion of the unweathered shale verification under Task 5, WBC will update the mix design utilizing soils from drilling activities.

2.5 Task 5 – Unweathered Shale Verification Boreholes

As stated in the slurry wall permit modification, the proposed 5,605 foot long slurry wall will be founded 3 feet into the Unweathered Shale Stratum. To facilitate slurry placement, the top elevation of the Unweathered Shale must be known along the entire

length of the slurry wall to assure the slurry trenching equipment excavates at least 3 feet into the Unweathered Shale. The slurry wall permit modification further requires unweathered shale boreholes be advanced to the top of the unweathered shale every 100 feet along the slurry wall trench and every fifth borehole must be advanced 10 feet into the unweathered shale (every 500 feet along the slurry wall trend).

Prior to drilling, WBC will survey the borehole locations. WBC proposes to advance 57 continuously sampled borings along the slurry wall trend. Forty four of these borings will be advanced using hollow stem auger techniques to the top of the unweathered shale. No samples from the hollow stem boreholes will be retained after drilling is complete. Eleven of the 57 borings will be advanced using wet rotary coring to 10 feet below the top of the unweathered shale stratum. These wet rotary core samples will be retained in core boxes for hydraulic conductivity testing and slurry mix optimization. After completion, all unweathered shale verification boreholes will be plugged using bentonite chips. It is estimated that using 2 drill rigs and two WBC geologists, about 12 days of drilling will be required to complete the field portion of this task.

WBC geologists will log all borehole samples and prepare a geologic log for each borehole location. In addition, a geologic cross section will be prepared that indicates the required trenching depths along the slurry wall trend. These deliverables will be included in the final CQA report.

2.6 Task 6 – Construction Quality Assurance (CQA) Services

The following outlines our understanding of the scope of work, testing, and reporting for the CQA services:

- Verify testing frequencies and specifications.
- Monitor and provide documentation of construction procedures during construction of the slurry wall construction.
- Participate in any preconstruction and progress meetings with the owner and contractor(s).
- Perform preconstruction sampling and testing of materials used during construction in accordance with the CQA plan.
- Collect samples during construction and perform laboratory testing as outlined in the specifications.
- Prepare daily records of work in progress, test results, and observations.
- Participate in a positive manner with the owner, contractor and surveyor to quickly resolve construction problems.
- Prepare a final CQA report.

2.6.1 Task 6.1 – Field Observations

This task includes all labor and expenses associated with providing full-time field CQA services of the slurry wall construction as required by the project plans and specifications.

Prior to commencement of construction, the CQA engineer and CQA monitor will meet at the site with representatives of the owner and the contractor to review and coordinate project schedules. The roles and responsibilities of each party, lines of communication, and documentation review procedures, as well as any other significant issues will be discussed and agreed upon.

The CQA Consultant will remain in contact with the Construction Contractor to ensure necessary observations, monitoring, and testing activities are performed at the appropriate time and frequency.

The budget for this task assumes 6 days per week with 10 hours per day for 14 weeks.

2.6.2 Task 6.2 – Material Testing

Material testing will be conducted in accordance with the CQA plan, construction drawings, and specifications. Conformance testing will be conducted on the materials proposed for use.

All tests results will be communicated to the City.

Testing to be performed by the CQA monitor for this task consist of the following.

- Visual Check, with Atterburg Limits and Grain Size of bottom key material
- pH and Total Dissolved Solids (TDS) of water source
- Moisture Content, Atterburg Limits, and Sieve for backfill
- Hydraulic Conductivity of the backfill
- Standard Proctor, Atterburg Limits, and Sieve for general fill and clay cap
- Standard Proctor and Sieve for all weather road materials
- Field Density and Moisture for general fill, clay cap, and all weather road materials

2.6.3 Task 6.3 – Engineering Site Visits

Coordination includes the time and costs associated with the following functions:

- Coordination with field personnel.
- Communication and coordination with the City.

- Review and coordination of laboratory testing.
- Periodic field visits by the project engineer-of-record to review construction activities, documentation, and participate in construction meetings.

The budget for this task assumes 9 site visits for the Professional of Record (POR).

2.6.4 Task 6.4 – Construction Reporting

The CQA Consultant shall take photographs of all phases of construction. Each photo shall be properly labeled and shall include the following information on each photograph:

- Project Name
- Photo Date
- Subject Identification
- Photo Number
- Direction of View
- Orientation

The CQA Consultant shall complete a daily inspection report which outlines all the activities for that particular day. A copy of this report shall be provided to the Owner's on-site representative each day. The observations recorded on the daily reports shall include the following information:

- Name and date;
- Contractors on site;
- Contractors' activities performed;
- CQA activities performed;
- Construction issues and resolutions, including design changes;
- Estimates of quantities of materials placed; and
- Significant discussions with the City, Construction Contractor, Design Engineer, and other individuals not covered above.

The CQA Monitor shall prepare a weekly summary report that summarizes the progress of the preceding week's activities. As a minimum, the report shall include the following information:

- A summary of the construction work activities accomplished during the preceding week;

- A summary of the CQA observation, monitoring, and testing activities performed during the preceding week;
- A summary of the preceding week's CQA test results; and
- A summary of the preceding week's construction issues and resolutions.

The weekly summary report shall be distributed to the Project Manager, Design Engineer, Construction Contractor, and the CQA project file.

The CQA consultant will prepare a final CQA report. The report shall describe the construction activities and include, as a minimum, the field and laboratory CQA test results, design changes, and record construction drawings of the constructed slurry wall cutoff trench. The report shall be stamped by a professional engineer, registered in the State of Texas, who will confirm that the project was constructed in substantial compliance with the project specifications and drawings.

The report will be compiled into a bound document with all drawings folded and bound or placed in protective envelopes. A draft report will be submitted to the City for review. The City's review comments will be incorporated in final report and it will be signed and sealed by a professional engineer licensed in the State of Texas. Five copies of the final CQA report will be prepared and submitted to the City.

2.6.5 Task 6.5 – Surveying

The CQA consultant shall conduct a pre-construction (e.g., initial slurry wall staking and offsets, as well as topo of the mixing area) and as-built survey of the construction area.

2.7 Task 7 – Observation Well Installations

As stated in the slurry wall permit modification, the installation of three new observation wells is required after the slurry wall is installed. WBC proposes to install observation wells MW-4A, MW-9A and MW-13R2 at the locations shown in the permit modification. WBC will procure the services of a subcontracted Texas-licensed monitor well driller to install the wells. Consistent with the existing monitoring wells, the new wells will be 2-inch i.d. PVC with 5-foot 0.010" slotted well screens that are screen across the Lower Sand Stratum. The wells' surface completions will include an aluminum protective cover, 4' x 4' x 6" reinforced concrete surface pads, and painted steel bollards set into concrete.

A WBC geologist will be on-site to log the observation well boreholes and provide installation CQA. The driller will develop each well after installation. The well development will be monitored by WBC using a turbidity meter. The goal of the well development will be groundwater having turbidity of 10 or less NTUs. No groundwater monitoring activities are included in this proposal.

A WBC surveyor will complete layout and as built surveys for the project. At the conclusion of the installations, WBC will prepare a draft well installation report for City and Republic review and comment. Mutually agreed upon changes will be incorporated into the final report. Five paper copies of the final report will be submitted to the TCEQ, the City, and the Site Operating Record.

3 PROPOSAL ASSUMPTIONS

The Scope of Services and costs for Construction Quality Assurance Services presented in this proposal are based on the following assumptions:

- We understand that the time for construction requiring CQA is approximately 84 days, which includes the excavation of the trench, mixing and backfilling of the slurry, capping the trench and the all-weather road over finished slurry wall.
- The POR or POR representative will visit the site 9 times during construction. He will attend the pre-construction meeting and also perform a final site visit after completion of all construction.
- The test quantities are based on the CQA plan, construction drawings, and specifications.
- Five copies of the final CQA report will be required to be submitted to the City.

4 ADDITIONAL SERVICES

We have developed the preceding project approach based on our understanding of the project. The following is a list of additional services that may be desired by the client during the course of the project.

- Laboratory testing in addition to those services identified in Scope of Services
- Full-time engineering/CQA services or site inspections provided beyond 14 weeks
- Additional certification report(s) other than those provided in this proposal

5 ESTIMATED BUDGET

WBC proposes to provide these basic construction management and CQA services on the basis of the proposed quantities and unit rates provided on the following table. The projected budget for the project is \$349,615. This amount will not be exceeded without the client's prior approval and unless our scope of work is increased.

Estimated Project Budget

Description	Labor \$ ⁽¹⁾	Direct Expenses ⁽²⁾	Laboratory Cost/Driller	Estimated Cost ⁽³⁾
Task 1 – Construction Plans and Bid Package	\$24,000	\$1,000	\$0	\$25,000
Task 2 – Advertisement and Award	\$3,800	\$200	\$0	\$4,000
Task 3 – Construction Management	\$10,000	\$500	\$0	\$10,500
Task 4 – Developed Backfill Mix Design	\$6,000	\$1,000	\$3,000	\$10,000
Task 5 – Unweathered Shale Verification Boreholes	\$45,220	\$8,165	\$59,930	\$113,315
Task 6.1 – CQA Monitoring, Inspection & Testing	\$91,080	\$10,620	\$0	\$101,700
Task 6.2 – Material Conformance Testing	\$0	\$0	\$38,500	\$38,500
Task 6.3 – Engineer Site Visits	\$11,310	\$990	\$0	\$12,300
Task 6.4 – Preparation of the Final CQA Report	\$12,000	\$1,000	\$0	\$13,000
Task 6.5 – Surveying	\$1,800	\$300	\$0	\$2,100
Task 7 – Observation Well Installations	\$8,166	\$1,165	\$9,869	\$19,200
Total				\$349,615

NOTES:

- (1) Labor cost represents time for the Certification Engineer (Registered Professional Engineer in Texas), CQA monitor and geologists. For a detailed description of work associated with these labor costs, see the Scope of Work.
- (2) Direct Expenses include per diem for the CQA monitor, site visits by the certification engineer and geologists, and vehicles.
- (3) Tasks 3 and 6 assume that the conventional slurry wall construction method will be utilized.