CITY OF CORPUS CHRISTI
AMENDMENT NO. 1
CONTRACT FOR PROFESSIONAL SERVICES

The City of Corpus Christi, a Texas home rule municipal corporation, P.O. Box 9277, Corpus Christi, Nueces County, Texas 78469-9277 (City) acting through its duly authorized City Manager or Designee (Director of Engineering Services) and **Freese and Nichols, Inc.**, a Texas corporation, 800 North Shoreline Boulevard, Suite 1600N, Corpus Christi, Nueces County, Texas 78401, (Architect/Engineer – A/E), hereby agree as follows:

1. SCOPE OF PROJECT

City of Corpus Christi Desalination Program (E13063) - The City of Corpus Christi has secured financial and technical assistance from the US Bureau of Reclamation to initiate and perform a one-year pilot study on seawater, brackish water, and variable salinity desalination.

This project, Amendment No. 1, will consist of four technical memoranda focused on the desalination technologies and pilot plant siting. Amendment No. 1 will also focus on the development requirements and protocols for future work. Additional funding sources and partnerships will be identified and developed during this project.

2. SCOPE OF SERVICES

The A/E hereby agrees, at its own expense, to perform professional services necessary to review and prepare plans, specifications, and bid and contract documents. In addition, A/E will provide monthly status updates (project progress or delays, gantt charts presented with monthly invoices) and provide contract administration services, as described in **Exhibit "A" and "A-1"**, to complete the project. Work will not begin on Additional Services until requested by the A/E (provide breakdown of costs, schedules), **and** written authorization is provided by the Director of Engineering Services.

A/E services will be "Services for Construction Projects"- (Basic Services for Construction Projects") which are shown and are in accordance with "Professional Engineering Services- A Guide to the Selection and Negotiation Process, 1993" a joint publication of the Consulting Engineer's Council of Texas and Texas Society of Professional Engineers. For purposes of this contract, certain services listed in this publication as Additional Services will be considered as Basic Services.

3. ORDER OF SERVICES

The A/E agrees to begin work on those authorized Basic Services for this contract upon receipt of the Notice to Proceed from the Director of Engineering Services. Work will not begin on any phase or any Additional Services until requested in writing by the A/E and written authorization is provided by the Director of Engineering Services. The anticipated

schedule of the preliminary phase, design phase, bid phase, and construction phase is shown on **Exhibit "A"**. This schedule is not to be inclusive of all additional time that may be required for review by the City staff and may be amended by or with the concurrence of the Director of Engineering Services.

The Director of Engineering Services may direct the A/E to undertake additional services or tasks provided that no increase in fee is required. Services or tasks requiring an increase of fee will be mutually agreed and evidenced in writing as an amendment to this contract. A/E shall notify the City of Corpus Christi within three (3) days of notice if tasks requested requires an additional fee.

4. INDEMNITY AND INSURANCE

A/E agrees to the mandatory contract indemnification and insurance requirements as set forth in **Exhibit "B"**.

5. FEE

The City will pay the A/E a fee, as described in **Exhibit "A"**, for providing services authorized, a revised fee not to exceed **$966,699.00 (Nine Hundred Sixty-Six Thousand Six Hundred Ninety-Nine Dollars and Zero Cents)** for a total restated fee not to exceed **$1,016,047.00 (One Million Sixteen Thousand Forty-Seven Dollars and Zero Cents).** Monthly invoices shall be submitted in accordance with **Exhibit "C"**.

6. TERMINATION OF CONTRACT

The City may, at any time, with or without cause, terminate this contract upon seven days written notice to the A/E at the address of record. In this event, the A/E will be compensated for its services on all stages authorized based upon A/E and City's estimate of the proportion of the total services actually completed at the time of termination.

7. LOCAL PARTICIPATION

The City Council's stated policy is that City expenditures on contracts for professional services be of maximum benefit to the local economy. The A/E agrees that at least 75% of the work described herein will be performed by a labor force residing within the Corpus Christi Metropolitan Statistical Area (MSA). Additionally, no more than 25% of the work described herein will be performed by a labor force residing outside the Corpus Christi Metropolitan Statistical Area (MSA.)

8. ASSIGNABILITY

The A/E will not assign, transfer or delegate any of its obligations or duties in this contract to any other person without the prior written consent of the City, except for routine duties delegated to personnel of the A/E staff. If the A/E is a partnership, then in the event of the termination of the partnership, this contract will inure to the individual benefit of such partner or partners as the City may designate. No part of the A/E fee may be assigned in advance of receipt by the A/E without written consent of the City.

The City will not pay the fees of expert or technical assistance and consultants unless such employment, including the rate of compensation, has been approved in writing by the City.

9. OWNERSHIP OF DOCUMENTS

All documents including contract documents (plans and specifications), record drawings, contractor's field data, and submittal data will be the sole property of the City, may not be used again by the A/E without the express written consent of the Director of Engineering Services. However, the A/E may use standard details that are not specific to this project. The City agrees that any modification of the plans will be evidenced on the plans, and be signed and sealed by a professional engineer prior to re-use of modified plans.

10. DISCLOSURE OF INTEREST

A/E further agrees, in compliance with City of Corpus Christi Ordinance No. 17112, to complete, as part of this contract, the *Disclosure of Interests* form.

CITY OF CORPUS CHRISTI

_____

Natasha Fudge, P.E., Date
Acting Director, Capital Programs

RECOMMENDED

_____ 4/10/14

Operating Department Date

APPROVED

_____

Office of Management Date
and Budget

ATTEST

_____

Rebecca Huerta, City Secretary

FREESE AND NICHOLS, INC.

_____ 4.8.14

Ron Guzman, P.E., Date
Principal
800 N. Shoreline, Suite 1600N
Corpus Christi, Texas 78401
(361) 561-6500 Office
(361) 561-6501 Fax

Project No: E13063
Fund Source No: 550950-4080-00000-E13063
Fund Name: Water CIP
Encumbrance No: _____

ENTERED
APR 04 2014
CONTRACT MANAGER

EXHIBIT "A"
CITY OF CORPUS CHRISTI, TEXAS

CITY OF CORPUS CHRISTI DESALINATION PROGRAM
PROJECT NO. E13063

I. SCOPE OF SERVICES

A. BASIC SERVICES

The City is undertaking a Variable Salinity Desalination (VSD) Demonstration Program. These basic services are required to provide the necessary information and preparation to successfully perform and complete the study. Amendment No. 1 to Project No. E13063 will provide:

- VSD Plant Site Selection Recommendation. The site selection will be driven by several factors including environmental, land use, technical, financial, accessibility, proximity to water supply sources, both brackish and seawater, availability of electrical and utility services, and waste disposal considerations, as well as other factors including integration of a full scale plant into the City's water supply which will be weighted and ranked to select and recommend a testing site for Variable Salinity Data Collection and Technology Testing.

- A background perspective on "State-of-the-Art" of desalination both brackish and seawater as that technology relates to being incorporated into the long-term water management strategies for the City of Corpus Christi (City).

- A Work Plan and study protocol for the Variable Salinity Data Collection and Technology Testing and obtaining regulatory and Reclamation approval to proceed with the Demonstration.

- Further investigation of potential brackish groundwater areas identified during Phase 1, being performed by a brackish groundwater consultant, which are possible brackish water sources for the Variable Salinity Data Collection and Technology Testing.

- Amendment No. 1 Encompasses Tasks which are part of both Phase 2 and Phase 3 of the Desalination Program.

    a) Phase 2 is defined as Desalination Technology Research and Demonstration Plant Site Selection. Phase 2 will be initiated and completed under Amendment No. 1 within the scope of Technical Memorandum (TM) #1 and TM #2.

    b) Phase 3 is defined as Variable Salinity Desalination Protocol Development, Demonstration Plant Implementation, Technology Testing, and Data Collection. Phase 3 will be initiated under Amendment No. 1 with the development and completion of TM #3 and TM #4. Phase 3 will continue, in a future Amendment No. 2, as the program progresses to Demonstration Implementation, Technology Testing, and Data Collection. US Bureau of Reclamation Grant Funds can be applied to Phase 3 effort at a proportional match of 1-to-1.

- Design criteria for the Desalination Demonstration Plant will be developed under the Scope of TM #3. A process for the development of full scale design criteria will also be proposed in the TM #3 deliverable, but the specific design and operating criteria cannot be developed until completion of the Desalination Demonstration, Technology Testing, and Data Collection. These

criteria are also dependent on the involvement and participation of specific stakeholders and industries.

a) The Demonstration Plant is defined as the temporary plant designed and operated based on the protocol and criteria developed in TM #3. This plant will be operated for an estimated twenty (20) months and will be used to employ a variety of treatment processes, equipment configurations, and strategies defined in TM #3.
b) The Full Scale Plant is defined as the long-term, infrastructure unit which will produce water for customers.

- The Desalination Implementation Plan which will include a summary of all findings from the Variable Salinity Desalination Demonstration and represent a complete plan and model for desalination in Corpus Christi can only be developed after the Desalination Demonstration is complete. The Scope of Amendment No. 1 does not include the Demonstration Plant or activities resulting from the Demonstration.

1. **Project Administration.** The Architect/Engineer-A/E (also referred to as Consultant) will conduct the following administration activities:
   a) Meetings
      1. Kick-off Meeting (1) with the City
      2. Up to four (4) coordination meetings with the City
      3. Up to four (4) coordination meetings amongst consultant team and Reclamation.
      4. TM #1 - Draft Review Meeting (1) with City and Reclamation
      5. TM #2 –Draft Review Meeting (1) with City and Reclamation
      6. TM #3 - Draft Review Meeting (1) with City and Reclamation
      7. TM #4 –Draft Review Meeting (1) with City and Reclamation.
   b) Status Reports
      1. Provide a monthly status report to the City. This report shall include progress in the last month, anticipated progress for the upcoming month, upcoming submittals/milestones, upcoming meetings/workshops, data requests/project needs, and list of milestones denoting completion or notes for pending completion.
   c) Reclamation Coordination
      1. Coordinate with City and Reclamation to fulfill obligation tasks of Reclamation Grant for Phase 3 Variable Salinity Data Collection and Technology Testing reporting requirements. Status reports will also be sent during the Phase 2 efforts.
         a. Quarterly Performance Reporting (Progress reports including milestone date compliance, budget compliance and identification of potential issues and resolutions.
         b. Quarterly SF425 Financial Reporting

2. **TM #1 – Desalination Technology Research**. The A/E will:
   a) Research and summarize water resource studies involving Seawater Desalination, Brackish Groundwater Desalination, and Aquifer Storage and Recovery (ASR). A brief summary of only pertinent information from the researched studies will be presented in a technical memorandum. The summary will be broad based to facilitate educational, background and baseline information on previous and on-going significant projects as they may relate to the study. Based on previous study approaches, identify feasible technologies and/or approaches that could benefit from being evaluated further as part of a pilot study and document a list of lessons learned. The projects identified below are not an

exhaustive list and other pertinent projects may be considered.

1. Seawater Desalination:
    a. Corpus Christi
        i. Large Scale Demonstration Desalination Feasibility Study
        ii. Padre Island Desalination Plant Feasibility Analysis and Siting Plan
    b. Texas
        i. Texas Seawater Desalination Demonstration Project (Brownsville Public Utilities Board)
        ii. Feasibility and Pilot Study, South Padre Island Seawater Desalination Project (Laguna Madre Water District)
        iii. Summary of TCEQ Regulations
    c. National
        i. Tampa Bay Seawater Desalination Project
        ii. Carlsbad Seawater Desalination Project
        iii. Taunton River Desalination Project
    d. International
2. Brackish Groundwater Desalination:
    a. Corpus Christi
        i. Summary of findings from City's groundwater consultant
    b. Texas
        i. Brief Summary of TWDB Brackish Groundwater Data Base
        ii. Brief Summary of TWDB Cost of Brackish Desalination in Texas
        iii. Brief Summary of TCEQ Regulations Relating to Brackish Groundwater
    c. National – National Groundwater Association
        i. Brief Summary of National Prospective on brackish groundwater development
3. Aquifer Storage and Recovery (ASR):
    a. Corpus Christi
        i. Summary of findings from City's groundwater consultant
        ii. TWDB – Geologic Characterization of and Data Collection in the Corpus Christi Aquifer Storage and Recovery Conservation District and Surrounding Counties
        iii. Summary of regulations of Corpus Christi Aquifer Storage and Recovery Conservation District
    b. Texas
        i. TWDB – Corpus Christi ASR Report (2012)
        ii. Summary of SAWS Aquifer Storage and Recovery Implementation
        iii. Summary of TCEQ Regulations
    c. National – National Groundwater Association
        i. Brief Summary of National Prospective on ASR Development
4. Variable Salinity Desalination (VD)
5. Alternative Energy Sources

b) Submit six (6) hard copies and one (1) electronic file on CD of the Draft Technical Memorandum to the City and three (3) hard copies and one (1) electronic file on CD to Reclamation for technical review and comments.

c) After the draft review meeting, incorporate comments and submit six (6) hard

copies and one (1) electronic file on CD to City and three (3) hard copies and one (1) electronic file on CD to Reclamation.

3. **TM #2 – Variable Salinity Desalination Plant Siting Analysis**. The A/E will:

a) Raw Water Quantity & Quality

1. Review the hydro-geologic results prepared by others for the City to establish acceptable brackish aquifer productivity and quality, including existing potential wells.
2. Review surface water sites, up to 5 site-specific locations, and identify pertinent site constraints
   a. The location of the pilot will be directly influenced by the feasibility of locating the full scale plant such as intake location, brine disposal location and proximity to water distribution and demand centers. The pilot site will be located in the same general vicinity as the future full-scale plant.
3. A ranking and weighting system will be developed to select up to two (2) sites, which appear to be suitable pilot study areas (Candidate Sites).

b) Candidate Site Selection – Once candidate sites are identified, the A/E will coordinate with the City to select up to two (2) potential sites which appear to be acceptable and which will serve to meet the objectives of a variable salinity desalination study. Consideration will be given to proximity to existing utilities and utilizing existing facilities, whenever possible, such as co-locating at Power Plants, utilizing existing groundwater wells, locations of potential groundwater development fields that have been identified by the City's groundwater consultant, obtaining raw water quality data from existing wells and surface water monitoring stations. Right of entry permission shall be obtained by the A/E and preliminary site survey performed to assess any fatal flaw issues. The A/E will identify additional sampling/testing needs to address data gaps.

c) Detailed Site Investigation – The A/E will perform a more detailed site investigation to analyze, document and compile the technical, environmental, land use and financial constraints associated with each of the candidate pilot plant sites, including:

1. Concentrate Disposal Evaluation
   a. Evaluating available concentrate disposal options (including temporary TCEQ wastewater discharge permit, co-disposal at existing power plant discharge, City's wastewater collection system through its industrial pretreatment program, others) for the pilot study including consideration of:
      i. Previously conducted pilot studies around the state and country
      ii. Input from Reclamation, TCEQ, City staff, Coastal Bend Bays and Estuaries Program
      iii. Potential ability to be up-scaled to full scale system
   b. Identify a recommended concentrate disposal method.
2. Regulatory Coordination. The A/E will:
   a. Legislative and Permitting Constraints
      i. Development of Permitting Timelines and Schedules
      ii. Define Strategies and Plan of Action
   b. Conduct up to two (2) regulatory meetings between City, TCEQ, Reclamation, TWDB, and other selected stakeholders to review final site location of Pilot plant and discuss issues/concerns for the

Variable Salinity Desalination Study.

c. Submit permitting applications for TPDES permit for concentrate disposal and TCEQ approval of pilot plant study protocol.

3. Other Considerations – Additionally, potential sites will be screened for security concerns, including preliminary aquatic environmental considerations, and other applicable considerations. The A/E will assist the City in meeting with landowners to discuss lease/land use issues and obtaining pilot facility agreements.

d) Preferred Variable Salinity Desalination Plant Site – In consultation with the City, the A/E will make a recommendation on the preferred pilot study site after detailed site investigations have been completed.

e) Submit six (6) hard copies and one (1) electronic file on CD of the Draft Technical Memorandum to the City and three (3) hard copies and one (1) electronic file on CD to Reclamation for technical review and comments.

f) After the draft review meeting, incorporate comments and submit six (6) hard copies and one (1) electronic file on CD of the Final Technical Memorandum to City and three (3) hard copies and one (1) electronic file on CD to Reclamation.

4. **TM #3 – Variable Salinity Desalination Plant Technical Criteria**. The A/E will:

a) Discuss the potential benefits for Variable Salinity Desalination –
   1. Strategy for Development of full scale design criteria
   2. Development of refined life cycle costing
   3. Operation and Maintenance verification
   4. City gaining operational experience
   5. Public educational value
   6. Possibility of testing other third party technologies

b) Incorporate pertinent findings from the Desalination Technology Research Technical Memorandum (TM#1) and the Variable Salinity Desalination Plant Siting Analysis Technical Memorandum (TM#2) and establish the Study Objectives.

c) Develop the necessary planning, regulatory and technical requirements to implement Desalination Pilot Study. Phase 2 work will include the requirements to execute the following:
   1. Obtain TCEQ/Reclamation approval of pilot study protocol.
   2. Brackish water well and supply (new well on site, existing well and transport to site, or approved alternative).
   3. Schematic VSD Plant Complex layout (seawater intake, groundwater supply, tanks, site contours, canopies, office trailer, piping, electrical, SCADA, phone, fencing and site lighting).
   4. Obtain waste disposal permit or waste disposal authorization.
   5. Estimate Manpower requirements
      a. Operator (City)
      b. Maintenance (City)
      c. Others
   6. Coordination of laboratory sampling and testing for Phase 2 including: Characterization of brackish groundwater quality for the site selected and Characterization of seawater quality for the site selected. The laboratory sampling and testing is to be performed by the City.
   7. Describe security requirements for the VSD plant site.
   8. VSD Data Collection and Technology Testing Work Plan.
      a. Develop Work Plan

i. Refine Process flow diagram of pilot test based on previous readily available pilot projects
ii. Determine anticipated pilot testing blending ratio ranges
iii. Anticipated testing water quality ranges
iv. Duration of testing period
v. Testing requirements
vi. Laboratory protocols
vii. Reporting and monitoring

b. Equipment Selection
i. Determine pre-treatment performance requirements and objectives (including equipment types)
ii. Determine MF/UF performance, requirements and objectives
iii. Determine RO performance requirements and objectives.
iv. Obtain proposals from pretreatment and membrane manufacturers for City review.
v. Select equipment to be piloted based on required data, performance goals, and manufacturer support during testing, certification, certified challenge studies, and approval of vendors.
vi. Assist City in obtaining lease/purchase agreements for Pilot equipment

c. Quality Assurance/Quality Control Plan. Discuss the individual responsibilities of the City, Reclamation, Engineer, equipment manufacturer, operator and laboratory staff to establish and maintain quality control throughout the pilot study, including:
i. Equipment calibration and maintenance
ii. Chain of Custody
iii. Operator Schedules/Logs

d. Identify Construction Permit Requirements
i. Building Permits
ii. Electrical Permits
iii. Other City Required Permits

e. Obtain TCEQ/Reclamation approval of pilot study protocol.

d) Develop the Execution Plan for Phase 3 VSD Data Collection and Technology Testing. The Execution Plan will include:
1. Communication plan
2. Progress reports including milestone date compliance, budget compliance and identification of potential issues and resolutions.
3. Grant funding administration plan and requirements
4. Sequencing of work activities
5. Identification of roles and responsibilities of Reclamation
6. Identification of roles and responsibilities of other contractors and participants
7. Milestone scheduling
8. Financial accounting plan

e) Submit six (6) hard copies and one (1) electronic file on CD of the Draft Technical Memoranda to the City and three (3) hard copies and one (1) electronic file on CD to Reclamation for technical review and comments.

f) After the draft review meeting, incorporate comments and submit six (6) hard copies and one (1) electronic file on CD of the Final Technical Memoranda to City

and three (3) hard copies and one (1) electronic file on CD to Reclamation.

5. **TM #4 – Variable Salinity Desalination Study Protocol.** The A/E will:
   a) Based on water quality characterization taken from the brackish groundwater location and the seawater location, develop operational performance objectives/goals of the RO membrane during pilot testing including anticipated flux rates, blending ratios, and anticipated pretreatment performance.
   b) Identify sparingly soluble salts that may require antiscalants for RO and identify post treatment options for the RO permeate to achieve water quality objectives.
   c) Based on previous piloting experience and familiarity with various membrane equipment, provide a recommendation for RO configurations, equipment manufacturer, and type.
   d) Based on water quality sampling, estimate expected RO feed pressure and permeate water quality.
   e) Develop VSD Data Collection and Technology Testing Protocol document including:
      1. Refine process flow diagram for pretreatment, RO membrane, and post treatment which will reflect the intended full-scale plant based on source water characterization, performance objectives/goals, and previous studies identified in TM #1.
      2. Determine anticipated pilot testing blending ratio ranges.
      3. Determine anticipated testing water quality and salinity ranges.
      4. Establish duration of testing period.
      5. Establish testing requirements.
      6. Establish laboratory protocols.
      7. Establish reporting and monitoring requirements.
      8. Operator schedules and log procedures.
   f) Submit Pilot Study Protocol to TCEQ and Reclamation for review and approval.
   g) Submit six (6) hard copies and one (1) electronic file on CD of the Draft Technical Memoranda to the City and three (3) hard copies and one (1) electronic file on CD to Reclamation for technical review and comments.
   h) After the draft review meeting, incorporate comments and submit six (6) hard copies and one (1) electronic file on CD of the Final Technical Memoranda to City and three (3) hard copies and one (1) electronic file on CD to Reclamation.

City to Provide or Perform

   a) City to provide one set of the 2013 Groundwater Study performed by others.
   b) Grab Sampling and Laboratory Analysis for at least five (5) locations for seawater characterization. Locations are expected to include the following:
      1. Barney Davis Power Plant Cooling Water Discharge
      2. Corpus Christi Bay, 2,000 feet from the Outlet of Nueces Bay
      3. Corpus Christi Bay, 2,000 feet from shoreline
      4. Nueces Bay Energy Center Cooling Water Discharge
      5. Off Shore, 2,000 feet
   c) Grab Sampling and Laboratory Analysis for at least five (5) locations for brackish water characterization. Locations to be identified by Freese and Nichols in conjunction with groundwater consultant.
   d) Obtaining authorization for use of existing well, as applicable.
   e) Record drawings, record information of existing facilities, and utilities (as available from City Engineering files).
   f) A copy of existing studies and plans (as available from City Engineering files).

g) Field location of existing city utilities. (A/E to coordinate with City Operating Department).
h) Applicable Master Plans and GIS mapping are available on the City's website.
i) Provide bench marks and coordinates.
j) The preliminary budget, specifying the funds available for construction.
k) The City shall not be responsible for any drilling activities.

The records provided for A/E's use under this contract are proprietary, copyrighted, and authorized for use only by A/E, and only for the intended purpose of this project. Any unauthorized use or distribution of the records provided under this contract is strictly prohibited**.**

B. ADDITIONAL SERVICES

This section defines the scope of additional services that may only be included as part of this contract if authorized by the Executive Director of Public Works. A/E may not begin work on any services under this section without specific written authorization by the Executive Director of Public Works. Fees for Additional Services are an allowance for potential services to be provided and will be **negotiated** by the Executive Director of Public Works as required. The A/E shall, with written authorization by the Executive Director of Public Works, perform the following:

1. **Funding Application Preparation**.
Identify Funding:
a) Coordinate with City on funding opportunities for Desal Pilot Study project.
b) Research opportunities to include, but not limited to, the following:
    1. U.S Restore Act
    2. Texas Water Development Board (multiple)
        a. Planning Grants
        b. Research and Demonstration Grants – Innovative Water Supplies Demonstration Program
            i. Water Reuse
            ii. Aquifer Storage and Recovery
            iii. Seawater Desalination Demonstration for Industrial Customers
        c. Others
    3. Governor's Economic Development Program Emerging Technologies Fund
    4. Federal Grant Programs
c) Identify and prepare up to three (3) funding applications for Federal and State Grant Programs.
d) Effort includes development and monitoring of the application process, and coordination with the Grant Administrator.

2. **Communication and Outreach Support.**
a) Development of Decision Matrix
    1. Identify and screen alternative/innovative water supply strategies
        a. Desalination
        b. Water Reuse
        c. Aquifer Storage and Recovery (ASR)
        d. Conservation through water supply efficiency
b) Assist City in Development of Communication and Outreach Plan

2. Conduct a workshop to identify and categorize stakeholder groups and interests
3. Update decision matrix based on input generated during workshop
4. Identify communication strategies and messages to engage key stakeholder groups.

c) Up to ten (10) coordination meetings and work sessions with City, Reclamation, Texas A&M Corpus Christi, Harte Institute, Coastal Bend Bays & Estuaries Program, Coastal Bend Bays Foundation, Topaz Power (Barney Davis Power Plant and Nueces Bay Energy Center), Texas Commission on Environmental Quality (TCEQ), Texas Water Development Board (TWDB), Texas Parks and Wildlife Department, Texas A&M Energy Institute (Renewable Power), Nueces County, San Patricio MWD, select State Legislators, and other regional stakeholders.

3. **Groundwater Engineering**.

a) Meetings and Correspondence
1. Teleconference calls as needed to provide project updates.
2. Up to three (3) meetings in Corpus Christi to present preliminary findings, meet with regulatory agencies, and/or meet with Freese and Nichols, Inc.
3. One meeting with TWDB BRACs group to discuss approach and obtain their latest database.

b) Evaluate feasibility of using existing wells for pilot study to include identification of closest potential groundwater production field to each potential demonstration plant site.
1. For each of the five potential plant sites, locate the closest available existing well which can sustain a minimum 100 gpm and likely has similar water quality characteristics to the aquifer zone proposed for use for a brackish well field.
2. Work with Freese and Nichols and the City of Corpus Christi to develop a strategy to request permission from candidate well owners to use their wells for the desalination demonstration plant.
   a. Identify potential wells to be sampled at each of the five sites. Work with Freese and Nichols on approaches for contracting with well owners to acquire samples. Prior to sampling wells, perform site visit to confirm suitability of the well and to discuss possible options for the long-term use of the well.
   b. Freese and Nichols to communicate sampling requirements and locations to City for sampling and groundwater testing.

c) Identify and Perform a Groundwater Assessment at each of the five potential demonstration plant sites – (1) Barney Davis Power Plant; (2) Nueces Bay Energy Center; (3) O.N. Stevens Water Treatment Plant; (4) Harbor Island/Ingleside Area; (5) Location to Be Determined.
1. Develop vertical profiles of sands and clays.
2. Analysis of Geophysical Logs
   a. Identify and locate an average of four logs per site and a minimum of two logs per site.
   b. Digitize and analyze logs for water quality and sand percent to a depth of 2,500 feet and map Gulf Coast stratigraphy on to each log.
3. Estimate aquifer productivity.
4. Estimate transmissivity of geological formations.

a. Assemble aquifer pumping test data from public water supply wells from TCEQ and analyze the data to estimate hydraulic properties for the geological formation and aquifers that would be pumped at each site.
b. Integrate hydraulic properties information from Groundwater Availability Models (GAM) and from public water supply wells with the sand map information to develop transmissivity maps for the study areas.

5. Estimate groundwater quality.
   a. Evaluate anthropogenic sources of contamination for an approximate area of 25 square miles for each site. This search will include surface sources of potential contamination and injection wells for waste disposal.
   b. For each site, summarize the water quality parameters from the TWDB groundwater database for an approximate 25 square miles.
6. Estimate the drawdown and potential for subsidence at each site for well fields designed to produce 3,000, 5,000, and 10,000 AFY.

d) Collect and analyze additional geophysical logs and well test results for areas of interest.
e) Estimate cost for installation and development of new test well.
f) Provide the City with Final Groundwater Engineering Technical Report to include all findings of Groundwater Assessment.
g) The City will not be responsible for any drilling activities.

4. **Sampling.** Perform additional sampling/testing of wells to address data gaps.

5. **Permit Preparation.** Furnish the City all engineering data and documentation necessary for all required permits, which have not been included in the Basic Services and would be considered unforeseeable. The A/E will prepare this documentation for all required signatures. The A/E will prepare and submit identified permits **as applicable** to the appropriate local, state, and federal authorities, including:
   a) Union Pacific Railroad, Missouri Pacific Railroad, or any other railroad operating in the area
   b) TxDOT utility and environmental permits, multiple use agreements
   c) Wetlands Delineation and Permit
   d) Temporary Discharge Permit
   e) NPDES Permit/Amendments (including SSC, NOI NOT)
   f) Texas Commission of Environmental Quality (TCEQ) Permits/Amendments
   g) Nueces County
   h) Texas Historical Commission (THC)
   i) U.S. Fish and Wildlife Service (USFWS)
   j) U.S. Army Corps of Engineers (USACE)
   k) United States Environmental Protection Agency (USEPA)
   l) Texas Department of Licensing and Regulation (TDLR)
   m) Texas General Land Office (TGLO)
   n) Other agency project-specific permits (Permitting of new site well, as necessary.)

6. **Right-of-Way (ROW) Acquisition Survey.** All work must comply with Category 1-A, Condition I specifications of the Texas Society of Professional Surveyors' Manual of Practice for Land Surveying in the State of Texas, Ninth Edition. All work must be tied to and in conformance with the City's Global Positioning System (GPS) control network. All work must comply with all TxDOT requirements as applicable.
   a) Perform surveys to determine apparent right-of-way widths.

b) Research plats, ROW maps, deed, easements, and survey for fence corners, monuments, and iron pins within the existing ROW and analyze to establish existing apparent ROW. A/E must obtain Preliminary Title Reports from a local title company and provide copies of the title reports to the City. Preliminary Title Report shall identify title ownership and any title encumbrances to all right-of-way to be acquired.

c) Provide a preliminary base map containing apparent ROW, which will be used by the A/E to develop the proposed alignment and its position relative to the existing and proposed ROW. This preliminary base map must show lot or property lines, land ownership and addresses as per appraisal district records.

7. **Topographic Survey and Parcel Descriptions** All work must be tied to and conform with the City's Global Positioning System (GPS) control network and comply with Category 6, Condition I specifications of the Texas Society of Professional Surveyors' Manual of Practice for Land Surveying in the State of Texas, Ninth Edition. Include reference to a minimum of two (2) found boundary monuments from the project area.

a) Establish Horizontal and Vertical Control.

b) Establish both primary and secondary horizontal/vertical control.

c) Set project control points for Horizontal and Vertical Control outside the limits of project construction disturbance.

d) Horizontal control will be based on NAD 83 State plane coordinates (South Zone), and the data will have no adjustment factor applied – i.e. – the coordinate data will remain in grid.

e) Vertical control will be based on NAVD 88.

f) All control work will be established using conventional (non-GPS) methods. Perform topographic surveys to gather existing condition information.

g) Locate proposed soil/pavement core holes as drilled by the City's Geotechnical Engineering Consultant.

h) Obtain x, y, and z coordinates of all accessible existing sanitary sewer, storm sewer, water and gas lines as well as any other lines owned by third-parties and locate all visible utilities, wells and signs within the apparent ROW width along project limits. No utility connections will be shown. Surveying services, related to subsurface utility engineering (SUE) shall be provided as part of the scope of work for SUE.

i) Locate improvements within the apparent ROW.

j) Locate and identify trees, at least five inches in diameter within the apparent ROW.

k) Generate electronic planimetric base map for use in project design.

l) Set property corners and prepare right of way strip parcel map depicting all parcels proposed for acquisition. Metes and bounds descriptions must indicate parent tract areas based on the most accurate information available. Strip map will show entire parent tracts at "not to scale" and for information only. All existing easements within the parcels to be acquired and those within adjacent parcels must be shown.

m) Prepare individual signed and sealed parcel maps and legal descriptions for the required right of way acquisition for parcels and easements. A strip map showing all parcels required will be submitted along with parcel descriptions. Additional fees may be required in resolving boundary conflicts between Owners. A/E shall submit parcel maps and legal descriptions prior to the 60% submittal.

8. **Environmental Issues.** Identify and develop a scope of work for any testing, handling and disposal of hazardous materials and/or contaminated soils that may be discovered during construction.

9. **Public Involvement.** Participate in two public meetings. One public meeting shall be held after submittal of the Final Engineering Letter Report and one public meeting shall be held prior to start of project construction. Prepare notices, PowerPoint presentations, handouts and exhibits for meetings. Provide follow-up and response to citizen comments. Revise contract drawings to address citizen comments, as directed by the City. Prepare notices, handouts and exhibits for public information meetings.

10. **Subsurface Utility Investigation**

a) Provide subsurface utility engineering in accordance with ASCE Standard "ASCE C-I, 38-02, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data" including, but not limited to, hydro-excavation. The proposed subsurface utility investigation will be as follows:

1. Excavation – The survey scope includes working with a subsurface utility excavator to perform Quality Level A investigation of underground utilities in specified areas through the project limit. (Quality Level A involves the use of nondestructive digging equipment at critical points to determine the horizontal and vertical position of underground utilities, as well as the type, size, condition, material, and other characteristics.) Utilities located at this quality level will be physically located and tied to the topographic survey control. The utility will be identified and an elevation will be obtained to the top of the utility.
2. Utility Location – The survey scope includes locating certain utilities to Quality Level B (Quality Level B involves surveying visible above ground utility facilities, such as manholes, valve boxes, posts, etc., and correlating this information with existing utility records.) These utilities will be located by obtaining a One-Call Notice and measuring the marked locations.
3. Storm Water – Storm water facilities within the project limits will be located to Quality Level C. Locations will be based on the surveyed locations of accessible storm water manholes and drainage inlets.
4. Wastewater – Wastewater facilities within the project limits will be located to Quality Level C. Locations will be based on the surveyed locations of accessible wastewater manholes. Wastewater lines that are not to be replaced as part of this project and that fall within the footprint of construction-related excavation shall be located at Quality Level A.
5. Water – Water facilities within the project limits will be located to Quality Level C.
6. Gas – Gas facilities within the project limits will be located to Quality Level C by the A/E. The City Gas Department will provide Quality Level A. The A/E will coordinate this activity.

b) Inform local franchises whose utilities fall within the footprint of construction-related excavation of the potential for encountering their utility lines during construction and coordinate relocation or conflict avoidance.

11. **Construction Observation Services.** To Be Determined

12. **Start-up Services.** Provide on-site services and verification for all start-up procedures during actual start-up of major Project components, systems, and related appurtenances if needed and required.

13. **Training.** Coordinate required training of City staff and provide Operation and Maintenance Manuals.

14. **Warranty Phase.** Provide a maintenance guaranty inspection toward the end of the one-year period after acceptance of the Project. Note defects requiring contractor action to maintain, repair, fix, restore, patch, or replace improvement under the maintenance guaranty terms of the contract. Document the condition and prepare a report for the City staff of the locations and conditions requiring action, with its recommendation for the method or action to best correct defective conditions and submit to City Staff. Complete the inspection and prepare the report no later than sixty (60) days prior to the end of the maintenance guaranty period.

Provide the services above authorized in addition to those items shown on Exhibit "A-1" Task List, which provides supplemental description to Exhibit "A". Note: The Exhibit "A-1" Task List does not supersede Exhibit "A".

C. SCHEDULE

Date	Activity
May 15, 2014	NTP
July 24, 2014	Draft Submittal – TM #1
July 25, 2014	City/Stakeholder Review Workshop – TM #1
August 18, 2014	Final Submittal – TM #1
September 19, 2014	Draft Submittal – TM #2
September 19, 2014	City/Stakeholder Review Workshop – TM #2
October 21, 2014	Final Submittal – TM #2
October 6, 2014	Draft Submittal – TM #3
October 7, 2014	City/Stakeholder Review Workshop – TM #3
November 14, 2014	Final Submittal – TM #3
October 23, 2014	Draft Submittal – TM #4
October 24, 2014	City/Stakeholder Review Workshop – TM #4
November 14, 2014	Final Submittal – TM #4

D. FEES

1. **Fee for Basic Services.** The City will pay the A/E a fixed fee for providing for all "Basic Services" authorized as per the table below. The fees for Basic Services will not exceed those identified and will be full and total compensation for all services outlined in Section I.A.1-4 above, and for all expenses incurred in performing these services. **The fee for this project is subject to the availability of funds. The Engineer may be directed to suspend work pending receipt and appropriation of funds.** For services provided in Section I.A.1-4, A/E will submit monthly statements for basic services rendered. In Section I.A.1-3, the statement will be based upon A/E's estimate (and with City's concurrence) of the proportion of the total services actually completed at the time of billing. For services provided in Section I.A.4, the statement will be based upon the percent of completion of the construction contract. City will make prompt monthly payments in response to A/E's monthly statements.

2. **Fee for Additional Services.** For services authorized by the Executive Director of Public Works under Section I.B. "Additional Services," the City will pay the A/E a not-to-exceed fee as per the table below:

Summary of Fees

Basic Services Fees	
1. TM #1 – Desalination Technology Research (Phase 2)	$180,250
2. TM #2 – VSD Plant Siting Analysis (Phase 2)	$224,709
3. TM #3 – VSD Plant Technical Criteria (Program Development) (Phase 3)	$194,073
4. TM #4 – VSD Study Protocol (TCEQ Permit Criteria) (Phase 3)	$120,292
5. Variable Salinity Data Collection and Technology Testing (Phase 3)	To Be Determined
6. Variable Salinity Desalination and Concentrate Disposal Model	To Be Determined
7. Bid Phase	To Be Determined
8. Construction Administration Phase	To Be Determined
Subtotal Basic Services Fees	$719,324
Additional Services Fees (Allowance)	
1. Funding Application Preparation	$65,843
2. Communication and Outreach Support	$91,532
3. Groundwater Engineering	$90,000
4. Sampling	To Be Determined
5. Permit Preparation	To Be Determined
6. ROW Acquisition Survey	To Be Determined
7. Topographic Survey and Parcel Descriptions	To Be Determined
8. Environmental Issues	To Be Determined
9. Public Involvement	To Be Determined
10. Subsurface Utility Investigation	To Be Determined
11. Construction Observation Services	To Be Determined
12. Startup Services	To Be Determined
13. Training	To Be Determined
14. Warranty Phase	To Be Determined
Sub-Total Additional Services Fees Authorized	$247,375
Total Authorized Fee	**$966,699**

EXHIBIT "A-1" TASK LIST
CITY OF CORPUS CHRISTI, TEXAS

(Provides supplemental description to Exhibit "A". Exhibit "A-1" Task List does not supersede Exhibit "A.")

CITY OF CORPUS CHRISTI DESALINATION PROGRAM
PROJECT NO. E13096

Basic Services:

The City is undertaking a Variable Salinity Desalination (VSD) Demonstration Program. These basic services are required to provide the necessary information and preparation to successfully perform and complete the study. Amendment No. 1 to Project No. E13063 will provide:

- VSD Plant Site Selection Recommendation. The site selection will be driven by several factors including environmental, land use, technical, financial, accessibility, proximity to water supply sources, both brackish and seawater, availability of electrical and utility services, and waste disposal considerations, as well as other factors including integration of a full scale plant into the City's water supply which will be weighted and ranked to select and recommend a testing site for Variable Salinity Data Collection and Technology Testing.

- A background perspective on "State-of-the-Art" of desalination both brackish and seawater as that technology relates to being incorporated into the long-term water management strategies for the City of Corpus Christi (City).

- A Work Plan and study protocol for the Variable Salinity Data Collection and Technology Testing and obtaining regulatory and Reclamation approval to proceed with the Demonstration.

- Further investigation of potential brackish groundwater areas identified during Phase 1, being performed by a brackish groundwater consultant, which are possible brackish water sources for the Variable Salinity Data Collection and Technology Testing.

- Amendment No. 1 Encompasses Tasks which are part of both Phase 2 and Phase 3 of the Desalination Program.

    a) Phase 2 is defined as Desalination Technology Research and Demonstration Plant Site Selection. Phase 2 will be initiated and completed under Amendment No. 1 within the scope of Technical Memorandum (TM) #1 and TM #2.

    b) Phase 3 is defined as Variable Salinity Desalination Protocol Development, Demonstration Plant Implementation, Technology Testing, and Data Collection. Phase 3 will be initiated under Amendment No. 1 with the development and completion of TM #3 and TM #4. Phase 3 will continue, in a future Amendment No. 2, as the program progresses to Demonstration Implementation, Technology Testing, and Data Collection. US Bureau of Reclamation Grant Funds can be applied to Phase 3 effort at a proportional match of 1-to-1.

- Design criteria for the Desalination Demonstration Plant will be developed under the Scope of TM #3. A process for the development of full scale design criteria will also be proposed in the TM #3 deliverable, but the specific design and operating criteria cannot be developed until completion of the Desalination Demonstration, Technology Testing, and Data Collection. These criteria are also dependent on the involvement and participation of specific stakeholders and industries.

    a) The Demonstration Plant is defined as the temporary plant designed and operated based on the protocol and criteria developed in TM #3. This plant will be operated for an estimated twenty (20) months and will be used to employ a variety of treatment processes, equipment configurations, and strategies defined in TM #3.

    b) The Full Scale Plant is defined as the long-term, infrastructure unit which will produce water for customers.

- The Desalination Implementation Plan which will include a summary of all findings from the Variable Salinity Desalination Demonstration and represent a complete plan and model for desalination in Corpus Christi can only be developed after the Desalination Demonstration is complete. The Scope of Amendment No. 1 does not include the Demonstration Plant or activities resulting from the Demonstration.

1. **Project Administration.** The Architect/Engineer-A/E (also referred to as Consultant) will conduct the following administration activities:
    a) Meetings
        1. Kick-off Meeting (1) with the City
        2. Up to four (4) coordination meetings with the City
        3. Up to four (4) coordination meetings amongst consultant team and Reclamation.
        4. TM #1 - Draft Review Meeting (1) with City and Reclamation
        5. TM #2 –Draft Review Meeting (1) with City and Reclamation
        6. TM #3 - Draft Review Meeting (1) with City and Reclamation
        7. TM #4 –Draft Review Meeting (1) with City and Reclamation.
    b) Status Reports
        1. Provide a monthly status report to the City. This report shall include progress in the last month, anticipated progress for the upcoming month, upcoming submittals/milestones, upcoming meetings/workshops, data requests/project needs, and list of milestones denoting completion or notes for pending completion.
    c) Reclamation Coordination
        1. Coordinate with City and Reclamation to fulfill obligation tasks of Reclamation Grant for Phase 3 Variable Salinity Data Collection and Technology Testing reporting requirements. Status reports will also be sent during the Phase 2 efforts.
            a. Quarterly Performance Reporting (Progress reports including milestone date compliance, budget compliance and identification of potential issues and resolutions.
            b. Quarterly SF425 Financial Reporting

2. **TM #1 – Desalination Technology Research**. The A/E will:

a) Research and summarize water resource studies involving Seawater Desalination, Brackish Groundwater Desalination, and Aquifer Storage and Recovery (ASR). A brief summary of only pertinent information from the researched studies will be presented in a technical memorandum. The summary will be broad based to facilitate educational, background and baseline information on previous and on-going significant projects as they may relate to the study. Based on previous study approaches, identify feasible technologies and/or approaches that could benefit from being evaluated further as part of a pilot study and document a list of lessons learned. The projects identified below are not an exhaustive list and other pertinent projects may be considered.

1. Seawater Desalination:
   - a. Corpus Christi
     - i. Large Scale Demonstration Desalination Feasibility Study
     - ii. Padre Island Desalination Plant Feasibility Analysis and Siting Plan
   - b. Texas
     - i. Texas Seawater Desalination Demonstration Project (Brownsville Public Utilities Board)
     - ii. Feasibility and Pilot Study, South Padre Island Seawater Desalination Project (Laguna Madre Water District)
     - iii. Summary of TCEQ Regulations
   - c. National
     - i. Tampa Bay Seawater Desalination Project
     - ii. Carlsbad Seawater Desalination Project
     - iii. Taunton River Desalination Project
   - d. International
2. Brackish Groundwater Desalination:
   - a. Corpus Christi
     - i. Summary of findings from City's groundwater consultant
   - b. Texas
     - i. Brief Summary of TWDB Brackish Groundwater Data Base
     - ii. Brief Summary of TWDB Cost of Brackish Desalination in Texas
     - iii. Brief Summary of TCEQ Regulations Relating to Brackish Groundwater
   - c. National – National Groundwater Association
     - i. Brief Summary of National Prospective on brackish groundwater development
3. Aquifer Storage and Recovery (ASR):
   - a. Corpus Christi
     - i. Summary of findings from City's groundwater consultant
     - ii. TWDB – Geologic Characterization of and Data Collection in the Corpus Christi Aquifer Storage and Recovery Conservation District and Surrounding Counties

iii. Summary of regulations of Corpus Christi Aquifer Storage and Recovery Conservation District

b. Texas
   i. TWDB – Corpus Christi ASR Report (2012)
   ii. Summary of SAWS Aquifer Storage and Recovery Implementation
   iii. Summary of TCEQ Regulations
c. National – National Groundwater Association
   i. Brief Summary of National Prospective on ASR Development

4. Variable Salinity Desalination (VD)
5. Alternative Energy Sources

b) Submit six (6) hard copies and one (1) electronic file on CD of the Draft Technical Memorandum to the City and three (3) hard copies and one (1) electronic file on CD to Reclamation for technical review and comments.

c) After the draft review meeting, incorporate comments and submit six (6) hard copies and one (1) electronic file on CD to City and three (3) hard copies and one (1) electronic file on CD to Reclamation.

3. **TM #2 – Variable Salinity Desalination Plant Siting Analysis**. The A/E will:

a) Raw Water Quantity & Quality
   1. Review the hydro-geologic results prepared by others for the City to establish acceptable brackish aquifer productivity and quality, including existing potential wells.
   2. Review surface water sites, up to 5 site-specific locations, and identify pertinent site constraints
      a. The location of the pilot will be directly influenced by the feasibility of locating the full scale plant such as intake location, brine disposal location and proximity to water distribution and demand centers. The pilot site will be located in the same general vicinity as the future full-scale plant.
   3. A ranking and weighting system will be developed to select up to two (2) sites, which appear to be suitable pilot study areas (Candidate Sites).

b) Candidate Site Selection – Once candidate sites are identified, the A/E will coordinate with the City to select up to two (2) potential sites which appear to be acceptable and which will serve to meet the objectives of a variable salinity desalination study. Consideration will be given to proximity to existing utilities and utilizing existing facilities, whenever possible, such as co-locating at Power Plants, utilizing existing groundwater wells, locations of potential groundwater development fields that have been identified by the City's groundwater consultant, obtaining raw water quality data from existing wells and surface water monitoring stations. Right of entry permission shall be obtained by the A/E and preliminary site survey performed to assess any fatal flaw issues. The A/E will identify additional sampling/testing needs to address data gaps.

c) Detailed Site Investigation – The A/E will perform a more detailed site investigation to analyze, document and compile the technical, environmental, land use and financial constraints associated with each of the candidate pilot plant sites, including:
   1. Concentrate Disposal Evaluation

a. Evaluating available concentrate disposal options (including temporary TCEQ wastewater discharge permit, co-disposal at existing power plant discharge, City's wastewater collection system through its industrial pretreatment program, others) for the pilot study including consideration of:
   i. Previously conducted pilot studies around the state and country
   ii. Input from Reclamation, TCEQ, City staff, Coastal Bend Bays and Estuaries Program
   iii. Potential ability to be up-scaled to full scale system
b. Identify a recommended concentrate disposal method.

2. Regulatory Coordination. The A/E will:
   a. Legislative and Permitting Constraints
      i. Development of Permitting Timelines and Schedules
      ii. Define Strategies and Plan of Action
   b. Conduct up to two (2) regulatory meetings between City, TCEQ, Reclamation, TWDB, and other selected stakeholders to review final site location of Pilot plant and discuss issues/concerns for the Variable Salinity Desalination Study.
   c. Submit permitting applications that require long lead time (e.g. TPDES permit for concentrate disposal, TCEQ approval of pilot plant study protocol).
3. Other Considerations – Additionally, potential sites will be screened for security concerns, including preliminary aquatic environmental considerations, and other applicable considerations. The A/E will assist the City in meeting with landowners to discuss lease/land use issues and obtaining pilot facility agreements.

d) Preferred Variable Salinity Desalination Plant Site – In consultation with the City, the A/E will make a recommendation on the preferred pilot study site after detailed site investigations have been completed.

e) Submit six (6) hard copies and one (1) electronic file on CD of the Draft Technical Memorandum to the City and three (3) hard copies and one (1) electronic file on CD to Reclamation for technical review and comments.

f) After the draft review meeting, incorporate comments and submit six (6) hard copies and one (1) electronic file on CD of the Final Technical Memorandum to City and three (3) hard copies and one (1) electronic file on CD to Reclamation.

4. **<u>TM #3 – Variable Salinity Desalination Plant Technical Criteria</u>**. The A/E will:

a) Discuss the potential benefits for Variable Salinity Desalination –
   1. Strategy for Development of full scale design criteria
   2. Development of refined life cycle costing
   3. Operation and Maintenance verification
   4. City gaining operational experience
   5. Public educational value
   6. Possibility of testing other third party technologies

b) Incorporate pertinent findings from the Desalination Technology Research Technical Memorandum (TM#1) and the Variable Salinity Desalination

Plant Siting Analysis Technical Memorandum (TM#2) and establish the Study Objectives.

c) Develop the necessary planning, regulatory and technical requirements to implement Desalination Pilot Study. Phase 2 work will include the requirements to execute the following:

1. Obtain TCEQ/Reclamation approval of pilot study protocol.
2. Brackish water well and supply (new well on site, existing well and transport to site, or approved alternative).
3. Schematic VSD Plant Complex layout (seawater intake, groundwater supply, tanks, site contours, canopies, office trailer, piping, electrical, SCADA, phone, fencing and site lighting).
4. Obtain waste disposal permit or waste disposal authorization.
5. Estimate Manpower requirements
   a. Operator (City)
   b. Maintenance (City)
   c. Others
6. Coordination of laboratory sampling and testing for Phase 2 including: Characterization of brackish groundwater quality for the site selected and Characterization of seawater quality for the site selected. The laboratory sampling and testing is to be performed by the City.
7. Describe security requirements for the VSD plant site.
8. VSD Data Collection and Technology Testing Work Plan.
   a. Develop Work Plan
      i. Refine Process flow diagram of pilot test based on previous readily available pilot projects
      ii. Determine anticipated pilot testing blending ratio ranges
      iii. Anticipated testing water quality ranges
      iv. Duration of testing period
      v. Testing requirements
      vi. Laboratory protocols
      vii. Reporting and monitoring
   b. Equipment Selection
      i. Determine pre-treatment performance requirements and objectives (including equipment types)
      ii. Determine MF/UF performance, requirements and objectives
      iii. Determine RO performance requirements and objectives.
      iv. Obtain proposals from pretreatment and membrane manufacturers for City review.
      v. Select equipment to be piloted based on required data, performance goals, and manufacturer support during testing, certification, certified challenge studies, and approval of vendors.
      vi. Assist City in obtaining lease/purchase agreements for Pilot equipment
   c. Quality Assurance/Quality Control Plan. Discuss the individual responsibilities of the City, Reclamation, Engineer, equipment manufacturer, operator and

laboratory staff to establish and maintain quality control throughout the pilot study, including:
   i. Equipment calibration and maintenance
   ii. Chain of Custody
   iii. Operator Schedules/Logs
d. Identify Construction Permit Requirements
   i. Building Permits
   ii. Electrical Permits
   iii. Other City Required Permits
e. Obtain TCEQ/Reclamation approval of pilot study protocol.

d) Develop the Execution Plan for Phase 3 VSD Data Collection and Technology Testing. The Execution Plan will include:
   1. Communication plan
   2. Progress reports including milestone date compliance, budget compliance and identification of potential issues and resolutions.
   3. Grant funding administration plan and requirements
   4. Sequencing of work activities
   5. Identification of roles and responsibilities of Reclamation
   6. Identification of roles and responsibilities of other contractors and participants
   7. Milestone scheduling
   8. Financial accounting plan

e) Submit six (6) hard copies and one (1) electronic file on CD of the Draft Technical Memoranda to the City and three (3) hard copies and one (1) electronic file on CD to Reclamation for technical review and comments.

f) After the draft review meeting, incorporate comments and submit six (6) hard copies and one (1) electronic file on CD of the Final Technical Memoranda to City and three (3) hard copies and one (1) electronic file on CD to Reclamation.

5. **TM #4 – Variable Salinity Desalination Study Protocol.** The A/E will:

a) Based on water quality characterization taken from the brackish groundwater location and the seawater location, develop operational performance objectives/goals of the RO membrane during pilot testing including anticipated flux rates, blending ratios, and anticipated pretreatment performance.

b) Identify sparingly soluble salts that may require antiscalants for RO and identify post treatment options for the RO permeate to achieve water quality objectives.

c) Based on previous piloting experience and familiarity with various membrane equipment, provide a recommendation for RO configurations, equipment manufacturer, and type.

d) Based on water quality sampling, estimate expected RO feed pressure and permeate water quality.

e) Develop VSD Data Collection and Technology Testing Protocol document including:
   1. Refine process flow diagram for pretreatment, RO membrane, and post treatment which will reflect the intended full-scale plant based on source water characterization, performance objectives/goals, and previous studies identified in TM #1.
   2. Determine anticipated pilot testing blending ratio ranges.
   3. Determine anticipated testing water quality and salinity ranges.

4. Establish duration of testing period.
5. Establish testing requirements.
6. Establish laboratory protocols.
7. Establish reporting and monitoring requirements.
8. Operator schedules and log procedures.

f) Submit Pilot Study Protocol to TCEQ and Reclamation for review and approval.

g) Submit six (6) hard copies and one (1) electronic file on CD of the Draft Technical Memoranda to the City and three (3) hard copies and one (1) electronic file on CD to Reclamation for technical review and comments.

h) After the draft review meeting, incorporate comments and submit six (6) hard copies and one (1) electronic file on CD of the Final Technical Memoranda to City and three (3) hard copies and one (1) electronic file on CD to Reclamation.

City to Provide or Perform

a) City to provide one set of the 2013 Groundwater Study performed by others.

b) Grab Sampling and Laboratory Analysis for at least five (5) locations for seawater characterization. Locations are expected to include the following:
1. Barney Davis Power Plant Cooling Water Discharge
2. Corpus Christi Bay, 2,000 feet from the Outlet of Nueces Bay
3. Corpus Christi Bay, 2,000 feet from shoreline
4. Nueces Bay Energy Center Cooling Water Discharge
5. Off Shore, 2,000 feet

c) Grab Sampling and Laboratory Analysis for at least five (5) locations for brackish water characterization. Locations to be identified by Freese and Nichols in conjunction with groundwater consultant.

d) Obtaining authorization for use of existing well, as applicable.

e) Record drawings, record information of existing facilities, and utilities (as available from City Engineering files).

f) A copy of existing studies and plans (as available from City Engineering files).

g) Field location of existing city utilities. (A/E to coordinate with City Operating Department).

h) Applicable Master Plans and GIS mapping are available on the City's website.

i) Provide bench marks and coordinates.

j) The preliminary budget, specifying the funds available for construction.

k) The City shall not be responsible for any drilling activities.

The records provided for A/E's use under this contract are proprietary, copyrighted, and authorized for use only by A/E, and only for the intended purpose of this project. Any unauthorized use or distribution of the records provided under this contract is strictly prohibited**.**

A. ADDITIONAL SERVICES

This section defines the scope of additional services that may only be included as part of this contract if authorized by the Executive Director of Public Works. A/E may not begin work on any services under this section without specific written authorization by the Executive Director of Public Works. Fees for Additional Services are an allowance for potential services to be provided and will be **negotiated** by the Executive Director of Public Works as required. The A/E shall, with written authorization by the Executive Director of Public Works, perform the following:

1. **Funding Application Preparation**.
   Identify Funding:
   a) Coordinate with City on funding opportunities for Desal Pilot Study project.
   b) Research opportunities to include, but not limited to, the following:
      1. U.S Restore Act
      2. Texas Water Development Board (multiple)
         a. Planning Grants
         b. Research and Demonstration Grants – Innovative Water Supplies Demonstration Program
            i. Water Reuse
            ii. Aquifer Storage and Recovery
            iii. Seawater Desalination Demonstration for Industrial Customers
         c. Others
      3. Governor's Economic Development Program Emerging Technologies Fund
      4. Federal Grant Programs
   c) Identify and prepare up to three (3) funding applications for Federal and State Grant Programs.
   d) Effort includes development and monitoring of the application process, and coordination with the Grant Administrator.

2. **Communication and Outreach Support.**
   a) Development of Decision Matrix
      1. Identify and screen alternative/innovative water supply strategies
         a. Desalination
         b. Water Reuse
         c. Aquifer Storage and Recovery (ASR)
         d. Conservation through water supply efficiency
   b) Assist City in Development of Communication and Outreach Plan
      1. Conduct a workshop to identify and categorize stakeholder groups and interests
      2. Update decision matrix based on input generated during workshop
      3. Identify communication strategies and messages to engage key stakeholder groups.
   c) Up to ten (10) coordination meetings and work sessions with City, Reclamation, Texas A&M Corpus Christi, Harte Institute, Coastal Bend Bays & Estuaries Program, Coastal Bend Bays Foundation, Topaz Power (Barney Davis Power Plant and Nueces Bay Energy Center), Texas Commission on Environmental Quality (TCEQ), Texas Water Development Board (TWDB), Texas Parks and Wildlife Department, Texas A&M Energy Institute (Renewable Power), Nueces County, San Patricio MWD, select State Legislators, and other regional stakeholders.

3. **Groundwater Engineering.**

a) Meetings and Correspondence
   1. Teleconference calls as needed to provide project updates.
   2. Up to three (3) meetings in Corpus Christi to present preliminary findings, meet with regulatory agencies, and/or meet with Freese and Nichols, Inc.
   3. One meeting with TWDB BRACs group to discuss approach and obtain their latest database.

b) Evaluate feasibility of using existing wells for pilot study to include identification of closest potential groundwater production field to each potential demonstration plant site.
   1. For each of the five potential plant sites, locate the closest available existing well which can sustain a minimum 100 gpm and likely has similar water quality characteristics to the aquifer zone proposed for use for a brackish well field.
   2. Work with Freese and Nichols and the City of Corpus Christi to develop a strategy to request permission from candidate well owners to use their wells for the desalination demonstration plant.
      a. Identify potential wells to be sampled at each of the five sites. Work with Freese and Nichols on approaches for contracting with well owners to acquire samples. Prior to sampling wells, perform site visit to confirm suitability of the well and to discuss possible options for the long-term use of the well.
      b. Freese and Nichols to communicate sampling requirements and locations to City for sampling and groundwater testing.

c) Identify and Perform a Groundwater Assessment at each of the five potential demonstration plant sites – (1) Barney Davis Power Plant; (2) Nueces Bay Energy Center; (3) O.N. Stevens Water Treatment Plant; (4) Harbor Island/Ingleside Area; (5) Location to Be Determined.
   1. Develop vertical profiles of sands and clays.
   2. Analysis of Geophysical Logs
      a. Identify and locate an average of four logs per site and a minimum of two logs per site.
      b. Digitize and analyze logs for water quality and sand percent to a depth of 2,500 feet and map Gulf Coast stratigraphy on to each log.
   3. Estimate aquifer productivity.
   4. Estimate transmissivity of geological formations.
      a. Assemble aquifer pumping test data from public water supply wells from TCEQ and analyze the data to estimate hydraulic properties for the geological formation and aquifers that would be pumped at each site.
      b. Integrate hydraulic properties information from Groundwater Availability Models (GAM) and from public water supply wells with the sand map information to develop transmissivity maps for the study areas.
   5. Estimate groundwater quality.

a. Evaluate anthropogenic sources of contamination for an approximate area of 25 square miles for each site. This search will include surface sources of potential contamination and injection wells for waste disposal.
b. For each site, summarize the water quality parameters from the TWDB groundwater database for an approximate 25 square miles.

6. Estimate the drawdown and potential for subsidence at each site for well fields designed to produce 3,000, 5,000, and 10,000 AFY.

d) Collect and analyze additional geophysical logs and well test results for areas of interest.
e) Estimate cost for installation and development of new test well.
f) Provide the City with Final Groundwater Engineering Technical Report to include all findings of Groundwater Assessment.
g) The City will not be responsible for any drilling activities.

4. **Sampling.** Perform additional sampling/testing of wells to address data gaps.

5. **Permit Preparation.** Furnish the City all engineering data and documentation necessary for all required permits, which have not been included in the Basic Services and would be considered unforeseeable. The A/E will prepare this documentation for all required signatures. The A/E will prepare and submit identified permits **as applicable** to the appropriate local, state, and federal authorities, including:

a) Union Pacific Railroad, Missouri Pacific Railroad, or any other railroad operating in the area
b) TxDOT utility and environmental permits, multiple use agreements
c) Wetlands Delineation and Permit
d) Temporary Discharge Permit
e) NPDES Permit/Amendments (including SSC, NOI NOT)
f) Texas Commission of Environmental Quality (TCEQ) Permits/Amendments
g) Nueces County
h) Texas Historical Commission (THC)
i) U.S. Fish and Wildlife Service (USFWS)
j) U.S. Army Corps of Engineers (USACE)
k) United States Environmental Protection Agency (USEPA)
l) Texas Department of Licensing and Regulation (TDLR)
m) Texas General Land Office (TGLO)
n) Other agency project-specific permits (Permitting of new site well, as necessary)

6. **Right-of-Way (ROW) Acquisition Survey.** All work must comply with Category 1-A, Condition I specifications of the Texas Society of Professional Surveyors' Manual of Practice for Land Surveying in the State of Texas, Ninth Edition. All work must be tied to and in conformance with the City's Global Positioning System (GPS) control network. All work must comply with all TxDOT requirements as applicable.

a) Perform surveys to determine apparent right-of-way widths.
b) Research plats, ROW maps, deed, easements, and survey for fence corners, monuments, and iron pins within the existing ROW and analyze to establish existing apparent ROW. A/E must obtain Preliminary Title Reports from a local title company and provide copies of the title reports to

the City. Preliminary Title Report shall identify title ownership and any title encumbrances to all right-of-way to be acquired.

c) Provide a preliminary base map containing apparent ROW, which will be used by the A/E to develop the proposed alignment and its position relative to the existing and proposed ROW. This preliminary base map must show lot or property lines, land ownership and addresses as per appraisal district records.

7. **Topographic Survey and Parcel Descriptions** All work must be tied to and conform with the City's Global Positioning System (GPS) control network and comply with Category 6, Condition I specifications of the Texas Society of Professional Surveyors' Manual of Practice for Land Surveying in the State of Texas, Ninth Edition. Include reference to a minimum of two (2) found boundary monuments from the project area.

a) Establish Horizontal and Vertical Control.
b) Establish both primary and secondary horizontal/vertical control.
c) Set project control points for Horizontal and Vertical Control outside the limits of project construction disturbance.
d) Horizontal control will be based on NAD 83 State plane coordinates (South Zone), and the data will have no adjustment factor applied – i.e. – the coordinate data will remain in grid.
e) Vertical control will be based on NAVD 88.
f) All control work will be established using conventional (non-GPS) methods. Perform topographic surveys to gather existing condition information.
g) Locate proposed soil/pavement core holes as drilled by the City's Geotechnical Engineering Consultant.
h) Obtain *x*, *y*, and *z* coordinates of all accessible existing sanitary sewer, storm sewer, water and gas lines as well as any other lines owned by third-parties and locate all visible utilities, wells and signs within the apparent ROW width along project limits. No utility connections will be shown. Surveying services, related to subsurface utility engineering (SUE) shall be provided as part of the scope of work for SUE.
i) Locate improvements within the apparent ROW.
j) Locate and identify trees, at least five inches in diameter within the apparent ROW.
k) Generate electronic planimetric base map for use in project design.
l) Set property corners and prepare right of way strip parcel map depicting all parcels proposed for acquisition. Metes and bounds descriptions must indicate parent tract areas based on the most accurate information available. Strip map will show entire parent tracts at "not to scale" and for information only. All existing easements within the parcels to be acquired and those within adjacent parcels must be shown.
m) Prepare individual signed and sealed parcel maps and legal descriptions for the required right of way acquisition for parcels and easements. A strip map showing all parcels required will be submitted along with parcel descriptions. Additional fees may be required in resolving boundary conflicts between Owners. A/E shall submit parcel maps and legal descriptions prior to the 60% submittal.

8. **Environmental Issues.** Identify and develop a scope of work for any testing, handling and disposal of hazardous materials and/or contaminated soils that may be discovered during construction.

9. **Public Involvement.** Participate in two public meetings. One public meeting shall be held after submittal of the Final Engineering Letter Report and one public meeting shall be held prior to start of project construction. Prepare notices, PowerPoint presentations, handouts and exhibits for meetings. Provide follow-up and response to citizen comments. Revise contract drawings to address citizen comments, as directed by the City. Prepare notices, handouts and exhibits for public information meetings.

10. **Subsurface Utility Investigation**

a) Provide subsurface utility engineering in accordance with ASCE Standard "ASCE C-I, 38-02, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data" including, but not limited to, hydro-excavation. The proposed subsurface utility investigation will be as follows:

1. Excavation – The survey scope includes working with a subsurface utility excavator to perform Quality Level A investigation of underground utilities in specified areas through the project limit. (Quality Level A involves the use of nondestructive digging equipment at critical points to determine the horizontal and vertical position of underground utilities, as well as the type, size, condition, material, and other characteristics.) Utilities located at this quality level will be physically located and tied to the topographic survey control. The utility will be identified and an elevation will be obtained to the top of the utility.
2. Utility Location – The survey scope includes locating certain utilities to Quality Level B (Quality Level B involves surveying visible above ground utility facilities, such as manholes, valve boxes, posts, etc., and correlating this information with existing utility records.) These utilities will be located by obtaining a One-Call Notice and measuring the marked locations.
3. Storm Water – Storm water facilities within the project limits will be located to Quality Level C. Locations will be based on the surveyed locations of accessible storm water manholes and drainage inlets.
4. Wastewater – Wastewater facilities within the project limits will be located to Quality Level C. Locations will be based on the surveyed locations of accessible wastewater manholes. Wastewater lines that are not to be replaced as part of this project and that fall within the footprint of construction-related excavation shall be located at Quality Level A.
5. Water – Water facilities within the project limits will be located to Quality Level C.
6. Gas – Gas facilities within the project limits will be located to Quality Level C by the A/E. The City Gas Department will provide Quality Level A. The A/E will coordinate this activity.

b) Inform local franchises whose utilities fall within the footprint of construction-related excavation of the potential for encountering their utility lines during construction and coordinate relocation or conflict avoidance.

11. **Construction Observation Services.** To Be Determined

12. **Start-up Services.** Provide on-site services and verification for all start-up procedures during actual start-up of major Project components, systems, and related appurtenances if needed and required.

13. **Training.** Coordinate required training of City staff and provide Operation and Maintenance Manuals.

14. **Warranty Phase.** Provide a maintenance guaranty inspection toward the end of the one-year period after acceptance of the Project. Note defects requiring contractor action to maintain, repair, fix, restore, patch, or replace improvement under the maintenance guaranty terms of the contract. Document the condition and prepare a report for the City staff of the locations and conditions requiring action, with its recommendation for the method or action to best correct defective conditions and submit to City Staff. Complete the inspection and prepare the report no later than sixty (60) days prior to the end of the maintenance guaranty period.

EXHIBIT "B"
MANDATORY INSURANCE REQUIREMENTS & INDEMNIFICATION
FOR A/E PROFESSIONAL SERVICES/CONSULTANT SERVICES
(Revised November 2013)

A. Consultant must not commence work under this agreement until all insurance required herein has been obtained and such insurance has been approved by the City. The Consultant must not allow any subcontractor to commence work until all similar insurance required of the subcontractor has been obtained.

B. Consultant must furnish to the City's Risk Manager, two (2) copies of Certificates of Insurance, showing the following minimum coverages by insurance company(s) acceptable to the City's Risk Manager. The City must be named as an additional insured for all liability policies, and a blanket waiver of subrogation is required on all applicable policies.

TYPE OF INSURANCE	**MINIMUM INSURANCE COVERAGE**
30-Day Written Notice of Cancellation, non-renewal or material change required on all certificates	**Bodily Injury & Property Damage Per occurrence - aggregate**
COMMERCIAL GENERAL LIABILITY including: 1. Broad Form 2. Premises - Operations 3. Products/ Completed Operations 4. Contractual Liability 5. Independent Contractors	$1,000,000 COMBINED SINGLE LIMIT
AUTOMOBILE LIABILITY to included 1. Owned vehicles 2.. Hired – Non-owned vehicles	$1,000,000 COMBINED SINGLE LIMIT
PROFESSIONAL LIABILITY including: Coverage provided shall cover all employees, officers, directors and agents 1. Errors and Omissions	$1,000,000 per claim / $2,000,000 aggregate (Defense costs not included in face value of the policy) If claims made policy, retro date must be prior to inception of agreement; have extended reporting period provisions and identify any limitations regarding who is an Insured
WORKERS' COMPENSATION EMPLOYERS' LIABILITY	Which Complies with the Texas Workers Compensation Act 500,000/500,000/500,000

C. In the event of accidents of any kind, Consultant must furnish the Risk Manager with copies of all reports within (10) ten days of accident.

D. Consultant must obtain workers' compensation coverage through a licensed insurance company in accordance with Texas law. The contract for coverage must be written on a policy and endorsements approved by the Texas Department of Insurance. The coverage provided must be in amounts sufficient to assure that all workers' compensation obligations incurred will be promptly met.

E. Consultant's financial integrity is of interest to the City; therefore, subject to Successful Consultant's right to maintain reasonable deductibles in such amounts as are approved by the City, Consultant shall obtain and maintain in full force and effect for the duration of this Contract, and any extension hereof, at Consultant's sole expense, insurance coverage written on an occurrence basis, by companies authorized and admitted to do business in the State of Texas and with an A.M. Best's rating of no less than A-VII.

F. The City shall be entitled, upon request and without expense, to receive copies of the policies, declarations page and all endorsements thereto as they apply to the limits required by the City, and may require the deletion, revision, or modification of particular policy terms, conditions, limitations or exclusions (except where policy provisions are established by law or regulation binding upon either of the parties hereto or the underwriter of any such policies). Consultant shall be required to comply with any such requests and shall submit a copy of the replacement certificate of insurance to City at the address provided below within 10 days of the requested change. Consultant shall pay any costs incurred resulting from said changes. All notices under this Article shall be given to City at the following address:

City of Corpus Christi
Attn: Risk Management
P.O. Box 9277
Corpus Christi, TX 78469-9277
Fax: (361) 826-4555

G. Consultant agrees that with respect to the above required insurance, all insurance policies are to contain or be endorsed to contain the following required provisions:

i. Name the City and its officers, officials, employees, volunteers, and elected representatives as additional insured by endorsement, as respects operations and activities of, or on behalf of, the named insured performed under contract with the City, with the exception of the workers' compensation and professional liability policies;

ii. Provide for an endorsement that the "other insurance" clause shall not apply to the City of Corpus Christi where the City is an additional insured shown on the policy;

iii. Workers' compensation and employers' liability policies will provide a waiver of subrogation in favor of the City; and

iv. Provide thirty (30) calendar days advance written notice directly to City of any suspension, cancellation, non-renewal or material change in coverage, and not less than ten (10) calendar days advance written notice for nonpayment of premium.

H. Within five (5) calendar days of a suspension, cancellation, or non-renewal of coverage, Successful Consultant shall provide a replacement Certificate of Insurance and applicable endorsements to City. City shall have the option to suspend Consultant's performance should there be a lapse in coverage at any time during this contract. Failure to provide and to maintain the required insurance shall constitute a material breach of this contract.

I. In addition to any other remedies the City may have upon Consultant's failure to provide and maintain any insurance or policy endorsements to the extent and within the time herein required, the City shall have the right to order Consultant to stop work hereunder, and/or withhold any payment(s) which become due to Consultant hereunder until Consultant demonstrates compliance with the requirements hereof.

J. Nothing herein contained shall be construed as limiting in any way the extent to which Successful Consultant may be held responsible for payments of damages to persons or property resulting from Consultant's or its subcontractors' performance of the work covered under this agreement.

K. It is agreed that Consultant's insurance shall be deemed primary and non-contributory with respect to any insurance or self insurance carried by the City of Corpus Christi for liability arising out of operations under this contract.

L. It is understood and agreed that the insurance required is in addition to and separate from any other obligation contained in this contract.

INDEMNIFICATION AND HOLD HARMLESS

Consultant agrees to indemnify, save harmless and defend the City of Corpus Christi, and its agents, servants, and employees, and each of them against and hold it and them harmless from any and all lawsuits, claims, demands, liabilities, losses and expenses, including court costs and attorneys' fees, for or on account of any injury to any person, or any death at any time resulting from such injury, or any damage to any property, which may arise or which may be alleged to have arisen out of the negligent performance of Consultant's services in connection with the work covered by this contract. The foregoing indemnity shall apply except if such injury, death or damage is caused by the sole or concurrent negligence of the City of Corpus Christi, its agents, servants, or employees or any other person indemnified hereunder.

Sample form for:
Payment Request
Revised 07/27/00

COMPLETE PROJECT NAME
Project No. XXXX
Invoice No. 12345
Invoice Date:

Basic Services:	**Contract**	**Amd No. 1**	**Amd No. 2**	**Total Contract**	**Amount Invoiced**	**Previous Invoice**	**Total Invoice**	**Percent Complete**
Preliminary Phase	$1,000	$0	$0	**$1,000**	$0	$1,000	$1,000	100%
Design Phase	2,000	1,000	0	**3,000**	1,000	500	1,500	50%
Bid Phase	500	0	250	**750**	0	0	0	0%
Construction Phase	2,500	0	1,000	**3,500**	0	0	0	0%
Subtotal Basic Services	$6,000	$1,000	$1,250	**$8,250**	$750	$1,500	$2,500	30%
Additional Services:								
Permitting	$2,000	$0	$0	**$2,000**	$500	$0	$500	25%
Warranty Phase	0	1,120	0	**1,120**	0	0	0	0%
Inspection	0	0	1,627	**1,627**	0	0	0	0%
Platting Survey	TBD	TBD	TBD	**TBD**	TBD	TBD	TBD	0%
O & M Manuals	TBD	TBD	TBD	**TBD**	TBD	TBD	TBD	0%
SCADA	TBD	TBD	TBD	**TBD**	TBD	TBD	TBD	0%
Subtotal Additional Services	$2,000	$1,120	$1,627	**$4,747**	$500	$0	$500	11%
Summary of Fees								
Basic Services Fees	$6,000	$1,000	$1,250	**$8,250**	$750	$1,500	$2,500	30%
Additional Services Fees	2,000	1,120	1,627	**4,747**	500	0	500	11%
Total of Fees	$8,000	$2,120	$2,877	**$12,997**	$1,250	$1,500	$3,000	23%

AMEND. NO. 1
EXHIBIT "C"
Page 1 of 1

City of Corpus Christi

SUPPLIER NUMBER
TO BE ASSIGNED BY CITY
PURCHASING DIVISION

CITY OF CORPUS CHRISTI
DISCLOSURE OF INTEREST

City of Corpus Christi Ordinance 17112, as amended, requires all persons or firms seeking to do business with the City to provide the following information. Every question must be answered. If the question is not applicable, answer with "NA". See reverse side for Filing Requirements, Certifications and definitions.

COMPANY NAME: **Freese and Nichols**

P. O. BOX: **N/A**

STREET ADDRESS: **800 N. Shoreline Blvd, Suite 1600N** **CITY:** **Corpus Christi** **ZIP:** **78401**

FIRM IS: 1. Corporation ☒ 2. Partnership ☐ 3. Sole Owner ☐
4. Association ☐ 5. Other ☐

DISCLOSURE QUESTIONS

If additional space is necessary, please use the reverse side of this page or attach separate sheet.

1. State the names of each "employee" of the City of Corpus Christi having an "ownership interest" constituting 3% or more of the ownership in the above named "firm."

Name	Job Title and City Department (if known)
N/A	

2. State the names of each "official" of the City of Corpus Christi having an "ownership interest" constituting 3% or more of the ownership in the above named "firm."

Name	Title
N/A	

3. State the names of each "board member" of the City of Corpus Christi having an "ownership interest" constituting 3% or more of the ownership in the above named "firm."

Name	Board, Commission or Committee
N/A	

4. State the names of each employee or officer of a "consultant" for the City of Corpus Christi who worked on any matter related to the subject of this contract and has an "ownership interest" constituting 3% or more of the ownership in the above named "firm."

Name	Consultant
N/A	

FILING REQUIREMENTS

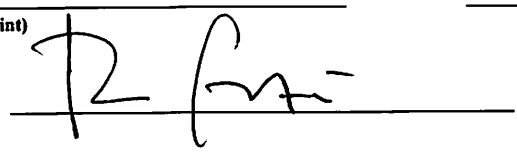
If a person who requests official action on a matter knows that the requested action will confer an economic benefit on any City official or employee that is distinguishable from the effect that the action will have on members of the public in general or a substantial segment thereof, you shall disclose that fact in a signed writing to the City official, employee or body that has been requested to act in the matter, unless the interest of the City official or employee in the matter is apparent. The disclosure shall also be made in a signed writing filed with the City Secretary. [Ethics Ordinance Section 2-349 (d)]

CERTIFICATION

I certify that all information provided is true and correct as of the date of this statement, that I have not knowingly withheld disclosure of any information requested; and that supplemental statements will be promptly submitted to the City of Corpus Christi, Texas as changes occur.

Certifying Person: **Ron Guzman, P.E.** **Title:** **Principal**

(Type or Print)

Signature of Certifying Person:  **Date:** 1.5.14

DEFINITIONS

a. "Board member." A member of any board, commission, or committee appointed by the City Council of the City of Corpus Christi, Texas.

b. "Economic benefit". An action that is likely to affect an economic interest if it is likely to have an effect on that interest that is distinguishable from its effect on members of the public in general or a substantial segment thereof.

c. "Employee." Any person employed by the City of Corpus Christi, Texas either on a full or part-time basis, but not as an independent contractor.

d. "Firm." Any entity operated for economic gain, whether professional, industrial or commercial, and whether established to produce or deal with a product or service, including but not limited to, entities operated in the form of sole proprietorship, as self-employed person, partnership, corporation, joint stock company, joint venture, receivership or trust, and entities which for purposes of taxation are treated as non-profit organizations.

e. "Official." The Mayor, members of the City Council, City Manager, Deputy City Manager, Assistant City Managers, Department and Division Heads, and Municipal Court Judges of the City of Corpus Christi, Texas.

f. "Ownership Interest." Legal or equitable interest, whether actually or constructively held, in a firm, including when such interest is held through an agent, trust, estate, or holding entity. "Constructively held" refers to holdings or control established through voting trusts, proxies, or special terms of venture or partnership agreements."

g. "Consultant." Any person or firm, such as engineers and architects, hired by the City of Corpus Christi for the purpose of professional consultation and recommendation.