CITY OF CORPUS CHRISTI
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 **LNV, Inc.**, a Texas corporation, 801 Navigation, Suite 300, Corpus Christi, Nueces County, Texas 78408, (**Architect/Engineer – A/E**), hereby agree as follows:

1. SCOPE OF PROJECT

Oso Water Reclamation Plant Nutrient Removal and Re-rate to 24 MGD-Phase 2 (Final) (Project No. E12206) - The Oso Water Reclamation Plant (WRP) is the largest of the six treatment plants in the City of Corpus Christi and is located at the corner of Ennis Joslin Road and Nile Drive, adjacent to the Texas A&M University-Corpus Christi Athletic Facility. The plant currently serves the large and growing service area on the City's south side which consists of approximately 24,143 acres and over 50% of the City's population. The Oso WRP is currently operating under a 20 milligrams per Liter (mg/L) BOD_5 (5-day biochemical oxygen demand) and 20 mg/L Total Suspended Solids permit and discharges into Oso Bay (Cayo del Oso) which is on the United States Environmental Protection Agency's list of impaired water bodies. The plant is operated with a current allocation of 16 staff members and produces an effluent quality that is in compliance with the Texas Commission on Environmental Quality's (TCEQ) Type II Reclaimed Water (§210.32) regulations.

The Oso WRP was originally constructed in 1941 and several expansion projects have occurred over the years. The most recent major upgrade to the Oso WRP was completed in 1982. The project consisted of converting the plant's activated sludge process to a contact stabilization process and upgrading the plant's treatment capacity to accommodate average daily flows (ADF) of 16.2 million gallons per day (MGD) and peak two-hour flows up to 98.0 MGD. The Oso WRP is currently configured as two parallel treatment trains; each rated at 8.1 MGD average daily flow. The Oso WRP currently treats about 11.3 MGD which represents approximately 70% of the plant's ADF design capacity and based on growth projections, this is expected to increase to approximately 15.2 MGD once the service area is completely developed. Per TCEQ regulations, design for increased capacity must be underway when flows to the plant reach 75% of design capacity.

As mentioned above, the TCEQ has recently adopted more stringent restrictions on ammonia levels intended to protect sea grasses in the bay systems. On April 29, 2011, the TCEQ issued a renewal of the plant's Texas Pollutant Discharge Elimination System (TPDES) permit which included new effluent ammonia limits on 30-day average, 7-day average and daily maximum of 4 mg/L, 6mg/L and 10mg/L, respectively, along with a milestone compliance date on or before October 29, 2013. Prior to this renewal, the Oso WRP permit had not contained an ammonia limitation. The purpose of the compliance schedule was to provide sufficient time for the City to design, construct and commission the necessary improvements to meet this ammonia limit in the near-term. The existing contact stabilization configuration of the Oso WRP was designed to remove BOD efficiently, but is not well suited for ammonia removal nor is it allowed by TCEQ to be used as a nitrifying

process to remove ammonia. As a result, major facility upgrades at the Oso WRP are necessary to comply with this new ammonia limit. It should also be noted there are indications from the regulators that Total Nitrogen (TN) and Total Phosphorus (TP) limits are likely to be imposed upon the Oso WRP within the next several permit renewal cycles.

To attain compliance by October 29, 2013, the City adopted a strategy of implementing near-term (Phase 1) and long-term (Phase 2) improvements at the Oso WRP. This strategy allows the City to implement cost effective improvements as a temporary means of meeting the new effluent ammonia requirements in the near-term while planning, designing, and implementing the permanent long-term Phase 2 facility improvements following completion of other on-going major capital projects such as the New Broadway Wastewater Treatment Plant.

Phase 1 improvements included the temporary Breakpoint Chlorination Facility (BPC) and Step Feed modifications which are currently under construction and are scheduled for completion in September 2013. Phase 1 will achieve compliance with the ammonia limitations in the City's discharge permit within the mandated timeframe. However, as a result of the increased operating and maintenance costs and added complexity to the operation of the plant, these improvements will not meet the cost/benefit requirements of a long-term solution.

The proposed Phase 2 scope of service has been broken into two contracts referred to as Contract A and Contract B. Contract A includes the Phase 2 facility upgrades necessary for the plant to meet additional anticipated regulatory requirements, provide additional treatment capacity to meet projected increased plant flows, to ensure continued plant reliability, and to replace the temporary Phase 1 improvements. Technical Memorandum No. 6-Regulatory Compliance and Implementation Plan describes the major capital improvements necessary to meet the current and anticipated (future) effluent regulations. Contract B includes the decommissioning of the Laguna Madre Wastewater Treatment Plant (WWTP) and a transfer pump station. Technical Memorandum No. 9-Oso WRP Phase 2 Cost/Benefit Evaluation provides the background information on the drivers of the Oso WRP Nutrient Removal project, presents the results of a cost/benefit evaluation, and describes additional recommended improvements associated with the decommissioning and flow transfer from the Laguna Madre WWTP. This Phase 2 scope of service is intended to implement the improvements recommended in TM-6 and TM-9.

At this time, this contract is based on the traditional project delivery method of design-bid-build for both Contracts A & B. However, City staff is currently investigating the feasibility, benefits and weaknesses of an alternative delivery method referred to as Construction Manager at Risk (CMAR). The preferred delivery method will need to be selected by the City prior to beginning the design phase (approximately 30% design level) and this contract will need to be modified appropriately if any alternative delivery methods are chosen.

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 total fee not to exceed **$9,998,629.00**, (**Nine Million Nine Hundred Ninety Eight Thousand Six Hundred Twenty Nine Dollars and Zero Cents**). Monthly invoices will 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 70% 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 30% 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

Oscar R. Martinez, Date
Assistant City Manager

RECOMMENDED

5/13/13
Daniel Biles, P.E., Date
Director of Engineering Services

5-13-13
Operating Department Date

APPROVED AS TO FORM

Office of Management Date
and Budget

ATTEST

Armando Chapa, City Secretary

Project No. E12206
Fund Source No. 550950-4249-00000-E12206
Fund Name: Wastewater 2012B CIP (RevBds)
Encumbrance No. _____

LNV, INC.

5-9-13
Dan S. Leyendecker, P.E., Date
President
801 Navigation, Suite 300
Corpus Christi, Texas 78408
(361) 883-1984 Office
(361) 883-1986 Fax

EXHIBIT "A"
CITY OF CORPUS CHRISTI, TEXAS

OSO WATER RECLAMATION PLANT NUTRIENT REMOVAL AND RE-RATE TO 24 MGD - PHASE 2 FINAL
CITY PROJECT E12206

I. SCOPE OF SERVICES

A. Basic Services.

1. Preliminary Phase. The A/E will:

It is the intent of the Preliminary Phase to provide a study and report of project scope with economic and technical evaluation of alternatives, and upon approval, proceed with a **Preliminary Engineering Report (PER)** which includes preliminary designs (30%), drawings, and written description of the project. This report shall include:

a. Provide scope of soil investigations, borings, and laboratory testing and make recommendations to the City. Coordinate all required services with the Geotech Lab. (The City Engineering Services Department will provide necessary soil investigation and testing under one or more separate contracts.)
b. Confer with the City staff regarding the design parameters of the Project. The A/E will participate in multiple formal meetings with City staff, provide agenda and purpose for each formal meeting; document and distribute meeting minutes and meeting report within seven (7) working days of the meeting as described in Exhibit A-1. The A/E will discuss the project with the operating department and other agencies, such as the Texas Department of Transportation (TxDOT) and Texas Commission on Environmental Quality (TCEQ) as required to satisfactorily complete the Project.
c. Submit one (1) copy in an approved electronic format, and one (1) paper copy of the **PER**, for review with City staff. **PER** will include the following (with **CONSTRUCTABILITY** being a major element in all the following items):
    1) Review the Project with the respective Operating Department(s) and discussions including clarification and definition of intent and execution of the Project. The A/E will meet with City staff to collect data, discuss materials and methods of construction, and identify design and construction requirements.
    2) Review and investigation of available records, archives, and pertinent data related to the Project including taking photographs of the Project site, list of potential problems and possible conflicts, intent of design, and improvements required, and conformance to relevant Master Plan(s).
    3) Identify results of site field investigation including site findings, existing conditions, potential right of way/easements to be acquired, and probable Project design solutions (which are common to municipalities), in accordance with S.U.E. (Subsurface Utility Engineering) standards (CI/ASCE 38-02). Subsurface investigation will be paid as an additional service.
    4) Provide a presentation of pertinent factors, sketches, designs, cross-sections, and parameters which will or may impact the design, including Engineering design basis, preliminary layout sketches, identification of needed additional services, preliminary details of construction of critical

elements, identification of needed permits, identification of specifications to be used, identification of quality and quantity of materials of construction, and other factors required for a professional design (CONSTRUCTABILITY).

5) Advise of environmental site evaluations and archeology reports that are needed for the Project (environmental issues and archeological services to be an Additional Service).
6) Identify and analyze requirements of governmental authorities having jurisdiction to approve design of the Project including permitting, environmental, historical, construction, and geotechnical issues; meet and coordinate with agencies such as RTA, CDBG, USPS, CCISD, community groups, TDLR, etc.
7) Confer, discuss, and meet with City operating department(s) and Engineering Services staff to produce a cohesive, well-defined proposed scope of design, probable cost estimates and design alternatives.
8) Provide a letter stating that the A/E and Sub-consultant Engineers have checked and reviewed the PER prior to submission.
9) ~~Provide an analysis on project impacts towards "re-Engineering" and effects on cost savings toward City operations, which this project will affect.~~

City staff will provide one set only of the following information (as applicable):

a. Record drawings, record information of existing facilities, and utilities (as available from City Engineering files)
b. The preliminary budget, specifying the funds available for construction
c. Aerial photography for the Project area
d. Through separate contract, related GIS mapping for existing facilities.
e. A copy of existing studies and plans, as available from City Engineering files.
f. Field location of existing city utilities. (A/E to coordinate with City Operating Department.)
g. Provide applicable Master Plans.
h. Provide bench marks and coordinates.

2. Design Phase. Upon approval of the preliminary phase, designated by receiving authorization to proceed, the A/E will:

a. Study, verify, and implement **PER** recommendations including construction sequencing, connections to the existing facilities, and restoration of property and incorporate these plans into the construction plans. Development of the construction sequencing will be coordinated with the City Operating Department(s) and Engineering Services staff.
b. Prepare one (1) set of the **construction bid and contract documents** (electronic and full-size hard copies using City Standards as applicable), including contract agreement forms, general conditions and supplemental conditions, notice to bidders, instruction to bidders, insurance, bond requirements, and preparation of other contract and bid related items; specifications and drawings to fix and describe, for **one (1)** bid, the size and character of the entire Project; description of materials to be utilized; and such other essentials as may be necessary for construction and cost analysis.
c. Provide assistance to identify testing, handling and disposal of any hazardous materials and/or contaminated soils that may be discovered during construction (to be included under additional services).

d. Prepare final quantities and estimates of probable costs with the recommended construction schedule. The construction schedule will provide a phased approach to track progress and payments.

e. For the 60% and Pre-Final (100%) submittal stages, A/E shall furnish one (1) set of the **interim plans** (electronic and full-size hard copies using City Standards as applicable) to the City staff for review and approval purposes with estimates of probable construction costs. Show existing elevations resulting from topographic survey. Show locations of utility lines, structures and their respective elevations resulting from the S.U.E. Use the City's numbering system for utility manholes. Identify distribution list for plans and bid documents to all affected utilities including City and all other affected entities. **Required** with the interim plans is a "Plan Executive Summary" which will identify and summarize the project by distinguishing key elements such as:
    - Pipe Size or Building Size
    - Pipe Material, etc.
    - Why one material is selected over another
    - Pluses of selections
    - ROW requirements and why
    - Permit requirements and why
    - Easement requirements and why
    - Embedment type and why
    - Constructability, etc.
    - Specific requirements of the City
    - Standard specifications
    - Non-standard specifications
    - Any unique requirements
    - Cost, alternatives, etc.
    - Owner permit requirements and status

f. Assimilate all review comments, modifications, additions/deletions and proceed to next phase, upon Notice to Proceed.

g. Compile comments and incorporate any requirements into the plans and specifications, and advise City of responding and non-responding participants.

h. Provide Quality Assurance/Quality Control (QA/QC) measures to ensure that submittal of the interim, pre-final (if required), and final complete plans and complete bid documents with specifications accurately reflect the percent completion designated and do not necessitate an excessive amount of revision and correction by City staff. **The A/E shall submit a letter declaring that all Engineering disciplines of all phases of the submittals have been checked, reviewed, and are complete prior to submission, and include signature of all disciplines including but not limited to structural, civil, mechanical, electrical, etc.**

i. ~~If required, provide traffic controls including a Traffic Control Plan, illumination, markings and striping, signalization, and as delineated by the City Traffic Engineering Department.~~

j. ~~Provide one (1) set of the final (100%) plans (unsealed and unstamped - electronic and full-size hard copies using City Standards as applicable) for City's final review.~~

k. ~~Assimilate all final review comments (if any).~~

l. Upon approval by the Director of Engineering Services, provide one (1) set of the **final plans and contract documents** (electronic and full-size hard copies using City Standards as applicable) suitable for reproduction. Said bid documents henceforth become the sole property and ownership of the City of Corpus Christi.

m. The City agrees that any modifications of the submitted final plans (for other uses by the City) will be evidenced on the plans and be signed and sealed by a professional Engineer prior to re-use of modified plans.
n. Prepare and submit monthly status reports with action items developed from monthly progress and review meetings.
o. Provide a Storm Water Pollution Prevention Plan, if required.

The City staff will:

a. Designate an individual to have responsibility, authority, and control for coordinating activities for the construction contract awarded.
b. Provide the budget for the Project specifying the funds available for the construction contract.
c. Provide the City's standard specifications, standard detail sheets, standard and special provisions, and forms for required bid documents.

3. Bid Phase. The A/E will:

a. Participate in the pre-bid conference and provide a recommended agenda for critical construction activities and elements impacted the project.
b. Assist the City in solicitation of bids by identification of prospective bidders, and review of bids by solicited interests.
c. Review all pre-bid questions and submissions concerning the bid documents and prepare, in the City's format, for the Engineering Services' approval, any addenda or other revisions necessary to inform contractors of approved changes prior to bidding.
d. Attend bid opening, analyze bids, evaluate, prepare bid tabulation, and make recommendation concerning award of the contract.
e. In the event the lowest responsible bidder's bid exceeds the project budget as revised by the Engineering Services in accordance with the A/E's design phase estimate required above, the A/E will, at its expense, confer with City staff and make such revisions to the bid documents as the City staff deems necessary to re-advertise that particular portion of the Project for bids.

The City staff will:

a. Arrange and pay for printing of all documents and addenda to be distributed to prospective bidders.
b. Advertise the Project for bidding, maintain the list of prospective bidders, receive and process deposits for all bid documents, issue (with the assistance of the A/E) any addenda, prepare and supply bid tabulation forms, and conduct bid opening.
c. Receive the A/E's recommendation concerning bid evaluation and recommendation and prepare agenda materials for the City Council concerning bid awards.
d. Prepare, review and provide copies of the contract for execution between the City and the contractor.

4. Construction Phase. The A/E will perform contract administration to include the following:

a. Participate in pre-construction meeting conference and provide a recommended agenda for critical construction activities and elements impacted the project.
b. Review for conformance to contract documents, shop and working drawings, materials and other submittals.
c. Review field and laboratory tests.

d. Provide interpretations and clarifications of the contract documents for the contractor and authorize required changes, which do not affect the contractor's price and are not contrary to the general interest of the City under the contract.
e. Make regular visits to the site of the Project to confer with the City project inspector and contractor to observe the general progress and quality of work, and to determine, in general, if the work is being done in accordance with the contract documents. This will not be confused with the project representative observation or continuous monitoring of the progress of construction.
f. Prepare change orders as authorized by the City (coordinate with the City's construction division); provide interpretations and clarifications of the plans and specifications for the contractor and authorize minor changes which do not affect the contractor's price and are not contrary to the general interest of the City under the contract.
g. Make final inspection with City staff and provide the City with a Certificate of Completion for the project.
h. As applicable, review and assure compliance with plans and specifications, the preparation of operating and maintenance manuals (by the Contractor) for all equipment installed on this Project. These manuals will be in a "multimedia format" suitable for viewing with Microsoft's Internet Explorer, version 3.0. As a minimum the Introduction, Table of Contents, and Index will be in HTML (HyperText Markup Language) format, with HyperText links to the other parts of the manual. The remainder of the manual can be scanned images or a mixture of scanned images and text. Use the common formats for scanned images - GIF, TIFF, JPEG, etc.. Confirm before delivery of the manuals that all scanned image formats are compatible with the image-viewing software available on the City's computer - Imaging for Win95 (Wang) and Microsoft Imaging Composer. Deliver the manuals on a CD-ROM, not on floppy disks.
i. Review construction "red-line" drawings, prepare record drawings of the Project as constructed (from the "red-line" drawings, inspection, and the contractor provided plans) and deliver to the Engineering Services a reproducible set and electronic file (AutoCAD r.14 or later) of the record drawings within two (2) months of final acceptance of the project. All drawings will be CADD drawn using dwg format in AutoCAD, and graphics data will be in dxf format with each layer being provided in a separate file. Attribute data will be provided in ASCII format in tabular form. All electronic data will be compatible with the City GIS system.

The City staff will:

a. Process applications/estimates for payments to contractor
b. Conduct the final acceptance inspection with the A/E

B. Additional Services (ALLOWANCE)

This section defines the scope (and ALLOWANCE) for compensation for additional services that may be included as part of this contract, but the A/E will not begin work on this section without specific written approval by the Director of Engineering Services. Fees for Additional Services are an allowance for potential services to be provided and will be **negotiated** by the Director of Engineering Services as required. The A/E will, with written authorization by the Director of Engineering Services, do the following:

1. **Permitting & Agency Coordination. (AUTHORIZED)** Furnish the City all Engineering data and documentation necessary for all required permits. The A/E will prepare this

documentation for all required signatures. The A/E will prepare and submit all permits **as applicable** to the appropriate local, state, and federal authorities, including, but not limited to:

a. Wetlands Delineation and Permit
b. Temporary Discharge Permit
c. NPDES Permit/Amendments
d. Texas Commission of Environmental Quality (TCEQ) Permits/Amendments
e. Nueces County
f. Texas Historical Commission (THC)
g. U.S. Fish and Wildlife Service (USFWS)
h. U.S. Army Corps of Engineers (USACE)
i. United States Environmental Protection Agency (USEPA)
j. Texas Department of Licensing and Regulation (TDLR)

2. **Topographic Survey. (AUTHORIZED)** A/E will provide field surveys, as required for design including the necessary control points, coordinates and elevations of points (as required for the aerial mapping of the Project area - aerial photography to be provided by City). Establish base survey controls for line and elevation staking (not detailed setting of lines and grades for specific structures or facilities). 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/E will also provide subsurface utility engineering (SUE) and land acquisition services as described in Exhibit A-1 and as required by the project. These services must be authorized by the City prior to commencement of work.

3. **Environmental Issues. (TBD)**

No Environmental issues have been identified and scoped with this contract amendment. Following the initiation of the design as directed by the City during the course of the project, the City may elect to amend the contract and negotiate a scope of work to:

A. Provide environmental site evaluations and Archeology Reports that are needed for the Project.
B. 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.

4. **Construction Observation Services. (TBD)**

Provide a Construction Management Team consisting of a Project Representative (PR), Project Construction Inspector (PCI), and Project Administrative Assistant (PAA) as described in Exhibit A-1.

A. Through such additional observations of Contractor's work in progress and field checks of materials and equipment by the PR and assistants, the A/E shall endeavor to provide further protection for the CITY against defects and deficiencies in the work.
B. The duties and responsibilities of the PR are described as follows:

1. General: PR will act as directed by and under the supervision of A/E, and will confer with A/E regarding PR's actions. PR's dealings in matters pertaining to the Contractor's work in progress shall in general be with A/E and Contractor, keeping the CITY advised as necessary.
2. Conference and Meetings: Attend meetings with Contractor, such as pre-construction conferences, progress meetings, job conferences and other project-related meetings as required by the City, and prepare and circulate copies of minutes thereof.
3. Liaison:
   A. Serve as liaison with Contractor, working principally through Contractor's superintendent and assist in understanding the intent of the Contract Documents.
   B. PR shall communicate with CITY with the knowledge of and under the direction of A/E
4. Interpretation of Contract Documents: Report when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued.
5. Shop Drawings and Samples:
   A. Receive Samples, which are furnished at the Site by Contractor, and notify of availability of Samples for examination.
   B. Record date of receipt of Samples and approved Shop Drawings.
   C. Advise Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which PR believes that the submittal has not been approved.
6. Review of Work and Rejection of Defective Work:
   A. Conduct on-Site observations of Contractor's work in progress to assist A/E in determining if the Work is in general proceeding in accordance with the Contract Documents.
   B. Report whenever PR believes that any part of Contractor's work in progress will not produce a completed Project that conforms to the Contract Documents or will prejudice the integrity of the design concept of the completed Project, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise City and A/E of that part of work in progress that PR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
   C. Observe whether Contractor has arranged for inspections required by Laws and Regulations, including but not limited to those to be performed by public agencies having jurisdiction over the Work.
7. Records:
   A. Maintain orderly files for correspondence, reports of job conferences, reproductions of original Contract Documents including all Change Orders, Field Orders, Work Change Directives, Addenda, additional Drawings issued subsequent to the Contract, A/E's clarifications and interpretations of the Contract Documents, progress reports, Shop Drawing and Sample submittals received from and delivered to Contractor, and other Project related documents.
   B. Prepare a daily report utilizing approved City format, recording Contractor's hours on the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to A/E and the City.

8. Reports:
   A. Furnish periodic reports as required of progress of the Work and of Contractor's compliance with the progress schedule and schedule of Shop Drawing and Sample submittals.
   B. Report immediately to the CITY and A/E the occurrence of any Site accidents, any Hazardous Environmental Conditions, emergencies, or acts of God endangering the work, and property damaged by fire or other causes.
   C. Provide project photo report on CD-ROM at the rate of a minimum of two photographs per day, including an adequate amount of photograph documentation of utility conflicts.
9. Completion:
   A. Before the issue of Certificate of Completion, submit to Contractor a list of observed items requiring completion or correction.
   B. Participate in a final inspection in the company of A/E, the CITY, and Contractor and prepare a final list of items to be completed or corrected.
   C. Observe whether all items on final list have been completed or corrected and make recommendations concerning acceptance and issuance of the Notice of Acceptability of the Work.

5. Start-up & Training 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, as described in Exhibit A-1.

Provide Training services as described in Exhibit A-1.

Provide factory witness testing as described in Exhibit A-1.

6. 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.

7. SCADA & O&M Documentation.

Provide standardized SCADA documentation, which will include PFDs, P&IDs, loop sheets, logics, SCADA architecture, DCS I/O lists, instrument lists, tie-in lists, piping lists, equipment lists, and instrumentation specification sheets. The construction documents will include the requirements within the Construction Contract and specifications that the Contractor is to prepare SCADA documents as specified, for submission to the A/E for review and approval. A/E will provide the final SCADA documentation to City in organized format when approved.

Prepare an Operation and Maintenance Manual for submittal to TCEQ as required by 30 TAC Chapter 217. Incorporate review comments and develop a FINAL O&M Manual as accepted by TCEQ.

8. **Public Involvement**. **(ALLOWANCE)** Provide authorized services as described in Exhibit A-1.

9. **Conformed Contract Documents**. Provide authorized services as described in Exhibit A-1.

10. **Existing Facilities Condition Assessment. (AUTHORIZED)** Provide authorized services as described in Exhibit A-1.

11. **Filtration & UV Disinfection Feasibility Study. (AUTHORIZED)** Provide authorized services as described in Exhibit A-1.

12. **Windstorm Certification.** Provide all required services for Winstorm Certification as described in Exhibit A-1.

13. **Peer Review Coordination & Response. (AUTHORIZED)** Provide authorized peer review coordination and response services as described in Exhibit A-1.

14. **LMWWTP Decommissioning.** Provide authorized services as described in Exhibit A-1.

15. **Biogas/Natural Gas Onsite Cogeneration. (AUTHORIZED)** Provide authorized services as described in Exhibit A-1.

16. **Oso WRP Energy Audit. (AUTHORIZED)** Provide authorized services as described in Exhibit A-1.

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."

2. SCHEDULE

The detailed project schedule for each design task and construction phase is provided in Appendix B. In addition, a preliminary project cost breakdown by fiscal year is shown for design, construction, contingency and inspection.

3. FEES

A. 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 A/E 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 ENGINEER's estimate (and City 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.

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

C. Summary of Fees Table

	CONTRACT A* (OSO WRP)	CONTRACT B* (LMWWTP)	TOTAL
BASIC SERVICES			
1. Preliminary Phase*	$1,293,283	$620,514	$1,913,797
2. Design Phase*	$2,564,148	$1,230,252	$3,794,400
3. Bid Phase*	$71,410	$34,060	$105,470
4. Construction Phase*	$862,552	$414,788	$1,277,340
Subtotal Basic Services	**$4,791,393**	**$2,299,614**	**$7,091,007**
ADDITIONAL SERVICES (ALLOWANCE)			
1. Permitting & Agency Coordination* (AUTHORIZED)	$129,083	$97,100	$226,183
2. Topo Survey & Land Acquisition (AUTHORIZED)	$82,944	$157,066	$240,010
3. Environmental Issues (TBD)	$0	$0	$0
4. Construction Observation Services (TBD)	$0	$0	$0
5. Start-Up & Training*	$250,068	$59,008	$309,076
6. Warranty Phase*	$88,086	$24,876	$112,962
7. SCADA & O&M Documentation*	$166,461	$35,220	$201,681
8. Public Involvement*	$12,037	$12,057	$24,094
9. Conformed Contract Documents*	$82,428	$34,790	$117,218
10. Exist. Facilities Condition Assessment (AUTHORIZED)	$295,390	$0	$295,390
11. Filtration & UV Disinfection Study (AUTHORIZED)	$94,358	$0	$94,358
12. Windstorm Certification*	$86,456	$20,904	$107,360
13. Peer Review - Coord. & Response* (AUTHORIZED)	$367,305	$88,068	$455,373
14. LMWWTP Decommissioning*	$0	$299,840	$299,840
15. Biogas/Natural Gas Onsite Cogen. (AUTHORIZED)	$152,661	$0	$152,661
16. Oso WRP Energy Audit (AUTHORIZED)	$271,416	$0	$271,416
Subtotal Additional Services	**$2,078,693**	**$828,929**	**$2,907,622**
TOTAL FEE	**$6,870,086**	**$3,128,543**	**$9,998,629**

NOTES:

* Rates have been escalated to the midpoint of construction for each contract.

EXHIBIT "A-1"
SCOPE OF WORK

CITY OF CORPUS CHRISTI
OSO WATER RECLAMATION PLANT NUTRIENT REMOVAL
AND RE-RATE TO 24 MGD - PHASE 2 FINAL
CITY PROJECT NO.E12206

TABLE OF CONTENTS

LIST OF TABLES

GENERAL INFORMATION

The Oso Water Reclamation Plant (Oso WRP) serves a large and growing portion of the City of Corpus Christi, Texas (City). Significant facility upgrades are necessary for the plant to meet anticipated regulatory requirements, future plant flows, to ensure continued plant reliability, and to replace the temporary Phase 1 Breakpoint Chlorination (BPC) Facility. The BPC Facility is currently being constructed as a temporary means of meeting the plant's new effluent ammonia requirements in the short-term while planning, designing and implementing the permanent long-term Phase 2 improvements. Technical Memorandum No. 6 – Regulatory Compliance and Implementation Plan completed in Phase 1 describes the major capital improvements necessary to meet the current and anticipated (future) effluent regulations. In addition, Technical Memorandum No. 9 – Oso WRP Phase 2 Cost/Benefit Evaluation provides the background information on the drivers of the Oso WRP Nutrient Removal project, presents the results of a cost/benefit evaluation, and describes additional recommended improvements associated with the decommissioning and flow transfer from the Laguna Madre WWTP. This Phase 2 scope of service is intended to implement the improvements recommended in TM-6 and TM-9.

The LNV Team consisting of Jacobs, Colwell & Associates, and Alan Plummer Associates (LNV or Engineer), has been retained by the City to provide engineering services for the Oso WRP Nutrient Removal Project (Ammonia). On April 29, 2011, the Texas Commission of Environmental Quality (TCEQ) issued a renewal of the plant's Texas Pollutant Discharge Elimination System (TPDES) permit which included a new monthly effluent ammonia limit of 4 mg/L. Prior to this renewal, the Oso WRP permit did not contain an ammonia limitation. The renewed permit also included a compliance date of October 29, 2013 to meet the new ammonia limit. The purpose of the compliance schedule was to provide sufficient time for the City to design, construct, and commission the necessary improvements to meet this ammonia limit. Phase 1 of this project includes the temporary Breakpoint Chlorination Facility which is currently under construction and is scheduled for completion in August 2013. The near-term (temporary) solutions are described in more detail in Technical Memorandum No. 3 – Ammonia Removal Alternatives Evaluation dated January 3, 2012.

Description of Project Scope

The Oso WRP is the largest of 6 treatment plants owned and operated by the City of Corpus Christi. The most recent major upgrade to the Oso WRP was completed in 1982 when the plant's activated sludge process was converted to contact stabilization and designed to accommodate average daily flows of 16.2 MGD and peak hour flows of up to 98.0 MGD. Oso WRP produces an effluent quality that is in compliance with TCEQ's Type II Reclaimed Water (§210.32) regulations. The Oso WRP is configured as two parallel trains; each rated at 8.1 MGD average daily flow. The contact stabilization configuration is designed to remove BOD efficiently, but is not well-suited for ammonia removal and is actually not allowed by TCEQ to be used as a nitrifying process. As a result, the long-term improvements will require major facility upgrades.

Based on workshops the team conducted with the City, the Oso WRP upgrades must achieve the following goals and objectives:

- Maintain regulatory compliance
- Provide biological ammonia and total nitrogen removal
- Provide accommodations for implementing future phosphorus removal
- Provide Coliform and Enterococci removal and/or inactivation
- Re-rate the average daily flow capacity to meet anticipated future flows
- Maintain peak hour flow capacity of 98 MGD
- Improve process automation and monitoring
- Reduce process and maintenance costs
- Reduce process odors
- Provide operational and maintenance flexibility

Phase 2 Improvements

The Phase 2 improvements to meet the goals and objectives described above are described in detail in TM-6 and will consist of the following elements as shown in Appendix A:

- Site Development & Yard Piping – additional cut/fill as needed for the final plant layout, paving, grading, and access roadways, and drainage improvements. Includes site landscaping, on-site miscellaneous yard piping, interconnecting process piping, tie-ins to existing and proposed treatment facilities and coordination with Oso WRP's existing hydraulic profile

- New Influent Pump Station –80 MGD capacity, depending upon the results of the evaluation to either eliminate Lift Station No. 1 or consolidate Lift Stations No. 1 and No. 2 into a single submersible style station with dual wet wells; the influent pump station will include a building, flow measurement, pump hoisting system, and automated controls.

- New Headworks – mechanical bar screens with associated washers/compactors for the screenings, vortex grit removal with grit pumps and classifiers, and flow splitting.

- New Odor Control System – odor control system to serve both the new influent pump station and headworks

- New Process Train No. 3 Aeration Basin – approximately 3 MG volume, anoxic and oxic zones, provisions to biologically remove phosphorus in the future, anoxic zone submersible mixers, fine bubble diffused aeration system, internal basin mixed liquor return (MLR) pumps and piping, return activated sludge piping, upgrades to the process air system (blowers & piping), and flow splitter structure

- New Process Train No. 4 Aeration Basin – approximately 3 MG volume, anoxic and oxic zones, provisions to biologically remove phosphorus in the future, anoxic zone submersible mixers, fine bubble diffused aeration system, MLR pumps and piping, return activated sludge piping, upgrades to the process air system (blowers & piping), and flow splitter structure

- Reconfigure Existing Process Train No. 1 & No. 2 (East and West) Aeration Basins – install new baffle walls to create anoxic zones, submersible mixers, fine bubble diffused aeration, diffused air piping, upgrades to the process air system, mixed liquor return (MLR) pumps and piping, walkways/catwalks, and return activated sludge piping

- Upgrade Disinfection System – new chlorine solution pumping system, baffles, mixing, chlorine contact chamber mechanical internals

- Electrical System Upgrades – overall site electrical for new process facilities, instrumentation and controls, two new electrical control rooms (ECRs), four (4) new standby electrical generators, relocation of two (2) existing generators, and area lighting

- SCADA System – new plant-wide supervisory control and data acquisition (SCADA) system to monitor and control all **new** plant processes

- Site and Civil Design – new yard piping to connect new process units, paving and grading, and landscape architectural elements

- Maintenance Building – new facility with maintenance bays, shop, parts storage, storage, offices, restrooms, and locker rooms

- Laguna Madre WWTP (LMWWTP) Decommissioning & Transfer Pump Station – overall decommissioning and demolition of the entire treatment plant, 17.5 MGD lift station and force main to transfer wastewater flows from the LMWWTP service area to the Oso WRP, and effluent force main to transfer effluent from the Oso WRP back to the LMWWTP effluent line supplying the NASCC. These improvements are outlines and described in TM-9.

- Condition Assessment of Existing Facilities – evaluate the condition, capacity, and treatment reliability of the existing facilities that will remain in service after the Phase 2 improvements are complete. Any additional design tasks associated with items identified in the condition assessment to be rehabilitated or replaced are not included in this scope and fee proposal,

including the effluent outfall facilities, administration building, belt press building, digesters, and clarifiers.

Scope Limiting Assumptions

The following scope limiting assumptions have been defined:

- The total scope of the project will be delivered via one single contract (ie. one set of contract documents).
- The Preliminary Project Schedule assumes the project will receive Notice to Proceed from the City no later than July 2013.
- The City or Contractor will pay all fees associated with permit applications and plan review including City of Corpus Christi Development Services, Nueces County, TCEQ, and other agencies as required.
- The starting point for this Design is based upon the major treatment processes and system recommendations in Technical Memorandum No. 6 – Regulatory Compliance & Implementation Plan. Upgrades or evaluations to the new existing Administration Building, Belt Press Solids Dewatering Building and/or those facilities identified during the condition assessment as requiring improvements are specifically omitted from the project.
- This contract is based on the traditional project delivery method of design-bid-build for both Contracts A & B. However, City staff is currently investigating the feasibility, benefits and weaknesses of an alternative delivery method referred to as Construction Manager at Risk (CMAR). The preferred delivery method will need to be selected by the City prior to beginning the design phase (approximately 30% design level) and this contract will need to be modified appropriately if any alternative delivery methods are chosen.

Phase 2 Site Plan, Construction Estimate and Project Schedule

The Phase 2 Preliminary Site Plan for the Oso Phase 2 improvements along with a preliminary routing plan for the LMWWTP transfers are shown in Appendix A. The Preliminary Construction Estimates are provided in Appendix B and the Preliminary Project Schedule is provided in Appendix C. The Preliminary Project Schedule takes into account a phased approach for all of the Phase 2 improvements and may require modification throughout the course of the Project.

Design Team

The firms involved in this Project are listed below in Table 1 with their respective disciplines:

Table 1 Design Team

Firm	Disciplines
LNV, Inc.	Project Management Condition Assessment - Structural General, Civil and Site Design LMWWTP Decommissioning LMWWTP Transfer Pump Station Process/Mechanical Design Structural Design Architectural Design Topographic Survey Subsurface Utility Engineering (SUE) Land Acquisition Cost Estimating – QA/QC SWPPP Construction Administration (TBD) Start-Up & Training Services Warranty Energy Audit
Jacobs Engineering	Process Unit Design & Criteria Condition Assessment – Mech/Process Process/Mechanical Design Plumbing/HVAC Design Cost Estimating Constructability Review Start-Up & Training Services SCADA & O&M Documentation Construction Administration (TBD) Biogas/Natural Gas Cogeneration
Colwell & Associates	Electrical Design (All facilities) Instrumentation & Controls Design (All Facilities)
Alan Plummer Associates, Inc. (APAI)	Permitting & Agency Coordination
(TBD)	Landscape Architectural Design (if required)

Design Standards

The Engineer will be responsible for providing the work to meet the City of Corpus Christi standards. The Engineer will also comply with the following standards:

- All applicable Uniform and National codes along with the City amendments as adopted by ordinance
- AWWA, NSF, ACI, ASTM, ANSI, etc., as applicable

BASIC SERVICES

Project Management

Under this task, the Engineer will prepare a Project Procedures Manual (PPM) that will be distributed to all project team members. The Manual will be prepared by LNV's Project Manager and will contain the scope of work, project directory, communication protocols, schedule, budget, calendar, standards, and Quality Assurance/Quality Control procedures for the project. The PPM will document the plan to achieve timely project delivery, encourage the consistent application of cost control strategies, and devote the utmost attention to quality control. The Engineer will also track the Final Design and Construction Administration budget and schedule, coordinate and manage sub-consultants, prepare and submit invoices, and coordinate with the City's Project Manager. The Engineer will prepare and distribute monthly progress reports. LNV's Principal-in-Charge and Project Manager will meet monthly with the City's Project Manager to discuss the status and progress of the project. Manage the services of the firms providing design and construction management services for the completion of this project. Review the progress of the services being performed, prepare subconsultant agreements, determine correctness of partial payment requests, and process payment requests.

Deliverables: Project Procedures Manual
Monthly progress reports
Monthly invoices

Project Meetings

The Engineer will prepare and distribute written minutes of these meetings to the City and the Project Team. Action items and decisions shall be clearly identified in the notes.

Kickoff Meeting

The Engineer will conduct a project kickoff meeting with representatives of City and Project Team. The purpose of this meeting will be to initiate the project and develop a working understanding of the following:

- Introduce the Project Team
- Review project Scope of Work
- Review project schedule
- Identify information needed from the City
- Identify City contacts
- Establish communication protocol and project procedures
- Develop a project meeting schedule

Deliverables: Agenda
Meeting notes

Workshop Meetings

Engineer will conduct regular meetings with the City and Project Team members, as appropriate, to address technical and administrative issues related to the project. These meetings will be used to conduct technical workshops. A maximum of twelve (12) workshop meetings during the Preliminary Design and Design phases are expected. Table 2 summarizes the anticipated workshop topics.

Table 2 Project Workshops

Topic of Workshop	Subject Matter
Condition Assessment Results and Recommendations	Results of condition assessment of existing units and equipment to remain in service
Filtration and Disinfection Alternative Analysis	Results of the evaluation to upgrade the plant effluent to Type 1 and to use UV Disinfection
Energy Audit & Biogas/Natural Gas Onsite Cogeneration	Results of the evaluations and discussions on recommendations
Basis of Design/Site Layout	Flows & loads, mass balance, hydraulic profile, site layout
I&C/SCADA	SCADA protocol, equipment tagging, I&C standards, plant control system
Electrical/Power Distribution	One-line diagrams, MCCs, standby power, etc.
Equipment Preferences	Identify the preferred equipment by manufacturer based on past experiences, availability, and maintenance
Construction Phasing	Constructability, maintaining operation, etc.
Architectural & Landscape Programming	Color palette, design concepts, landscape concepts, etc.
Support Systems	Potable water, drains, nonpotable water, etc.
Preliminary (30%) Design	Present Draft PreliminaryDesign Reports
60% Design	Present 60% design and cost estimate
100% Pre-final Design	Present 100% Pre-final design & cost estimate

The purpose of these meetings will be to present design concepts and receive the City's opinions and comments. Items to be specifically addressed could be as follows:

- Confirm configuration of process
- Confirm systems and site layout
- Identify control concepts
- Identify architectural and structural preferences
- Identify maintenance requirements and plant staff capability
- Identify operational schemes

- Identify tag numbering system
- Gather data, records, drawings, and miscellaneous information
- Identify project coordination and interfacing needs required to meet the project schedule

Deliverables: Agenda
Meeting Notes

Project Meetings

This task provides for meetings that pertain to the management of the project. The planned meetings and frequency are described below. The Engineer will prepare and distribute written results of these meetings to the City and the Team. Action items and decisions shall be clearly identified in the notes as a decisions log with the date the issue was identified, the individual raising the issue, the individual responsible for responding, the resolution/solution to the issue, and the resolution date.

- Conduct monthly status meetings with the City project team to provide an update on project progress; receive information; coordinate the proposed design and construction activities under this contract with other proposed and ongoing design, construction, and maintenance activities; and to obtain direction and decisions from the City. Meetings will occur throughout Preliminary Design, Design, Bidding, and Construction phases of the project and will last approximately 2 hours, not including preparation and meeting notes. A total of 96 monthly meetings are planned over the duration of the project.

- A total of six (6) targeted meetings with the City project team to discuss project issues will be scheduled. These meetings will be scheduled in advance to facilitate a focused, in depth discussion.

Deliverables: Agenda
Meeting Notes

Internal Team Meetings

The Project Team will meet on a bi-weekly basis to coordinate efforts and keep all team members informed about the project. The Engineer will conduct interdisciplinary coordination review meetings with its sub-consultants at the 30%, 60%, and 100% Pre-Final submittal stages. A total of 92 internal meetings are planned during the Preliminary and Design Phases.

Deliverables: Agenda
Meeting Notes

Design and CAD Standards

This task includes the development of design and CAD standards for the project. Design standards and typical design details will be developed for use on all portions of the project. Standard drawing setup, layering, and production standards will be implemented on all portions of the project.

QA/QC Program

This program includes the development and enforcement of QA/QC procedures and design and CAD Standards for Design. Reviews will be conducted for the 30%, 60% and 100% Pre-final level of design completion.

Design Quality Control Review

The Engineer will provide the services of a Design Quality Control Committee (DQCC). The DQCC will be led by a Senior Engineer that will meet independently from the Design Team to review the 30%, 60% and 100% Pre-final progress milestone submittals for technical merit, completeness of the drawings and specifications, and interdisciplinary coordination prior to submittal to the City. The Design Team and the DQCC will meet to review and resolve DQCC comments and suggested modifications to the progress milestone submittals. The comments and resolutions will be documented in a memorandum. The DQCC will be responsible for the following focused areas of review for each design submittal:

- Consistency with the intent of the design concepts established in the Preliminary Design
- Technical merit

- Conformance with Engineer's Design Checklist
- Conformance with Regulatory Agency and Development Services Design Checklists
- Constructability
- Operability and Maintainability

Deliverables: Project QA/QC Manual
Quality Control memo with review comments on design submittals

Construction Quality Control Review

The Engineer will provide the services of a Quality Control Committee (QCC) that will be led by the Project Manager that will meet independently to review the quality of construction and possible resolutions to construction situations that way arise. The QCC will be responsible for the following focused areas of review.

- Construction Quality
- Constructability
- Operability and Maintainability

1 PRELIMINARY DESIGN PHASE

Prior to the preparation of detailed plans and specifications, the Engineer will develop a Preliminary Design (30% Design) for the Phase 2 project elements. The purpose of the Preliminary Design phase is to develop an adequate definition of the Project to enable the Detailed Design phase to proceed without significant changes. A prerequisite to the preparation of plans and specifications is the development of a specific design agenda that incorporates the project site conditions and constraints, summarizes the rationale for each major detailed design decision, and contains design criteria including process control criteria and process descriptions for each component and system incorporated into the project. Another objective of Preliminary Design is to identify desirable equipment types, as well as the need to specify sole source procurement and/or equipment pre-purchase options. The selection and design of major process equipment will be based on technical factors, operability, and optimal lifecycle cost analysis.

The results of Preliminary Design phase will be compiled into series of DRAFT Preliminary Design Reports (PDR) for the General Design Criteria task and for major project elements described in the Phase 2 Improvements section above. The PDRs will establish the design parameters, criteria, and concepts necessary for preparation of detailed plans and specifications. Each PDR will be delivered and presented to the City for a two (2) week staff review period followed by a resolution of comments at a regularly scheduled progress meeting. Each of the PDRs along with comments from the City will be incorporated in the FINAL Preliminary Engineering Report (PER), as appropriate, which will be submitted to TCEQ.

Deliverables: Three (3) copies of each DRAFT PDR
Three (3) copies of the FINAL PER and schematic drawings

1.1 General Design Criteria

The Engineer will develop general Process Flow Diagrams and Design Criteria for all of the major process equipment and systems for each of the components associated with Phase 2. Also, a device numbering system, general notes, legends and symbols will be developed.

The Engineer will develop a preliminary staffing plan for the City to use in manpower planning to operate and maintain the Oso WRP after the Phase 2 Improvements are complete.

Deliverables: Process Design Criteria, Process Flow Diagrams, Device Numbering System
Preliminary Staffing Plan

1.1.1 Hydraulic Profile and Process Mass Balance Development

The Engineer will prepare hydraulic profile calculations to reflect the proposed improvements. The Engineer will also revise the BioWin™ dynamic process model prepared in Phase 1 to (1) incorporate the recent hydraulic and waste loading of the plant to update the process mass loadings, (2) confirm the impact of the internal plant flow return stream from the new Belt Filter Press Solids Dewatering Building, and (3) determine the optimum process to incorporate biological phosphorus removal for the future.

Deliverables: Hydraulic Profiles
UpdatedBioWin™ Dynamic Process Model
Process Mass Balances

1.1.2 Civil-Site Design Concept

The Engineer will develop preliminary site plans taking into consideration setbacks, site access, interface with TAMU-CC access roads, topography, existing utilities, and landscaping. The Engineer will develop preliminary yard piping and grading and paving plans reflecting the proposed improvements. Preliminary site plans should include final property boundaries, easements, setbacks, zoning, floodplain delineations, topography, proposed structure locations, vehicular circulation (plant drives), finished floor or top of structure elevations, drainage patterns and major drainage features. The Engineer will identify items required by the City for initial site plan approval and make sure those features are shown on the site plan.

1.1.3 Preliminary Drainage Report

The Engineer will update the on-site management of storm water runoff taking into consideration the proposed facilities. A Preliminary Drainage Report will be submitted to the City. Also included will be a draft update to the Storm Water Pollution Prevention Plan.

Deliverable: Preliminary Drainage Report
Draft Updated Storm Water Pollution Prevention Plan

1.1.4 Utility Coordination

The Engineer will coordinate with the electric, telephone, and natural gas utilities to advise them of the City's utility service requirements. This will allow the utility companies to plan, design, and construct any off-site improvements needed to provide expanded service to the plant.

Deliverables: Notes from meetings with the utility companies

1.1.5 Power Distribution, Standby Power, and One-Line Diagrams

The Engineer will develop preliminary electrical one-line diagrams showing major equipment and method of providing power, determine estimated electrical equipment sizes for housing requirements and develop preliminary electrical load calculations. The Engineer will recommend appropriate stand-by power provisions.

Deliverables: Power Feed Criteria, Stand-by Power Criteria, One-Line Diagrams

1.1.6 Control System Planning and System Architecture Diagrams

For each treatment system, the Engineer will develop a control system architecture diagram, a process and instrumentation diagram, basic control logic description, and the method of control (either PLC or centralized data acquisition and control).

Deliverables: Preliminary P&IDs
Control System Architecture Diagram

Preliminary Process Control Descriptions

1.1.7 Plant Support Systems

The Engineer will develop design criteria for the support systems at the WWTP. This task includes the plant, potable, and fire protection water systems.

1.2 Treatment Process Units Design Criteria

1.2.1 Influent Pump Station Design

The Engineer will develop general Process Design Criteria and preliminary layouts for the new lift station. The station will be housed in a building with a firm capacity of 80 MGD, depending on the condition assessment of Lift Station Nos. 1 and 2, and will be based on a wet-pit design with submersible pumps. It will also include flow measurement of the discharge of the station. The criteria will include recommendations for redundancy of pumping capacity.

Deliverables: Process Design Criteria and Preliminary Process Unit Layouts
Equipment Data Sheets

1.2.2 Headworks Design

The Engineer will develop general Process Design Criteria and preliminary layouts for the new Headworks. The Headworks will contain the mechanical screening and grit removal processes. Like the other proposed buildings, this facility will be designed to be compliant with the architectural programming and aesthetic theme determined in this Preliminary Design.

Deliverables: Process Design Criteria and Preliminary Process Unit Layouts
Equipment Data Sheets

1.2.3 Aeration Basin and Process Air System Improvements Design

The Engineer will develop general Process Design Criteria and preliminary layouts for the new Train 3 and Train 4 aeration basins and for the conversion of the existing East and West Trains into aeration

basins that can biologically remove nitrogen. All trains will include anoxic and oxic zones, fine bubble diffused aeration system with diffusers, air distribution piping, control valves and flow meters, MLR pumps and piping, RAS piping, upgrades to the process air blowers, and provisions to biologically remove phosphorous in the future.

Deliverables: Process Design Criteria and Preliminary Process Unit Layouts
Equipment Data Sheets

1.2.4 Odor Control System Design

The Engineer will develop general Process Design Criteria and preliminary layouts for the new odor control system(s) for the Influent Pump Station and the Headworks.

Deliverables: Process Design Criteria and Preliminary Process Unit Layouts&
Equipment Data Sheets

1.2.5 Disinfection System Upgrades Design

Although major modifications to the disinfection system have been considered and found unnecessary, a study will be performed to determine whether the current hypochlorite feed system should be upgraded or modified with an additional metering pump system and whether the existing chlorine contact chambers would benefit from the installation of baffles to prevent short circuiting.

The Engineer will develop general Process Design Criteria and a preliminary layout for the improvements recommended in the study.

Deliverables: Disinfection System Upgrade Study
Process Design Criteria and Preliminary Process Unit Layouts
Equipment Data Sheets

1.2.6 Laguna Madre WWTP Transfer Station & Force Main

The Engineer will develop general Process Design Criteria and preliminary layouts for the new transfer station at the LMWWTP. The station will be housed in a building with a firm capacity of 17.5 MGD

and will be based on a wet-pit design with submersible pumps. It will also include flow measurement of the discharge of the station. The criteria will include recommendations for redundancy of pumping capacity and stand-by generators. Based on preliminary routing evaluation, the force main to Oso WRP will be approximately 35,500 linear feet and will consist of dual 20-in lines.

Deliverables: Design Criteria and Preliminary Site Layouts
Equipment & Material Data Sheets

1.2.7 Oso WRP Effluent Line to LMWWTP

The LMWWTP currently provides 300,000 to 500,000 gallons of effluent to the NASCC per day for irrigation of their golf course. With the decommissioning of the LMWWTP, it will be necessary to transfer effluent from the Oso WRP back to the LMWWTP effluent line. It is anticipated that this line will be 12-in diameter and will parallel the transfer station's dual force mains.

Deliverables: Design Criteria and Preliminary Routing
Material Data Sheets

1.2.8 Preliminary P&IDs

The Engineer will develop preliminary Process & Instrumentation Diagrams (P&ID), a control system architecture diagram, basic control logic description, and the method of control (either PLC or centralized data acquisition and control) for all of the processes that will be in service after the completion of Phase 2.

Deliverables: Preliminary P&IDs
Preliminary Process Control Descriptions
Preliminary Instrumentation List
Preliminary Input/Output (I/O) Point Count List

1.2.9 Future Facilities

The Engineer will update the Site Plan to reflect how the Oso WRP could be expanded in the future after Phase 2 is complete.

Deliverables: Updated Site Plan for Phase 2 and future phase(s)

1.3 Geotechnical Coordination

The Engineer will identify the extent of subsurface geotechnical investigations as required to support the design of the new facilities and will coordinate this effort with the City's selected Geotechnical Engineer. The Engineer will prepare a draft scope of work for the Geotechnical Engineer that includes a vicinity map for the site, identifies the number of bores and bore locations (the Geotechnical Engineer will be consulted in identifying bore locations), and creates the bore location exhibit. The Engineer also will review the draft geotechnical report findings and recommendations. The report prepared by the Geotechnical Engineer should include discussions on the laboratory and test analyses, findings and recommendations of the investigation, exhibits, boring logs, detailed descriptions of surface and subsurface conditions, seismic conditions, geotechnical profile, and recommendations for all required foundations(including piers, if necessary) and roadways, and recommendations of any additional geotechnical investigations that are required for design. Geotechnical findings and recommendations should include soil bearing loads, lateral earth pressures, trenching, excavation and over-excavation, fill and backfill, structural and foundation design parameters, soil corrosiveness, and design pavement section design criteria.

Deliverables: Draft Scope of Work for Geotechnical Engineer

1.4 Architectural Concepts Development

The architectural concept of the new belt press facility and planned adjacent TAMU-CC development will be used to develop an architectural program for proposed improvements at the Oso WRP. The Engineer will provide the initial architectural concepts and will prepare architectural drawings, renderings and 3-D model to illustrate what the plant improvements will look like. Of particular interest

will be the view studies of the plant with regards to TAMU-CC. This task includes the evaluation of various building horizontal and vertical relief elements, architectural treatments, construction materials, surface finishes, and color palettes, and the cost impacts of the various alternatives. The goal of this task is to select a cost-effective architectural programming and aesthetic concept so that the plant will be compatible with the architecture of TAMU-CC and visually pleasing to other adjacent property owners and the motoring public on Ennis Joslin Road.

Deliverables: Preliminary Architectural Program

1.4.1 Landscaping Concept

The landscaping concept of the existing facilities and planned adjacent residential developments will be used to develop a landscaping program for proposed improvements at the WWTP. The Engineer will provide initial landscaping concepts to illustrate what the landscaping improvements will look like for both Oso WRP and the decommissioned LMWWTP. The concepts developed under this task will be used by the Engineer to prepare a preliminary site plan illustrating the location of the proposed landscaping improvements.

Deliverables: Preliminary Landscaping Site Plan

1.5 Preliminary Design Package

The process for distributing the final basic design criteria for this project will include preparation of a DRAFT and FINAL Preliminary Engineering Report (PER) that includes documentation of changes made subsequent to the Regulatory Compliance and Implementation Plan and documentation of the recommendations from the Preliminary Design Tasks.

The PER will describe the modifications, upgrades, types of materials and equipment, layouts, and other design criteria. It will also include preliminary drawings developed to a 30 percent level of completion. The capital costs will be developed to a Class 3 cost level, as defined by the Association for the

Advancement of Cost Engineering (AACE). Annual O&M costs, including any cost savings that may occur by implementing the recommended alternative, will also be developed.

Deliverables: Level 3 Cost Estimate (included in PER)
Three (3) copies of the DRAFT Preliminary Design Report (PDR)
Three (3) copies of the FINAL Preliminary Engineering Report (PER)

2 DESIGN PHASE

The Engineering services to be provided under this stage of work will include services related to the final detailed design of the Phase 2 improvements.

The intent of the Design Phase of this project is to prepare a set of Contract Documents to define the work of the Phase 2 Improvements project in such a manner that satisfies the needs of the City, the requirements of governing regulatory agencies, and clearly and completely conveys the design intent and requirements to the prospective Bidders and the awarded Contractor. The Engineer will prepare final detailed plans and technical specifications in accordance with the Preliminary Design and any adjustments to the Preliminary Design as suggested and authorized by the City.

2.1 General Design

2.1.1 General

The Engineer will update the Process Flow Diagrams and Design Criteria for all of the major process equipment and systems from the Preliminary Design. Also, the device numbering system, general notes, legends, abbreviations, and symbols will be updated.

2.1.2 Hydraulic Profile and Process Mass Balance Development

The Engineer will finalize the hydraulic profile to reflect any changes since Preliminary Design. The Engineer will also prepare the final process mass balances to reflect the hydraulic and waste loading of the plant and the internal plant flow streams (e.g., belt filter press return).

2.1.3 Civil-Site Design

The Engineer will finalize the site plans taking into consideration setbacks, site access, access roads, topography, existing utilities, and landscaping. The Engineer will finalize the yard piping and the grading and paving plans reflecting the proposed improvements. Site plans should include final property boundaries, easements, setbacks, zoning, floodplain delineations, topography, proposed

structure locations, vehicular circulation (plant drives), finish floor or top of structure elevations, drainage patterns and major drainage features. The Engineer will identify items required by the Planning Department for site plan approval and make sure those features are shown on the site plan.

2.1.4 Final Drainage Report

The Engineer will update the on-site containment of storm water runoff taking into consideration the proposed facilities. The Engineer will also finalize the SWPPP for the plant.

2.1.5 Utility Coordination

The Engineer will coordinate with the electric, telephone, and natural gas utilities to advise them of the City's utility service requirements due to the Phase 2 improvements. This will allow the utility companies to plan, design, and construct any off-site improvements needed to provide expanded service to the plant.

2.1.6 Power Distribution, Standby Power, and One-Line Diagrams

The Engineer will update the electrical one-line diagrams showing major equipment and method of providing power, determine estimated electrical equipment sizes for housing requirements and develop preliminary electrical load calculations. The Engineer will update the stand-by power provisions defined in the PDR along with one-line diagrams, electrical site plans, site lighting plans, conduit schedules, and panel schedules.

2.1.7 Plant Control System

The existing plant controls will be replaced with a new SCADA system as described in the PDR. The system network diagram and the individual points to be monitored, measured, alarmed and controlled described in the PDR will be updated.

2.1.8 Plant Support Systems

The Engineer will design the non-potable water distribution system, potable water, site fire protection systems, and site security upgrades.

2.1.9 Maintenance of Plant Operations

The Engineer will prepare Maintenance of Plant Operations (MOPO) plans to provide information to allow the Contractor to avoid interrupting the operation of new or existing treatment processes or units other than as coordinated with the City. The purpose of the MOPOs is to provide the Contractor a sequence to perform their construction activities in such a manner that uninterrupted treatment of the wastewater flows and continuous operation of all essential plant services and facilities are maintained throughout the construction period so that the Oso WTP is in compliance with all of the regulatory permit requirements at all times.

This task also includes development of a plan for testing, startup, and initial operation of the Phase 2 improvements that is consistent with the anticipated sequence of construction. This plan will be developed with input from the City's operation and maintenance staff.

2.2 Treatment Process Units

2.2.1 Influent Pump Station Design

The station will be housed in a building with a firm capacity of 80 MGD. The station will have a wet well with submersible pumps, be enclosed to contain odors, and have ducting to convey the foul air to the new odor control system. This facility will be designed to be consistent with the architectural programming and aesthetic theme determined in the Preliminary Design. The design will include redundant pumping capacity and will also include the measurement of the pump discharge flow.

2.2.2 Headworks Design

The Headworks will contain the mechanical screening, screening compaction, and grit removal processes. The odor-generating areas will be enclosed and the foul air will be captured and conveyed to the new odor control system that will also serve the Influent Pump Station. This facility will be designed to be consistent with the architectural programming and aesthetic theme determined in the Preliminary Design.

2.2.3 Aeration Basin and Process Air System Improvements Design

This includes the following:

- New Train 3 south of the East Plant
- New Train 4 south of the West Plant
- Conversion of East Plant to biologically remove nitrogen
- Conversion of West Plant to biologically remove nitrogen

All trains will include anoxic and oxic zones, fine bubble diffused aeration, stainless steel process air distribution piping, process air valves and flow meters to control air flow to each zone of the basin, MLR pumps and piping, RAS piping, and upgrades to the process air blowers. The design will also be able to accommodate the future addition of an anaerobic zone to biologically remove phosphorus.

2.2.4 Odor Control System Design

The Engineer will design a new bio-filter for the new odor control system for the Influent Pump Station and the Headworks.

2.2.5 Disinfection System Upgrades Design

If determined to be needed in the Preliminary Design phase, the Engineer will design a metering pump feed system and baffles to prevent short circuiting within the existing chlorine contact chambers.

2.2.6 Architectural, Mechanical and Electrical Design

The Engineer will provide architectural design services for the new Influent Pump Station and Maintenance Building along with the transfer station at the LMWWTP. This includes preparing final architectural drawings and specifications based upon the Preliminary Design. The drawings will include a site plan, site wall and gate, and for each building floor plans, roof plans, room finish schedules, door and window schedules, elevations, building sections, wall sections, stair plans and sections, and details for building components. Specifications anticipated include masonry, concrete, floor sealers, roofing system, metal flashings, miscellaneous metals, ladder to roof, stairs, railings, metal doors, steel gate, finished hardware, windows, glass and glazing, sealants, stucco, paint and stain finishes, fire extinguishers, and monorails.

The Engineer will provide heating, ventilation, and air conditioning (HVAC), plumbing, and electrical design services for the Influent Pump Station and Maintenance Building. This includes preparing final drawings and specifications based upon Preliminary Design. The drawings will include floor plans, sections, schematics, fixture and equipment schedules, panel board schedules, and details for the HVAC, plumbing, and electrical building components. Specifications anticipated include HVAC equipment, air ducting, plumbing fixtures, and light fixtures.

2.2.7 Structural

The Engineer will provide structural engineering design services. This includes preparing final structural drawings and specifications based upon the process unit and building layouts developed in the Preliminary Design.

2.2.8 Landscape Architecture

The Engineer will provide, through a qualified subconsultant, landscape architecture design services. This includes preparing final landscape and irrigation drawings and specifications based upon the Landscape Concept developed in the Preliminary Design.

Deliverables: Graphic exhibits illustrating landscape design for public meetings

2.3 60% Design – Plans & Specifications

The 60 percent design will include the preliminary front-end documents, preliminary technical specifications for major equipment items, development of control system strategies, preliminary piping, preliminary equipment lists, and instrumentation lists. Under this task, the conceptual drawings prepared under Preliminary Design will be developed into the 60%Design level. The 60% drawings will include dimensioned piping and equipment drawings; structural and architectural layouts, elevations, and sections; and detailed P&ID schematics, and equipment electrical one-line diagrams, power plans, and lighting plans.

The LNV Team will prepare 60 percent level of completion plans, which will be defined and consist of a level of completion by disciplines as follows:

- Cover/Title Sheet 70%
- Sheet List 90%
- General/Standard Sheets 70%
- Demolition 70%
- Process Mechanical 70%
- Civil 70%
- Structural 70%
- Architectural 70%
- HVAC and Plumbing 60%
- Instrumentation/Control 50%
- Electrical One-Lines 60%

The Team will prepare 60% complete specifications, which will generally include:

- Specification index
- Preliminary front end documents (Division 0)
- General requirements (Division 1)
- Completed process equipment specifications
- Preliminary specifications for support disciplines

2.4 100% Pre-final Design - Plans and Specification

The 100% Pre-final Design segment is the continuation of detailing the plans and specifications. Work generally consists of addressing the review comments from the 60% design, completing typical and project details, completing specifications, and completing coordination between civil, process, mechanical, structural, architectural, electrical and control system designers. The Team will prepare 100% level of completion plans.

The Team will prepare 100% complete specifications, which will generally include:

- Revised front end documents (Division 0).
- Revised general requirements of contract (Division 1)
- O&M Manual equipment requirements (Division 1)
- Curricula and O&M training requirements (Division 1)
- Divisions of technical specifications (Division 2 to 48, as needed)

All technical specifications will be prepared in accordance with the guidelines established by the Construction Specifications Institute (CSI) for Divisions 1 to 48.

2.5 FINAL Design –Construction Documents

The intent of the FINAL Design is to assist the City with obtaining Building Permits, industrial exemptions and regulatory approvals from other agencies. The FINAL Design will incorporate the comments received from the City and regulatory agencies, and comments received from the Design Quality Control Committee (DQCC) into a set of Contract Documents. All plans, specifications, and calculations required for the building permit and regulatory submittals will be sealed and signed by a Professional Engineer, Architect, and Landscape Architect, as appropriate, who is registered in the State of Texas. The calculations will include those calculations required for permit review and approval (e.g. structural, plumbing, HVAC, electrical, and drainage). Specifications will be delivered as an 8-1/2" x 11" set and on a CD-ROM in Microsoft Word (version 2007 or as directed by City) and in Adobe PDF. Plans will be submitted as both full size and ½-size and on a CD-ROM in electronic files for the project in AutoCAD R2007, or as directed by City. Upon the receipt of the final comments from City and the

regulatory agencies, the Engineer will incorporate the final comments into the construction documents and prepare them for distribution to the City, bidding Contractors, and the Team.

Deliverables: Response memos to review comments (60%, 100% and FINAL)
3 Sets of Plans (60%, 100% and FINAL)
3 Sets of Specifications (60%, 100% and FINAL)
Construction Cost Estimates (60%, 100% and FINAL)
Maintenance of Plant Operations (MOPO) (60%, 100% and FINAL)
Operations and Commissioning Plan (60%, 100% and FINAL)
1CD of Specifications/Drawings in electronic format (PDF, Word and CAD files)
Sealed calculations (including process, structural, HVAC, plumbing, and electrical)

3 BIDDING PHASE

This task will consist of assistance the City with conducting a Pre-Bid Conference, preparing the Pre-Bid Conference minutes, responding to bidder questions, preparing addenda, and evaluating the bids, and recommending an award to the Contractor. The City will advertise the bid and distribute the bidding documents (plans, specifications, and addenda) to the interested bidders and suppliers.

3.1 Pre-Bid Conference

Approximately 3 weeks after the notice of bids has been advertised by the City, the LNV Team will assist the City in conducting a Pre-Bid Conference to review the details of the project and solicit questions regarding the Bid Documents. The Team will prepare a draft agenda for City review, address the review comments and finalize the agenda, and document the conference in writing within 5 working days.

Deliverables: Meeting Agenda

3.2 Bidding Coordination and Addenda Preparation

The Team will answer City and Contractor questions, develop written responses in the form of Contract Addenda, provide (1) set of any required addenda for distribution to Bidders, and provide overall support to City during the bid advertisement period. The addenda will include, as needed, (1) full size and (1) half-size sets of addenda drawings for distribution by the City to interested Bidders.

Deliverables: Contract Addenda as necessary

3.3 Bid Evaluation and Recommendation of Award

The Team will tabulate and review all bids received for compliance with the requirements of the bid documents, including addenda. After consultation with City, the team will prepare a written award recommendation based on this review and knowledge of proposed contractors' and subcontractors' past performance records.

Deliverables: Bid Tabulation
Contract Award Recommendation Letter

4 CONSTRUCTION PHASE

The intent of the Construction Phase is to assist the City in confirming that construction of the Project is carried out in accordance with the requirements of the Contract Documents and the requirements of the City and regulatory agencies, within the project schedule, and with a minimum of disruption to ongoing activities at the facility. The construction Contract Documents are defined as the Agreement between the City and the Contractor, general conditions, supplemental conditions, drawings, standard details, specifications, addenda, approved project schedule, and executed change orders prepared for the construction of the project. The construction services effort will have the goal of facilitating the construction to enable the Work to progress in an efficient and cost-effective manner, while maintaining operations. The anticipated construction duration for Contract A is **36 months** and for Contract B is **26 months**.

During the construction phase of the project, the following terms will apply:

- In regards to the review of submittals from construction contractors, LNV will review and approve or take other appropriate action upon construction contractor(s)' submittals such as shop drawings, product data and samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents. LNV's action will be taken with such reasonable promptness as to cause no delay in the work while allowing sufficient time in LNV's professional judgment to permit adequate

review. Review of such submittals will not be conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities.

- If Engineer is called upon to observe the work of City's construction contractor(s) for the detection of defects or deficiencies in such work, Engineer will not bear any responsibility or liability for such defects or deficiencies or for the failure to so detect. Engineer will not make inspections or reviews of the safety programs or procedures of the construction contractor(s), and will not review their work for the purpose of ensuring their compliance with safety standards.

- Engineer will not assume any responsibility or liability for the performance of construction services, or for the safety of persons and property during construction, or for compliance with federal, state and local statutes, rules, regulations and codes applicable to the conduct of the construction services. Engineer will have no influence over the construction means, methods, techniques, sequences or procedures. Construction safety will remain the sole responsibility of the construction contractor(s).

- All contracts between the City and its construction contractor(s) will contain broad form indemnity and insurance clauses in favor of City and LNV, in a form satisfactory to LNV.

4.1 General Project Administration and Meetings

As the designated Design Consultant for the project, LNV will consult with and advise the City and act as its representative during construction. LNV will serve as the central point of contact for the Contractor. Instructions from the City to the Contractor(s) will be issued through LNV, who will have authority to act on behalf of the City to the extent provided in this Scope of Work, except as otherwise provided in writing. However, LNV will not be responsible for the means, methods, techniques, sequences or procedures of construction selected by the Contractor(s) (except as otherwise specified in the Contract Documents) or the safety precautions and programs incident to the Work of the Contractor(s). Subconsultant personnel and other engineering and architectural disciplines from the design team will also provide a presence on the site through scheduled coordination meetings and inspections to provide quality control and monitoring for conformance with the design intent.

LNV and other Project Team members will conduct specific architectural, electrical, and structural inspections required by governing Codes, prepare applicable documentation and records of such inspections, and certify compliance with design requirements and governing Codes. LNV will accompany visiting inspectors representing public or other agencies having jurisdiction over the Project and will record and report the outcome of these inspections.

LNV or other Project Team members will review factory test reports as required by the Contract Documents and verify that the data reported meets the requirements of the contract documents. LNV will review test reports, whether by the Contractor or the Design Consultant, for compliance with quality standards and will take appropriate action to obtain additional data if necessary regarding the quality of materials and work in-place.

The efforts of LNV will be directed toward providing a greater degree of confidence for the City that the completed Work of the Contractor conforms to the Contract Documents. However, LNV will not be responsible for the failure of Contractor to perform the Work in accordance with the Contract Documents.

On the basis of onsite examination of materials, equipment, and workmanship, LNV will keep the City informed of the progress of the Work, will endeavor to guard the City against defects and deficiencies in such Work, and may disapprove or reject Work failing to conform to the Contract Documents. This task will include the following items:

- Conduct a pre-construction conference. At the conference, LNV will identify field services to be provided and discuss appropriate coordination procedures. LNV will prepare an agenda for the meeting and will prepare and distribute the meeting notes.

- Provide construction administration, quality control, value engineering support and coordination: LNV will provide construction administration and quality control services during the course of the project to assure that the overall technical correctness of the construction phase services and

that specified procedures are being followed and LNV's schedules are being met. LNV will provide coordination functions during the construction phase as follows:

- Hold coordination meetings with the City and Contractor.
- Coordinate with regulatory and approving agencies and utilities as required.
- Coordinate the work of specialty sub-consultants assigned to the project.
- Maintain and provide detailed project records and documentation during the construction phase. Project records will include correspondence, schedules, submittals, test data, project data, payments, change orders, meeting minutes, clarifications, mark-ups of drawings and specifications, and other such documentation. Project records will be delivered to the City's representative upon completion of the construction contract. Records will be maintained at the LNV's office.
- Project Management Manuals.
- Status reports for the construction contract will be provided.

4.2 Changes Orders

LNV will review cost and time estimates for change orders and for Contractor's claims for additional cost or compensation due to differing site conditions, force majeure, material or equipment shortages, or other causes. LNV will also provide an estimate of the additional Design Consultant costs (if any) that would be incurred as a result of the change order.

LNV will evaluate Contractor's claims to determine whether they are justified under the Contract and will review Contractor's proposals for additional compensation, credits, and/or time relating to changes or claims. LNV will make recommendations to the City's Project Manager on the amount of additional compensation, credit, or time extension due to the Contractor. In addition, LNV will clarify matters and work to resolve discrepancies with the Contractor.

LNV, with other Project Team members, will perform necessary design revisions in connection with change orders to reflect modifications requested by the City, or as required by unforeseen conditions. Coordination of the resulting change order requests and any additional Design Consultant research and design efforts, up to a maximum number of hours as shown in the fee schedule, are included in this scope.

LNV, with input from other Project Team members, will consider and evaluate Contractor's suggestions for changes in the Contract Drawings or Specifications and respond as appropriate or as required by the Contract Documents. LNV will coordinate with the City and provide recommendations pertaining to the suggested design modifications.

LNV, with other Project Team members, will also perform necessary design revisions authorized by the City in connection with change orders to reflect modifications requested by the Contractor and will perform services in evaluating substitutions proposed by Contractor. Coordination of the resulting change order requests and any additional Design Consultant research and design efforts, up to a maximum number of hours as shown in the fee schedule, are included in this scope.

Deliverables: Design Recommendations and Revisions as necessary

4.3 Perform Site Visits

In addition to field services described above, LNV and other Project Team members' staffs and/or managers will conduct regular visits to the site (**at least two (2) per month**) to familiarize themselves with the status of work, make spot checks of work-in-progress, verify conformance with the design intent, and conduct detailed coordination of construction issues. Field reports will be kept to document progress and issues. A total of **one hundred forty (124) site visits** are anticipated for the duration of construction.

Deliverables: Field Reports as necessary

4.4 Review Submittals and Test Results

LNV will receive, log and distribute for review and approval the submittals, shop drawings, samples, test results, operations and maintenance manuals, and other data that Contractor is required to submit. LNV will distribute and file the submittals after review action has been taken. LNV will follow-up to verify that revisions are made and resubmitted as required and will verify that such required submittals are received and approved prior to installation or payment for the materials covered. LNV will also perform a review of the schedule of shop drawing submissions and schedule of values prepared by Contractor and will discuss status of the submittals at construction progress meetings. LNV will be responsible for completing the submittal reviews within 15 business days and for monitoring the status and timeliness of responses.

LNV, with other Project Team members, will review and approve product data, shop drawings, samples, test results, operations and maintenance manuals, and other data that the Contractor is required to submit. However, such reviews will be conducted only for conformance with the design concept of the Project and compliance with the information given in the Contract Documents. Such review and approval or other action will not extend to means, methods, sequences, techniques or procedures of construction selected by Contractor, or to safety precautions and programs incident thereto.

As part of this task, LNV will maintain a submittal log showing dates of submittal, transmittal action to other sub-consultants, dates of return and review action. Copies of the log will be furnished to the City and the Contractor monthly. LNV will also evaluate the Contractor's request for substitutions. Submittal review efforts are based on a maximum of two (2) reviews per submittal and that no more than fifty percent (50%) of the total number of first submittals will require two (2) reviews. The level of effort for this task is based on receiving 600 shop drawing submittals. Not included in the scope of work for this task is the witnessing of specification compliance testing at manufacturer's factories.

Deliverables: Monthly Updated Submittals Log
Reviewed Submittals with Submittal Status
Test Data Reviews

4.5 Issue Interpretations and Clarifications

LNV will act as main point of contact for interpretation of the requirements of the Contract Documents and judge of the acceptability of the work based on the requirements shown or specified. LNV will be responsible for responding to Requests for Information (RFI) within 5 business days and for monitoring the status and timeliness of responses.

As part of this task, LNV will maintain a RFI log showing dates of submittal, transmittal action to other sub-consultants, dates of return, and a summary of the response. Copies of the log will be furnished to the City and the Contractor monthly. The level of effort for this task is based on receiving 200 RFIs.

As specified in the General Conditions of the Contracts, LNV will interpret and issue decisions on claims of the Contractor(s) or the City relating to the acceptability of the work or the interpretation of the requirements of the Contract Documents or pertaining to the execution and progress of the work. LNV will also have authority, as the City's representative, to require special inspection or testing of the work.

LNV and other Project Team members will issue interpretations and clarifications of the Contract Documents, as requested by the Contractor(s) or as deemed necessary by the Resident Engineer, to facilitate proper fabrication, construction, or installation of work. LNV will render interpretations or decisions in good faith and in accordance with the requirements of the Contract Documents (e.g., within 10-days).

In the event of a claim or dispute by the Contractor, LNV will interpret the requirements of the Contract Documents and judge the acceptability of the work. LNV will make written recommendations to the City on all claims of the Contractor related to acceptability of the work, or the interpretation of the requirements of the Contract Documents pertaining to the execution and progress of work, or additional work as deemed necessary by the City.

Deliverables: Monthly Updated RFI Log
RFI Responses
Contractor or City-Requested Change Reviews as necessary

Contract Document Interpretations and Clarifications as necessary

4.6 Landscape Architecture

The Engineer will provide, through a qualified subconsultant, landscape architecture construction phase services. This includes attendance at three progress meetings, four site visits, plant material review at nurseries, submittal reviews, clarifications and responses to RFIs, punch list reviews, and preparation of record drawings.

Deliverables: Field Reports
RFI Responses
Reviewed Submittals with Submittal Status

4.7 Substantial Completion/Final Acceptance Inspection

Following notice from the Contractor, LNV and other Project Team members will conduct an inspection to determine if the Project is substantially complete in accordance with the construction documents. If LNV considers the work substantially complete, then LNV will deliver to City and the Contractor a Certificate of Substantial Completion and a list of observed items requiring completion or correction (punch list), date for completion for the punch list, and recommendation for division of responsibilities between the City and the Contractor.

LNV and other Project Team members will conduct a final inspection to determine if the finished Work has been completed to the standard required by the Contract Documents and that Contractor has fulfilled its obligations as required. This inspection will be based on the punch list and any other functional or operational deficiencies that occur in the time period between when the punch list is generated and the Final Inspection. A final list of items to be completed or corrected in accordance with the requirements of the construction documents will be prepared and submitted to the Contractor.

After the Contractor has completed the work of the final punch list and upon written notice from the Contractor, LNV will review and determine that items on the final list have been completed or corrected and make recommendations to the City concerning acceptance and final payment.

Deliverables: Substantial Completion Recommendation
Substantial Completion Punch List
Final Completion Recommendation
Final Completion Punch List

4.8 Record Drawings

LNV and the project team will prepare and deliver to the City record drawings of the constructed work both in hard copy and complete electronic files for the project in AutoCAD and PDF. Record drawing information will be obtained from redlined drawings prepared by the Contractor.

Deliverables: 1 full-size sets of drawings
. 1 ½-size sets of drawings
1 CD of drawings in AutoCAD and PDF format

ADDITIONAL SERVICES

1 PERMITTING & AGENCY COORDINATION (AUTHORIZED)

1.1 Building Permit/ Industrial Exemption Affidavit

The Engineer will prepare building permits and/or industrial exemption applications, make Final Design submittals to the City Development Services Department, and respond to comments received from the Department until the exemptions/building permits are approved. The actual cost of the permit(s) will be paid by the City and/or Contractor and the permit will be obtained by the Contractor prior to the start of construction.

Deliverables: Building Permit Applications or Exemptions
Response Documents to City Comments

1.2 General Agency Coordination

Engineer will provide coordination with the personnel at the governing State/Federal agencies to seek approval for the permits and approvals needed to construct and operate the Phase 2 improvements. This will involve correspondence with TCEQ during the preliminary design and design phases to work toward their timely approval of the proposed process improvements and/or modifications and to maintain compliance with the City's discharge permit. The Engineer will provide backup documentation, clarifications, answers as requested by the permitting agencies. The Engineer will provide technical assistance to the City when such support is necessary to coordinate meetings and materials required for the Project.

The City will take the lead for permit coordination with all governing agencies except for the permits indicated below. The Engineer will provide technical assistance to City when such support is necessary to coordinate and reconcile permitting requirements for the proposed project. The anticipated major coordination and permitting activities are listed in the tabulation below in terms of the project stakeholders involved and the project components requiring coordination. The actual cost of the permit(s) will be paid by the City.

Stakeholder	Project Component(s)	Lead
Design Review Board (Scope is based on approval of the concept at the staff level).	Building Architecture	LNV City
Planning and Development Services Department	Building Permits	LNV City
Wastewater Dept, Fire Department	Hazardous Materials Management Plan (HMMP), Site Plan Building Permit	LNV City
South Central Texas Association of Governments	Coordination with Section 208 Plan	APAI
Texas Commission on Environmental Quality (TCEQ)	Review & Decommissioning (Approval to Construct and Approval of Construction)	LNV & APAI
Texas Commission on Environmental Quality (TCEQ)	TPDES Permits (Wastewater, Stormwater)	APAI
Texas Commission on Environmental Quality (TCEQ)	Regulatory requirements associated with closure plan of Laguna Madre WWTP	APAI

This task will also include agency coordination meetings to be attended and conducted by the Engineer or the City. These meetings will discuss the project components outlined above and will include the stakeholders listed above (City – 6 meetings, County/State – 10 meetings, and Private – 4 meetings). This task assumes that the total number of meetings will not exceed 20 two hour meetings

Deliverables: Agency Meeting Minutes
Meeting Exhibits
ATC and AOC Permit Applications to TCEQ
Response Documents to TCEQ Comments

1.3 Permit Amendment Application

The permit application process is divided into two phases plus a phase for meetings. The first phase provides for the preparation of the application and ends when the application is declared by TCEQ to be

administratively complete. The second phase provides for support during the technical processing of the permit and ends when the permit becomes effective. The following provides details for the phases.

1.3.1 Preparation of Permit Amendment Application

The permit amendment application will be prepared using information provided by the City and collected by the LNV team. The following provides additional detail for each task.

1.3.1.1 Request for Information

Engineer will prepare a list of information needed to complete the application. Requested information will include, but is not to be limited to, contact information, analytical data, site plans, and plant boundaries.

1.3.1.2 Prepare Draft Permit Amendment Application

Engineer will review the information and data received. Engineer will verify that analytical methods used meet the TCEQ requirements. The information and data will be used to prepare the application. A draft application will be submitted to the City for review. A meeting will be convened to discuss the application package and obtain comments.

1.3.1.3 Prepare Permit Amendment Application

Engineer will prepare a permit amendment application for submittal to TCEQ. The application will be provided to the City for signature. Per TCEQ requirements, the original and three copies of the application must be submitted to the TCEQ. If requested to do so, Engineer will hand-deliver originals and copies of the application to the TCEQ.

1.3.1.4 Support During Administrative Review

Engineer will provide support during the administrative review of the application. Engineer will respond to TCEQ comments and questions. Engineer will assist the City in preparing the public notice and submittal of the public notice verification information to the TCEQ.

1.3.2 Support During Technical Processing of Permit

After the permit amendment application is declared administratively complete, TCEQ will review the application and prepare internal technical memoranda, followed by the preparation of a draft permit and eventually the final permit. The following tasks will be completed during this period.

1.3.2.1 Coordination with TCEQ Technical Staff

Engineer will provide support during the technical review of the application and periodically contact TCEQ staff to check on status of the amendment. Engineer will respond to TCEQ comments and coordinate responses to technical questions with the City.

1.3.2.2 Review of Draft Permit

Engineer will distribute the draft permit to the City and prepare written comments to the draft permit for distribution to the City. An official comment letter will be prepared for signature by the City. Because of the complexity of this project, more than one draft permit may be provided by TCEQ to the City. This task provides for review of the initial draft, and up to three revisions of the draft permits. Engineer will assist with preparation of responses to the draft permits as necessary.

1.3.2.3 Final Notice and Review of Final Permit

Engineer will assist the City in preparing the public notice and submittal of the public notice verification information to the TCEQ. Engineer will review the final permit to verify that it reflects previously agreed to conditions.

1.3.3 Meetings During Permit Amendment Application

The Oso permit amendment application will be complex, requiring close coordination between the City, the City's consultants, the TCEQ, and possibly EPA. Some of the coordination will require meetings, including face-to-face meetings and conference calls. The following summarizes the projected meetings.

Location	Number of Meetings
Meet in Corpus Christi	3
Meetings in Austin with TCEQ during Technical Review of the Application	2
Conference Calls throughout project	10

Engineer will prepare minutes for each meeting and conference call.

Deliverables:
Draft Permit Application
Responses to Draft Permit(s)
Final Permit Application – one original and three copies
Meeting minutes

Responsibilities of City:
Permit Application Fee
Analytical Costs
Cost of Newspaper Public Notices

1.4 Special Permitting Services (TBD)

Special Permitting Services are those that are not currently anticipated to be a part of the project to amend the TPDES permit, but which could become necessary or desired at some time during the project. Engineer will perform these services only as authorized to do so by the City. If requested, Engineer will prepare a specific scope and budget for the services requested for review and approval prior to initiating the services. Following is a list of some of the Special Permitting Services that might be needed or desired:

- Preparation for and participation in meetings or telephone calls with the public, including potential or actual protestants, or the development of public information or strategies to aid in avoiding protests.
- Preparation for and participation in public meetings or public hearings.
- Preparation for and participation in meetings with City's attorneys regarding potential or actual protests.
- Meetings with City, TCEQ, or other regulatory authorities (e.g., U.S. Environmental Protection Agency) in addition to those provided for above.

- Time to review additional water quality data beyond that addressed above, should it become necessary to re-sample and re-test.
- Field reconnaissance by Engineer to collect data or information not otherwise provided by City.
- Draft permit review and preparation of comment letters beyond those described above.

2 TOPOGRAPHIC SURVEY (AUTHORIZED)

2.1 Site Survey

The Engineer shall provide a site survey of the entire project limits. This will consist of the Oso WRP site, which includes approximately 15 acres of developed land with paving and existing structures, and 23 acres of undeveloped land, the LMWWTP for plant decommissioning and the transfer pump station, and the 35,500 LF routing for the dual force mains and effluent line. The Surveyor will perform a boundary and topographic survey of the sites, identify all setbacks, easements, rights-of-way, major features and structures at the plant and tie all survey work to the plant's existing horizontal and vertical coordinate system. Contours will be provided for every foot of elevation change, and results of this task will be presented in AutoCAD drawings which can be used as civil backgrounds. The total area to be surveyed is approximately 60 acres.

In addition, the Surveyor will set two (2) permanent horizontal control points/benchmarks on the site that will be used for the entire Phase 2 design and construction work.

Deliverables: AutoCAD files with all spot elevations and 1 foot contours
Two permanent survey control markers

2.2 Subsurface Utility Engineering (SUE) (ALLOWANCE)

The A/E shall perform engineering services which will result in accurately identifying the location of subsurface utilities, and for acquiring and managing that level of information during the development of the project. These services shall conform to standards and guidelines as described in FHWA and ASCE Subsurface Utility Engineering publications. The final work shall be completed such that all known

utilities with potential conflicts are graphically depicted in both a digital and hard copy / plan sheet format.

As the design progresses and when necessary, the A/E may be required to locate utilities that have a high potential for conflicts with the proposed improvements. For the purpose of this agreement, "locate" means to obtain precise horizontal and vertical position of the utility line by excavating a test hole. The test holes shall be done using vacuum excavation or comparable nondestructive equipment in a manner as to cause no damage to the utility line. After excavating a test hole, the A/E shall perform a field survey to determine the exact location and position of the utility line. This work is considered quality level A.

The SUE tasks shall include –

1. Develop a test hole Location Plan based upon the guidelines set forth in the document: Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data, published by the ASCE, current edition, and obtain utility company records as required.

2. Neatly cut and remove existing pavement with the cut area not to exceed 144 square inches. Excavate using a method enabling vertical and horizontal exploration through this cut.

3. Excavate test holes in such a manner as to prevent any damage to wrappings, coatings, or other protective coverings, such as vacuum excavation or hand digging.

4. Backfill with approved material around utility structure.

5. Furnish, install, and color code a permanent above ground marker (i.e. P.K. nail, peg, steel pin, or hub) directly above the centerline of the structure and record the elevation of the marker.

7. Provide a permanent restoration of the pavement within the limits of the original cut at the time of backfill. If the test hole is excavated in an area other than the roadway pavement, the area disturbed shall be restored to equal or better than the condition before excavation.

8. Identify utility locations in digital and reproducible certified plan sheet format. At a minimum, the A/E shall provide the following test hole information:

- Elevation of top and/or bottom of utility tied to datum of the furnished plan.
- Elevation of existing grade over utility test hole.
- Horizontal location referenced to project coordinate datum. The A/E shall perform all required survey work.
- Outside diameter of pipe or width of duct banks and configuration of non-encased multi-conduit systems.
- Utility structure material compositions and condition.
- Identification of benchmarks used to determine elevations.
- Elevations shall have an accuracy of +/- 0.1-ft and certified accurate to the benchmarks used to determine elevations.
- Horizontal data accurate to within +/- 0.2 ft or applicable survey standards, whichever is more precise.

Provide the above SUE services (up to 260 field crew hrs), including hydro-excavator and operating crew, as required by the contract documents and/or as requested by the City.

3 ENVIRONMENTAL ISSUES (TBD)

4 CONSTRUCTION OBSERVATION SERVICES (TBD)

5 START-UP & TRAINING SERVICES

5.1 Facilities Start-Up

LNV and other Project Team members will provide start-up services sufficient to transfer finished work from a construction status to an operating, functional system(s). Such services may include review of Contractor's start-up plan, preparation and coordination of a start-up plan and procedures for City personnel to use, observation and monitoring during start-up procedures, and assistance to City personnel during a period of initial operation (commissioning).

LNV will coordinate with the Contractor and City in advance of scheduled major systems tests or start of important phases of the work. LNV will validate that the testing program submitted by the Contractor is in conformance with the Contract Documents and will adequately assure that the system(s) will

respond properly during normal operations and anticipated unusual conditions. LNV will observe conduct of testing and startup and will verify that the approved testing program is followed and the reports provided are accurate and complete.

LNV and other Project Team members will review the Contractor's training plan and instruction materials for compliance with Contract Documents. Contractor or Manufacturer training presentations will be scheduled and coordinated with City personnel and facility operation.

Start-up services budget shall be based on providing a Project Engineer (as needed, up to 9 weeks @ 40 hrs/wk), Process Specialist (as needed, up to 8 weeks @ 40 hrs/wk), Electrical Engineer (as needed, up to 3 weeks @ 40 hrs/wk), and an Instrumentation & Controls Engineer (as needed, up to 2 weeks @ 40 hrs/wk) during facilities start-up for Contract A.

Start-up services budget shall be based on providing a Project Engineer (as needed, up to 3 weeks @ 40 hrs/wk), Electrical Engineer (as needed, up to 1 weeks @ 40 hrs/wk), and an Instrumentation & Controls Engineer (as needed, up to 2 weeks @ 40 hrs/wk) during facilities start-up for Contract B.

5.2 Training

To supplement the training from the Contractors and Manufacturers, LNV and other Project Team members will also provide instruction to plant operating personnel on the project objectives, design intent, and system operational procedures. A total of 10 training sessions that will last approximately 4 hours are planned. The training will be both classroom and hands-on and is intended to supplement the information presented in the O&M Manual described in Task 12.1. Training budget for Contract A is limited to a total of 540 hours (approximately 2 weeks @ 48 hrs/wk per facility start-up) for on-site training and training preparation. Training budget for Contract B is limited to a total of 100 hours (approximately 2 weeks @ 48 hrs/wk) for on-site training and training preparation.

5.3 Factory Witness Testing

Provide specialty engineer to witness factory testing of the special equipment as required by the contract documents. Provide the services of Engineer's staff and other team members (up to 75 hrs for Contract A and up to 68 hrs for Contract B) as required by the contract documents and as requested by the City.

Deliverables: Review Comments on Contractor or Manufacturer Training Outlines and Lesson Plans
Outlines and Lesson Plans for Training of Operations and Maintenance Staff

6 WARRANTY PHASE

LNV and other Project Team members will provide services after completion of the construction phase, such as inspections during the 12-month warranty period, reporting observed discrepancies under guarantees called for in the construction documents, and provide assistance for resolution of defects to be corrected under warranty. The correction of any defects observed in the inspections is the responsibility of the Contractor and their subcontractors and suppliers. This scope assumes that such services may be required for up to 190 hours per 12-month warranty periods (up to 4 warranty periods).

Deliverables: Correspondence with Contractor and equipment manufacturers
Reports on warranty inspections

7 SCADA AND O&M DOCUMENTATION

The Engineering Consulting services to be provided under this stage of work will include services related to the SCADA system and the preparation of an operations and maintenance manual for the Phase 2 improvements.

7.1 SCADA Documentation

Provide SCADA documentation as described in Exhibit A.

7.2 Electronic Operations and Maintenance Manual

To date the extent of the operations and maintenance documentation for the WRP has been limited to an existing operations manual and individual equipment manuals. While these documents are sufficient to guide the operations and maintenance of the equipment and systems at the facility, the City has indicated a desire to compile a comprehensive plant Operations and Maintenance (O&M) manual that would bring together the information required to operate and maintain the overall facility. The major objective is to provide operations and maintenance staff with quick access to the information that is essential to performing their jobs.

With today's technology, LNV does not believe that an O&M manual should be a static document that is stored on a shelf, but rather should be an interactive web-based tool providing nearly instantaneous access to the stores of information that should be available to the operators. The LNV approach to developing electronic O&M manuals in the most efficient way is to focus on five fundamental issues:

- Making sure the content is correct and current.
- Developing good interface aesthetics and graphics to provide a pleasing user experience.
- Making the manual usable through attention to proper organization and coherent navigation.
- Providing a system that can be easily modified and/or expanded.
- Making technology decisions that allow for integration of new technologies, without an excessive technology-maintenance burden on the City.

Beyond any other consideration, the content must be correct and focused on what the O&M staff needs to know. The electronic O&M manual format provides the opportunity to keep write-ups on procedures, control descriptions, etc. short and to the point (a fundamental in any web page design as well as in a successful O&M manual). Yet deeper levels of detail can be provided through links in the documents to allow the user to research a problem to its fullest extent, if necessary, for the task at hand.

A key to the success of an O&M manual project, in whatever format, is the involvement of the end users. O&M staff at the facility must be provided the opportunity to contribute to the development process in a way that doesn't increase their workload, but does allow meaningful contributions. LNV will work directly with the users in developing and verifying our O&M manual content. The on-line

format allows for immediate feedback as the content is being developed – it is published on-line, as it is developed (after our internal QC check), at which time users on all shifts may review and comment directly to the authors. This allows updates to be made the next day in some cases.

Deliverables: Draft submittal of O&M manual content shell and format for City review and approval
Draft O&M manual in electronic format for City review and approval
1 paper copy of the Draft O&M manual for City review and approval
1 presentation to City on Draft O&M manual
Final O&M manual in electronic format
1 paper copy of the Final O&M manual
1 presentation to City on Final O&M manual

7.2.1 Organize Electronic Format and Security

LNV will work with the City operations and IT staff to determine the best approach to the electronic format and security access issues. The starting point will be the electronic format for the New Broadway WWTP currently under construction. LNV will then develop a content shell for review by the City prior to installing the content. This task will include coordination with the City's systems integrator, security coordinator, and technical staff as well as the end users. LNV will organize the electronic O&M manual format to address the user's needs in six areas:

- Content
- Aesthetics
- Usability/Features
- Information Maintenance/Expansion
- Technology/Implementation
- Information Security

The site will be designed with the following basic layout:

- Functional navigation buttons (help, search, feedback) at the very top of the site.
- Topical navigation menu on the left side of the screen. An expanding tree menu system will be used to organize content by process area and topic.

The look and feel of the site will be managed using cascading style sheets to make it easy to modify aesthetics across the site. The O&M manual will be developed as a web site, suitable for access using a

web browser from a CD, LAN, intranet, or Internet connection. The documents will be in HTML format with supporting graphics in formats described below.

The following hardware and software will be used to access/host the O&M manual. Existing City hardware and software will be utilized as much a possible. Any additional equipment or software will be included in the Contract Documents and will be furnished by the Contractor.

- Microsoft Internet Explorer with Java and JavaScript enabled
- Internet Information Server
- 27" monitor with 1200 x 1080 resolution

7.2.2 Compile Background Information

LNV will research and inventory the historical information and documents that exist for the WRP by examining the records found at the site and from the central City office files. In addition, LNV will assemble the large quantity of reports and drawings gained from City through previous project work on the Master Plan and Preliminary Design. The information to be researched and inventoried will include the following types of documents relating to the Oso WRP:

- Original Equipment Manufacturer Manuals
- Design Reports
- Construction Drawings and Specifications
- Permit Applications and Approvals
- Materials Safety and Data Sheets
- Written Facility and City Policies

LNV will compile these documents and coordinate the copying or transfer of the information into the appropriate electronic format.

After a review of the design drawings and specifications, manufacturer's manuals, and existing plant data systems (CMMS, etc.), an inventory of the plant equipment will be conducted in which nameplate information will be collected for major pieces of equipment. That information will be entered into the Plant Design Database developed by LNV and used in the Design Phase.

7.2.3 Standard Process-Level Content Sections

The O&M manual content will be developed with several standard sections. The purpose and format for those standard sections are described here. Each of these sections will be presented as topics within a given process area. Any section that is lengthy will be provided with an index at the top of the page to allow jumping directly to sections within the page.

7.2.3.1 Opening Page

Each process area will open with a file that contains the name of the process area and a schematic showing an overview of the area.

7.2.3.2 Overview

The Overview section will provide a brief (2 pages maximum) description of the process area including the process area objectives and brief descriptions of how those objectives are accomplished and components used in the area. Schematic diagrams of the area will accompany the description. Each Overview will contain the following headings:

- Purpose & Objectives.
- Process Fundamentals and General Description.
- Sub-Systems.
- Relations to Other Systems or Processes.

7.2.3.3 Theory

The Theory section (also called Process Control) is used to briefly describe unit process theory (where applicable) and specific application of that theory to this plant. The section includes sample calculations.

7.2.3.4 Design

The Design section presents design criteria for the process area. This section presents process-level design criteria and major equipment design characteristics; equipment data are provided in the

Components section. The criteria will be presented in two-column tabular format, with the process parameter in the left column and the design value in the right. When the design criteria are longer than a single screen, an index will be provided at the top of the page to sections in the page.

7.2.3.5 Control

The Control section presents a description of typical modes of control and control strategies for the major control loops in the process area. The strategies will include interlocks, permissives, and alarms. Specific operating procedures are given in the Procedures page. For each meter, gauge, and other analytical equipment, ranges and set points will be displayed. A photograph of each control panel will also be included, with callouts for major items on the panel along with a description of those items.

7.2.3.6 Procedures

Standard operating procedures (SOPs) will be developed with the following sections:

- General Overview.
- Normal Operation.
- Abnormal Operation.
- Emergency Operation.

7.2.3.7 Safety

This section will include safety information specific to the area, including descriptions of area-specific hazards and precautions. Each Area-Specific safety section will contain the following headings:

- Hazardous Materials
- MSDS Links
- Personal Protective Equipment Requirements
- Confined Spaces
- Fire System (extinguisher locations, sprinkler systems, hydrant locations)

The section will also contain an area-map locating safety-related items (chemical locations, fire extinguishers, fire hydrants, emergency eye wash, etc.)

7.2.3.8 Drawings

The Drawings section provides a listing of all CAD drawings pertinent to the process area. The summary list will indicate Drawing ID, Title and Discipline. The list will also provide links to view details about the drawing or to view the drawing itself.

7.2.3.9 Components

The Components section provides a listing of all major equipment components within this area. Information will be presented in a tabular format and include the following columns:

- Name - The common name for the component
- Equipment Number - The component ID tag as specified on the design drawings
- Characteristics - The characteristic size, capacity, etc. for the component
- Function - A brief description of the component's function in the process

Each equipment number will be a link to a detailed report for each component, which will include basic equipment data (manufacturer, model, etc.) as well as lists of photos, design drawings, manufacturer manuals, and recommended routine maintenance. The equipment data will be developed from an inventory of all of the equipment in the plant.

7.2.3.10 Troubleshooting

The Troubleshooting section presents, in a tabular format, typical problems, possible causes, and remedies for process-level problems. The table will include the following columns:

- Symptom
- Possible Cause
- Remedy

7.2.3.11 Alarms

The Alarm Response section will be similar to the troubleshooting guide both in scope and organization. Alarm summaries will be listed first by the alarm name followed by the numerical designation. Following this information will be a list of possible causes and suggested responses. The set of causes

and responses will be listed like a troubleshooting guide, organized to present the most obvious cause of the alarm first and the least likely cause of the alarm last.

7.2.3.12 Routine Maintenance

The Routine Maintenance guide will identify the maintenance tasks recommended by the manufacturer to be performed for each piece of equipment. They will be organized in the database and presented in the detailed report for each piece of equipment.

7.2.4 Facility-Wide Reference Sections

As part of the on-line system LNV will also develop non-specific information areas that will assist in the overall management and operation of the facility. These areas are listed below.

7.2.4.1 Home Page

The Home Page will be a map of the facility with links to process areas.

7.2.4.2 Directives

This page will be used by the Senior Operators to post operational directives for other operators. These directives will include:

- Operating set points (MCRT, wasting rates, return rates, etc.).
- Equipment Out of Service.
- Shift Schedules.

It is anticipated that the page content will be updated on up to a daily basis.

7.2.4.3 Permits

Links to PDF versions of the major facility permits are provided here. These include TPDES permits, Storm Water Pollution Prevention permits, and air quality permits.

7.2.4.4 Drawings

This section allows users to search and display CAD drawings related to the plant.

7.2.4.5 MSDS

This section allows users to search and display lists of Materials Safety and Data Sheets and to review the resulting MSDS.

7.2.4.6 Manufacturers O&M Manuals

This section allows users to search the database of scanned manufacturer manuals, and view the resulting PDF files (where available).

7.2.4.7 Help/About

This will be a help file that describes how to use the manual.

8 Public Involvement (ALLOWANCE)

The Engineer anticipates coordination with the Public, City of Corpus Christi Development Agencies, TAMU-CC, other regulatory agencies, and interested stakeholders. Public Involvement may be required to gain the acceptance of the public, and the Engineer Team will be utilized on an as-needed basis and an allowance is identified in the Fee Estimate provided. The Engineer will provide technical assistance to the City when such support is necessary to coordinate meetings and materials required for the Project.

Public Involvement may also include preparation of exhibits, handouts or brochures. This task includes up to three (3) public information or City Council briefing meetings. All meetings will be coordinated through the City of Corpus Christi. It is assumed that the City's Project Manager or Public Involvement Coordinator will preside over each meeting. Each presentation is expected to be approximately two (2) hours.

Deliverables: Exhibits, Brochure or Handouts, as required

9 Conformed Contract Documents

The Team will incorporate the addenda changes into the plans and specifications to provide conformed Contract documents. All drawings will be stamped conformed. Half-scale plans will be provided with laminated covers bound with either GBC or spiral binders.

Deliverables:
Contract Addenda as necessary
Pre-Bid Meeting Agenda, Presentation, and Meeting Minutes for Addenda
Bid Tabulation
Contract Award Recommendation Letter
Conformed Plans and Specifications
3 copies of the Conformed Plans and Specifications (half-scale plans)
CD in electronic character recognition Adobe PDF and Word 2007 format

10 Existing Facilities Condition Assessment (AUTHORIZED)

The Engineer will evaluate the condition, capacity, and treatment reliability of the existing facilities at the Oso WRP to define the condition of the existing structures and equipment that will remain in service after the Phase 2 Improvements are complete. The purpose of the condition assessment is to evaluate the suitability of the existing structures to provide up to 30 years of reliable service and equipment to provide up to 15 years of reliable service. Engineer will make appropriate recommendations for improvements to achieve the 15 and 30 year goals. Table 3 presents the processes, structures, and equipment that will be evaluated.

Table 3 Condition Assessment Structures and Processes

Lift Station 1 and 2 (including Odor Control)	Blower House 1 through 4
Secondary Clarifiers 1 through 8	Doors and windows of buildings
Chlorine Chambers 1 through 4	Site, paving, and grading
Sodium Hypochlorite and Sodium Bisulfite Storage and Feed Systems	Electrical and Instrumentation & Controls
Aerobic Digesters 1 through 4	Outfall Line and Structure
Effluent Pump Station – Oso Golf Course	

The specific subtasks below will provide an understanding of the condition of the structures and equipment, electrical and controls system, and the performance of the existing treatment processes.

- Visit the Oso WRP in order to interview City staff regarding any issues or concerns with the existing plant operation, maintenance, or performance. An initial visual inspection with staff will be conducted to gain knowledge of the operational condition of the existing equipment and structures.

- Visually inspect the lift stations, secondary clarifiers, chlorine chambers, and aerobic digesters to document their structural condition. The results of the inspection will be logged and photographically documented in the PDR. **The City will need to remove from service, drain, clean, and leave in a near dry condition the structures to be inspected.** As the evaluation will consist of confined space entries, a written safety plan will be developed by the LNV Team and will be reviewed and approved by all parties prior to initiating activities. Safe access into the areas to be inspected will be provided by the City. **The structural assessment does not include (1) a structural analysis to determine the existing capacities based upon current building codes nor (2) material testing (e.g., concrete coring and X-ray analysis) of the structures.**

- Visually inspect the lift stations, secondary clarifiers, chlorine chambers, and aerobic digesters to document condition of the mechanical and process equipment. This mechanical and process equipment includes the pumps, piping, and valves for the lift stations; the inlet baffles, scum removal, sludge collection, effluent weirs and launders for the secondary clarifiers; the chlorine chamber mixing and internals; and the coarse bubble diffused air system (diffusers, piping, valves, instrumentation) for the aerobic digesters. **The City will need to remove from service, drain, clean, and leave in a near dry condition the structures to be inspected.** As the evaluation will consist of confined space entries, a written safety plan will be developed by the LNV Team and will be reviewed and approved by all parties prior to initiating activities. Safe access into the areas to be inspected will be provided by the City.

- Visually inspect the electrical power and the instrumentation/controls system to determine their suitability to provide up to 15 years of reliable service. This includes the following:
    - The motors, motor control centers, variable frequency drives (VFD), conduits, wiring, electrical manholes, light poles, fixtures, and junction boxes. Electrical gear will be evaluated to determine its classification status, condition and useful remaining design life as well as compliance to the appropriate codes.
    - The instrumentation and controls system will be evaluated including the wiring, and control panels to determine their condition, useful remaining design life, code compliance, and consistency with other recently completed improvements at Oso WRP.
- Building upon the condition assessment developed above, the Engineer will identify and evaluate alternatives and provide recommended rehabilitation and/or replacement alternatives that can be developed into contract documents. The evaluation and recommendations will be described in a Condition Assessment PDR.
- Review historical plant process and effluent data to evaluate the plants ability to adequately and reliably produce effluent in accordance with the discharge permit, with special emphasis on disinfection, chlorine, BOD and TSS.

As the design and construction tasks that may result from the condition assessment cannot be defined exactly at this time, they are excluded from this scope of work and covered under a Special Services allowance that must have authorization from the City to proceed.

Deliverables: Condition Assessment PDR

11 Filtration and UV Disinfection Feasibility Study (AUTHORIZED)

The Engineer will prepare a feasibility study to determine the cost to upgrade Oso WRP's effluent water quality to a Type I Reclaimed Water as defined by TCEQ regulations (§210.32).The feasibility study

will be based on producing Type I effluent up to the plants average daily flow capacity of 24 MGD in the following scenarios; 2 MGD, 8 MGD, 16 MGD, and 24 MGD. The water quality standards for Type I are presented in Table 4.

Table 4 Type I Reclaimed Water Quality Standards

BOD5	5 Mg/L
Turbidity	3 NTU
Fecal coliform or *E. Coli* (30-day Geometric Mean)	20 CFU/100 ml
Fecal coliform or *E. Coli* (Maximum Single Grab Sample)	75 CFU/100 ml
Enterococci (30-day Geometric Mean)	4 CFU/100 ml
Enterococci (Maximum Single Grab Sample)	9 CFU/100 ml

Type I reclaimed water is allowed by TCEQ to be reused in areas where the public may be present during the time when irrigation occurs or other uses where the public may come in contact with the effluent. In order to meet the more stringent water quality criteria, the Oso WRP will need to add tertiary filtration to reduce the plant's turbidity and comply with the 3 NTU maximum limit. The feasibility study will evaluate the following filtration alternatives:

- Conventional Sand Filtration
- Cloth Disk Filtration
- Microfiltration/Ultrafiltration

Preliminary site and yard piping plans will be developed for each alternative. The capital costs developed to evaluate these alternatives will be Class 4 cost estimates, as defined by the Association for the Advancement of Cost Engineering (AACE). Annual operations and maintenance costs (O&M) will be included in the alternatives analysis.

The second part of the feasibility study will be to evaluate the feasibility of upgrading the disinfection system to meet the higher Type I standards by implementing UV disinfection as the process that either replaces or supplements the existing Chlorination/Dechlorination system. Preliminary site and yard piping plans, along with Class 4 cost estimates, will be developed. Annual O&M costs will be included

in the alternatives analysis. Cost-benefit and lifecycle costs analyses will be developed to compare the disinfection processes.

NOTE: This scope of work specifically excludes the design of tertiary filtration and UV disinfection should the City decide to proceed with the design and construction of these treatment units.

Deliverables: Draft and Final Filtration and UV Disinfection Feasibility Study

12 Windstorm Certification

Engineer will perform Windstorm calculations, inspections, and provide certification for the following structures:

1. Maintenance Building
2. Generator Building/Control Room Building
3. ECR Building 5
4. ECR Building 6
5. Influent Pump Station (ie. Lift Station No.4)
6. LMWWTP Transfer Pump Station

- Prepare WPI-1 form in accordance with the requirements of the Texas Department of Insurance (TDI) for Windstorm for the each of the New Structures; including foundations.

- Review design calculations for new building structures and foundations to insure design is in accordance with the International Building Code 2003/2006 and Texas Dept. of Insurance for Windstorm compliance.

- Perform wind pressure calculations in accordance with the International Building Code 2003/2006 for all building envelopes to insure all component and cladding elements meet or exceed the requirements of TDI for Windstorm.

- Review all necessary submittals for foundation reinforcing, wall and floor framing, windows/frames/anchoring, doors/frames/anchoring, louvers/frames/anchoring and roofing for compliance with TDI. Initial submittal review and one (1) re-submittal review is included in this contract. Additional review of re-submittal's will be performed at an hourly rate of $150.00.

- Perform necessary inspections during the entire construction process for all buildings and their respective foundation systems as required to visually verify that all foundation reinforcing, anchorage, primary and secondary framing, connections, sheathing installation, doors, windows and louvers are all constructed as designed. Additional re-inspections will be performed at an hourly rate of $150.00.

- Submit WPI-2 –BC-5 forms upon completion of construction to receive the WPI-8 Windstorm Certificate.

Windstorm Certification Requirements:

The Contractor/Owner shall be responsible for providing all necessary Design / Assembly Documentation for all windows, doors, louvers...etc. to the Windstorm Engineer / Inspector as required to conform to the requirements of the Texas Department of Insurance. All windows, doors, louvers...etc., at a minimum, shall meet all positive (inward) and negative (outward) wind pressures for "Components and Cladding" in accordance with the International Building Code 2006 (IBC 2006 with latest Texas Revisions) as calculated by Texas Registered Professional Engineer for the specific project. All Custom-Built Doors / Windows must be tested for the appropriate wind design pressures with a certified facility as approved by the Texas Dept. of Insurance prior to receiving any certification.

13 Peer Review Coordination and Response (AUTHORIZED)

Anticipated effort is based on providing these services over the course of the 42 month preliminary design/design periods consisting of 12 workshops and 4 preliminary and design submittals.

- The City has retained the services of Peer Review Team to review Project Deliverables and provide comments to City and Engineer. Engineer will respond to standard review comments from the City's Peer Review Team. Design revisions based upon Peer Review Comments are not included in this Scope.

- Participate as directed by the City in Peer Review of the project with the City and a Peer Review Team, a separate dedicated engineering team for peer review that is contracted by the City.

- Provide as directed by the City required responses associated with the limited value engineering evaluation by a Peer Review Consultant of the design phase for the Oso WRP. Redesign efforts to incorporate Value Engineering are not included in this Scope.

13.1 Evaluation of Alternative Delivery Methods

Various project delivery methods are available to the Owners of public projects in the State of Texas. While the traditional design-bid-build delivery method remains the most common method, there is considerable interest on the part of Owners in alternative methods of project delivery and the potential of these alternative methods to save money and time.

The decision on the project delivery method for the Phase 2 Improvements impacts various aspects of the project including financing, procurement, ownership, and the associated levels of risk carried by the involved parties. Several fundamental project considerations are directly impacted by the delivery method selected. These considerations include the need to adhere to a realistic budget, a schedule that accurately presents the performance period, a responsive and efficient design process that leads to a quality set of documents, a thorough risk assessment followed by the proper allocation of risk by the owner, and a recognition of the level of expertise within the owner's organization or available to it.

The most typical methods can be divided into three basic categories: Design-Bid-Build, Construction Management At Risk (CMAR), and Design-Build.

The project delivery methods to be examined are:

Design-Bid-Build (DBB) – The traditional project delivery approach, which customarily involves three sequential project phases: design, procurement, and construction.

Construction Management At Risk (CMAR) – A project delivery method in which the Construction Manager acts as a consultant to the owner in the development and design phases, but assumes the risk

for construction performance as the equivalent of a general contractor holding all trade subcontracts during the construction phase.

Design-Build (DB) – A project delivery method that combines architectural and engineering design services with construction performance under a single contract.

The project delivery analysis will evaluate each alternative project delivery model for life-cycle costs, risks, and qualitative / quantitative factors and issues. The analysis will include a stakeholder process to receive input from Owner and managers most affected by the new project. This will be accomplished through a series of workshops soliciting stakeholder input. The typical considerations in selecting the most beneficial delivery method are as follows:

- Owner's Requirements and Risk Considerations
- Project Delivery Methods Available to the Owner
- Role of the Construction Manager
- Contracting Alternatives
- Procurement Alternatives

The result of the analysis process will be a recommendation for the most appropriate approach to be used for the Phase 2 Improvements.

14 LMWWTP Decommissioning

The Laguna Madre Wastewater Treatment Plant (LMWWTP) serves the entire Flour Bluff peninsula, operates as an activated sludge process and discharges into the Laguna Madre. The plant is currently treating an ADF of 2.1 MGD and is permitted for 20 mg/L BOD5 and 20 mg/L TSS. The plant was originally constructed in 1971 and was expanded to its current 3.0 MGD average daily and 9.0 MGD peak 2-hour capacities in 1986.

The wastewater treatment plant consists of the following treatment units:

- Office / Administration Building
- Maintenance Garage
- Influent Plant Lift Station
- Headworks Facility with bar screen and grit removal system
- Blower Building
- One (1) Aeration Basin
- Two (2) Secondary Clarifiers
- Two (2) Re-aeration Basins
- One (2) Pre-thickener Basin
- Five (5) Digesters
- Chlorine Contact Chamber
- Chemical Storage Facilities
- Effluent Pump Station
- Drying Beds

14.1 Decommissioning

The objective of this task is to decommission, demolish, and remove all existing onsite treatment units and infrastructure associated with the LMWWTP so that the plant can be taken out of service and all flows will be transferred to the Oso WRP. Work will be limited to the infrastructure on-site and within the property boundaries as listed above and will be coordinated with the site plan for the new Transfer Station. The infrastructure to be demolished or abandoned includes, but is not limited to, buildings, manholes, subsurface lines, valves, pumps, tanks/basins, filters, drying beds, mechanical equipment, and electrical equipment. The plan will consider the timing and coordination effort associated with the transfer station and will define the proper disposal requirements of all materials, equipment, sludge, etc. In addition, the Engineer will identify any opportunities for salvaging existing equipment.

14.2 Closure Plan

The Consultant shall coordinate a meeting with the TCEQ to discuss the closure of the plant and requirements for the regulatory closure associated with it. Based on the meeting results, the Consultant shall prepare the required closure plan for addressing regulatory requirements associated with the closure of Laguna Madre WWTP. A draft of the plan will be prepared for City review. The finalized closure plan will be submitted to the TCEQ. The Consultant shall coordinate with the TCEQ to obtain approval of the closure plan. The closure plan will address sampling of facility structures, soil and groundwater sampling as required by the TCEQ, required analyses of samples, coordination with demolition contractors, coordination for location of utilities, contingency procedures, and a schedule for closure. The closure plan will not address specific facility demolition specifications or plans, public involvement (addressed as an ADDITIONAL SERVICE in Task 14.1), or implementation of contingency procedures, should they be necessary.

14.3 Closure Report

The Consultant shall provide coordination for field support during closure sampling, including field locating sampling locations and monitor well locations (if necessary) in advance of sampling events. The Consultant shall work with field and laboratory personnel to ensure that samples are taken at the correct locations; that they are preserved, shipped, and stored, appropriately; and that analyses are appropriately performed. The Consultant shall evaluate the data obtained in the site investigation (i.e., site observations during the closure investigation and analytical results) and will prepare a draft closure report for the City's review. The final closure report will be submitted to the TCEQ. The Consultant shall provide coordination with the TCEQ in order to gain approval of the Closure Report for the facility.

The Consultant shall be responsible for coordinating with the TCEQ and any other approving authorities and for preparing all documents necessary for the City to obtain all permits and approvals associated with this work.

Deliverables: Draft and Final Laguna Madre WWTP Closure Report

15 Biogas/Natural Gas Onsite Cogeneration (AUTHORIZED)

The use of biogas, which is a valuable, methane-rich gas produced by the anaerobic digestion process in wastewater treatment, is a valuable renewable energy source. Biogas is typically used as the fuel source for a hot water or steam boiler with a heat exchanger to maintain the anaerobic digestion system at the desired temperature; when combined with an internal combustion engine and a generator to simultaneously produce electricity and useful heat, the process is called cogeneration. As the anaerobic digestion process requires primary sludge from the primary clarification, primary clarifiers need to be added to the existing liquid stream process at the Oso WRP. In additional to primary clarifiers, primary sludge pumping and WAS thickening will be needed to augment the anaerobic digesters.

The Engineer will prepare a feasibility study to estimate the cost of utilizing biogas in a cogeneration facility to produce electrical power for the Oso WRP and waste heat from the gas engine to heat the digesters. The feasibility study will also evaluate the cost of a natural gas-fuel engine and generator to produce electricity to meet the electrical demand of the expanded Oso WRP as described in TM 6. The feasibility study will include the following:

- BioWin™ Process Modeling – The existing BioWin™ model of the Oso WRP will be updated to include primary clarification, primary sludge pumping, biological nutrient removal, secondary clarification WAS thickening with filtrate return flow, anaerobic digestion, and dewatered sludge filtrate return flow at the design flow of 24 MGD. The model output will confirm the treatment unit sizing, process air demand, effluent quality, sludge production, and biogas production design criteria. The model will assume the anaerobic digesters will be high-rate with supplemental mixing and heating and operate in the mesophilic range at 35◦C to produce Class B biosolids.
- Preliminary Site Plan – An Oso WRP site plan will be prepared. It will be based upon the proposed site plan in TM 6 with the addition of the new treatment processes described above, new odor control equipment, and a cogeneration facility.
- Sequencing Plan – A sequencing plan will be developed for the startup of the new process units of the Phase 2 project, while maintaining the existing plant operations.

- Estimate of Probable Construction Cost - Class 4 cost estimates, as defined by the Association for the Advancement of Cost Engineering (AACE), will be prepared for (1) the biogas utilization alternative utilizing the additional treatment processes described above and the applicable elements of the proposed upgraded described in TM 6 and (2) a cogeneration facility using natural gas as the single fuel source.
- Life-Cycle Cost Estimates – Life-cycle cost estimates will be prepared for both the biogas utilization alternative and the natural gas-fueled cogeneration facility. The estimates will utilize the same life-cycle cost analysis methodology use in TM 9.
- Prepare a Draft Biogas Utilization and Natural Gas Cogeneration Feasibility Study. Meet with the City to present and discuss the draft study. Address City comments and submit a Final Feasibility Study.

NOTE: This scope of work specifically excludes design of primary clarification, primary sludge pumping, WAS thickening, anaerobic digestion, and cogeneration should the City decide to proceed with the design and construction of these treatment processes.

Deliverables: Draft and Final Biogas Utilization and Natural Gas Cogeneration Feasibility Study

16 Oso WRP Energy Audit (AUTHORIZED)

Providing wastewater service to municipal and industrial facilities requires a significant amount energy. Rising energy costs require wastewater authorities to better manage energy consumption and identify areas for improvement. Wastewater energy consumption generally accounts for 30% to 60% of the total facility's energy bill.

Energy represents the largest controllable cost of providing wastewater services to the public. Many facilities were designed and built without energy costs as a major concern. With large pumps, drives, motors, and other equipment operating 24 hours a day, wastewater utilities can account for some of the largest individual energy expenses incurred by a local community.

At a time when many communities are striving to reduce operating costs and greenhouse gas emissions, an energy audit can provide the tools and resources necessary to help eliminate energy waste and lower operating costs of wastewater utilities. A review or thorough study of a facility's energy performance will identify areas for operational improvements and cost savings such as labor, chemicals, maintenance, and disposal costs. A thorough energy assessment may alert managers to other issues that can be identified and explored for further energy reduction measures. An unexplained increase in energy consumption discovered through a utility bill analysis may be indicative of equipment failure, an obstruction, or other problems associated with facility operation that may have not been exposed otherwise.

A wastewater facility energy audit by LNV allows the facility owner to discover ways to save money by improving the energy efficiency of current operations. LNV will examine controls systems, primary and secondary treatments, aeration, and offer recommendations for operational improvements. Typically these may include variable frequency drives for speed control, SCADA control systems, pumping operations, aeration system modifications, and scheduling, building-related inefficiencies, and other upgrades to help your facility use less energy.

As part of the energy audit, LNV will provide a comprehensive energy analysis and strategic operating plan offering recommendations for retrofitting, replacement, and energy conservation opportunities. The plan contains a financial payback analysis, including estimated annual savings, estimated cost to implement, simple payback, and a savings-to-investment ratio (SIR) for each recommendation. This allows the owner an opportunity to prioritize energy efficiency measures according to your capital budget and allows you to forecast for future capital expenditures.

LNV will provide the City with a strategic commercial energy management plan which prioritizes the most cost-effective recommendations for energy savings. The plan includes:

- A comprehensive list of recommended energy investments with the best paybacks and savings to investment ratios
- A detailed list of low-cost opportunities for energy savings

- Recommendations for energy improvements that could be implemented with the Phase 2 construction
- Current and projected energy use
- Annual electric and natural gas consumption/costs
- A comprehensive analysis of existing energy inefficiencies
- A list of potential energy rebates, incentives, grants, and other funding opportunities
- Renewable energy opportunities and feasibility
- Energy management strategies and how they can be implemented
- Inventory and description of existing conditions

16.1 Elements of the Audit Report

LNV will prepare an Energy Audit Report that incorporates each of the following elements:

16.1.1 Historic Energy Consumption

1) Compile energy usage and costs for each facility/building for the twelve months prior to the audit including kW, kWh, BTUs, therms, etc. and shall include billing meter readings that corroborate usage.

2) Identify the utility rate schedule under which services are provided to each meter.

3) Enter the required building and utility data into the U.S. Environmental Protection Agency's (EPA) Portfolio Manager energy benchmarking system for comparable wastewater energy performance.

16.1.2 Facility or Measure Description:

Characterize facility usage and occupancy profiles, size, construction features including an assessment of the building envelope (windows, doors, insulation, etc.) and process equipment description and operations.

16.1.3 Equipment List:

Provide a detailed inventory of equipment, which contains pertinent information for all energy consuming equipment including estimate of equipment efficiency and remaining useful life. For example, for lighting, for each area of each building, provide existing fixture type, existing lamp type, existing lamp count and existing ballast type, current watts per fixture and current energy cost per room/building. Similar detail will be provided for other equipment, including but not limited to process equipment such as wastewater pumping systems, aeration systems and chemical feed equipment of the treatment plant.

16.1.4 Energy Conservation Measures:

Provide a narrative summary for each energy conservation measure recommended. For example, for lighting recommendations, for each area of each building, provide proposed fixture type, proposed lamp type, proposed lamp count, proposed ballast type, total watts per proposed fixture, projected energy savings per room, projected energy cost savings per room and before and after lighting levels. Similar detail will be provided for other measures. Clearly document the key assumptions made in analyzing each measure and describe the method of analysis.

The Energy Audit and Analysis Fee includes:

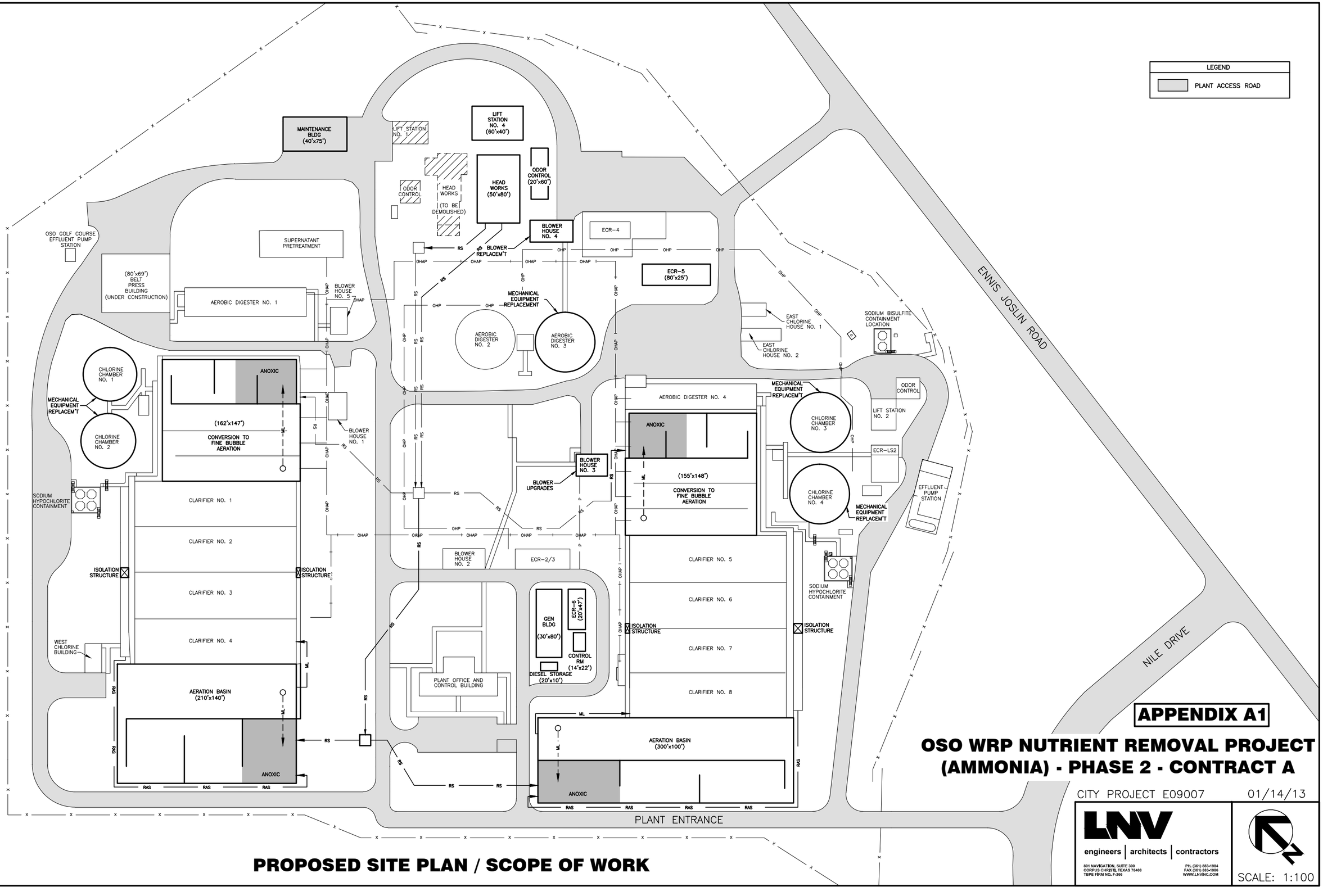
- Preliminary engineering consulting services to provide Oso WRP Nutrient Plant with the preliminary scope of work, estimated installed cost, estimated annual kWh production and resultant energy savings, and a financial analysis including all available incentives.
- (2) Bound color copies of the Feasibility Analysis
- (1) Electronic Copy on disk
- (4) Engineering site visits
- Client consultation
- Presentation of Energy Assessment

16.1.5 Limitations

1. LNV, Inc. will rely on the accuracy of any information submitted to us by the CLIENT in the performance of our services, and will not be held responsible for errors or inaccuracies contained in information provided to us.

2. Detailed building energy simulations will not be performed. The study will employ techniques that rely on historical information compiled over the years from similar facilities. Individual building performance will not be modeled in great detail. Rather, building type, size and occupancy will be used to form a rough calculation model of the building (or specific equipment) energy usage for use in determining the estimated results of energy conservation measures. Likewise, construction costs will also be based on historic data compiled from similar installations, and engineering opinion.

Deliverables: Draft and Final Feasibility Analysis



PROPOSED SITE PLAN / SCOPE OF WORK

APPENDIX A1

OSO WRP NUTRIENT REMOVAL PROJECT (AMMONIA) - PHASE 2 - CONTRACT A

CITY PROJECT E09007

01/14/13

LNV
engineers | architects | contractors
801 NAVIGATION, SUITE 300
CORPUS CHRISTI, TEXAS 78408
TBPE FIRM NO. F-366
PH. (361) 883-1984
FAX (361) 883-1986
WWW.LNVINC.COM

SCALE: 1:100

ALAMEDA ST

OCEAN DR

TERMINATE WASTEWATER FORCEMAIN AT NEW HEADWORKS

TAMU–CC

TIE–IN PROPOSED EFFLUENT FORCEMAIN AT EXISTING EFFLUENT PUMP STATION

OSO WRP

PRELIMINARY PREFERRED ROUTE (35,750 LF)DUAL 20ò WASTEWATER FORCEMAIN FROM LAGUNA MADRE WWTP 12ò EFFLUENT FORCEMAIN FROM OSO WRP

CORPUS CHRISTI BAY

N

0 2000' 4000'

ENNIS JOSLIN RD

OSO BAY

NAVAL AIR STATION

SOUTH PADRE ISLAND DR

FLOUR BLUFF DR

N.A.S. DR

LAGUNA MADRE

TIE–IN PROPOSED EFFLUENT FORCEMAIN FROM OSO WRP

DECOMMISSION EXISTING LAGUNA MADRE WASTEWATER TREATMENT PLANT

PROPOSED 17.5 MGD LIFT STATION

LEGEND:

PRELIMINARY PREFERRED ROUTE

ALTERNATE ROUTES

PROP 17.5 MGD LIFT STATION

APPENDIX A2

LNV

engineers | architects | contractors

801 NAVIGATION, SUITE 300
CORPUS CHRISTI, TEXAS 78408
TBPE FIRM NO. F-366

PH. (361) 883-1984
FAX (361) 883-1986
WWW.LNVINC.COM

CITY OF CORPUS CHRISTI, TEXAS

LAGUNA MADRE WWTP DECOMMISSIONING & TRANSFERS TO OSO WRP
PRELIMINARY ALTERNATIVE ROUTES
PHASE 2 - CONTRACT B

U:\Corpus Christi\100140.00 Oso Water Reclamation Plant Nutrient Removal (Ammonia)\005\Drawings\Exhibits - Imagery\Laguna Madre Oso Transfer Prelim Alter Routes.dwg
Monday, April 01, 2013, 4:28pm

LNV
engineers | architects | contractors

In association with:
Jacobs Engineering Group
Joshua Brown, P.E.

DATE: May 7, 2013
BY: JB & LB & JH

PROJECT: Oso WRP Nutrient Removal and Re-rate to 24 MGD - Phase 2 FINAL
PROJECT NO: E12206

Project Estimates

CONTRACT A

Item	Description	Qty	Unit	Unit Price	Total Price
1	Influent Pump Station	1	LS	$ 9,910,000	$ 9,910,000
2	Headworks	1	LS	$ 9,734,000	$ 9,734,000
3	East Plant Retrofit	1	LS	$ 5,585,000	$ 5,585,000
4	West Plant Retrofit	1	LS	$ 5,585,000	$ 5,585,000
5	New East Process Train No. 3	1	LS	$ 11,245,000	$ 11,245,000
6	New West Process Train No. 4	1	LS	$ 10,545,000	$ 10,545,000
7	Maintenance Building	1	LS	$ 1,158,000	$ 1,158,000
8	Disinfection System Modifications & Chlorine Contact Basin Mech Equip. Replacement	4	EA	$ 325,000	$ 1,300,000
9	Digester No 2,3 & 4 Mech Equip Replacement	3	EA	$ 325,000	$ 975,000
				SUB TOTAL	**$ 56,037,000**
				CONSTRUCTION SUB TOTAL (2013 $)	**$ 56,037,000**
	DESIGN - BASIC SERVICE (8.0%)				$ 4,483,000
	ENGINEERING - ADDITIONAL SERVICES (2.0%)				$ 1,121,000
	TOPOGRAPHIC SURVEY (0.3%)				$ 169,000
	CONTRACT ADMINISTRATION (3.0%)				$ 1,682,000
	ENGINEERING SERVICES (3.5%)				$ 1,962,000
	CONSTRUCTION INSPECTION (3.5%)				$ 1,962,000
	TESTING (1.0%)				$ 561,000
	BOND INSURANCE (1.0%)				$ 561,000
	MISC. (PRINTING, ETC) (0.5%)				$ 281,000
				ADMINISTRATIVE SUB TOTAL	**$ 12,790,000**
				PROJECT TOTAL (2013 $)	**$ 68,827,000**

CONSTRUCTION TOTAL (2017 $)[Note 1] **$63,071,000**

PROJECT TOTAL (2017 $)[Note 1] **$75,861,000**

CONTRACT B

Item	Description	Qty	Unit	Unit Price	Total Price
1	LMWWTP Decommissioning & Transfers	1	LS	$ 27,161,000	$ 27,161,000
				SUB TOTAL	**$ 27,161,000**
				CONSTRUCTION SUB TOTAL (2013 $)	**$ 27,161,000**
	DESIGN - BASIC SERVICE (8.0%)				$ 2,173,000
	ENGINEERING - ADDITIONAL SERVICES (2.0%)				$ 44,000
	TOPOGRAPHIC SURVEY (0.3%)				$ 82,000
	CONTRACT ADMINISTRATION (3.0%)				$ 815,000
	ENGINEERING SERVICES (3.5%)				$ 951,000
	CONSTRUCTION INSPECTION (3.5%)				$ 951,000
	TESTING (1.0%)				$ 272,000
	BOND INSURANCE (1.0%)				$ 272,000
	MISC. (PRINTING, ETC) (0.5%)				$ 136,000
				ADMINISTRATIVE SUB TOTAL	**$ 5,700,000**
				PROJECT TOTAL (2013 $)	**$ 32,861,000**

CONSTRUCTION TOTAL (2018 $)[Note 1] **$31,488,000**

PROJECT TOTAL (2018 $)[Note 1] **$37,188,000**

NOTES:

1. Preliminary construction prices are based on recent and historical data on local projects in Corpus Christi and costs should be escalated 3% per yr to the midpoint of construction in 2013 dollars.
2. Items not included in the estimate are any structures or equipment identified during the condition assessment as requiring upgrades, rehabilitation, or replacement including but not limited to the outfall facilities, administration building, belt press building, digesters, clarifiers and/or yard piping.

LNV engineers | architects | contractors

In association with:
Jacobs Engineering Group
Joshua Brown, P.E.

DATE: March 20, 2013
BY: WLB & BHE & JH

PROJECT: Oso WRP Nutrient Removal and Re-rate to 24 MGD - Phase 2 FINAL
PROJECT NO: E12206
DESCRIPTION: Proposed Influent Lift Station

Project Estimates

Item	Description	Qty	Unit	Unit Price	Total Price
1	Mobilization	1	LS	$ 370,000	$ 370,000
2	Utility Relocation Allowance	1	LS	$ 300,000	$ 300,000
3	Excavation	1	LS	$ 500,000	$ 500,000
4	Dewatering	1	LS	$ 150,000	$ 150,000
5	New 60" Inlet Piping	500	LF	$ 1,000	$ 500,000
6	Lift Station Dual Wet Well	1	LS	$ 750,000	$ 750,000
7	Submersible Influent Pumps	8	EA	$ 150,000	$ 1,200,000
8	Lift Station Building	1500	SF	$ 300	$ 450,000
9	Yard piping & Fittings	1	LS	$ 500,000	$ 500,000
10	Flow Metering	1	EA	$ 200,000	$ 200,000
11	Pump Hoist & Lifting System	1	LS	$ 150,000	$ 150,000
12	Demolition & Decommissioning of LS1 & LS2	1	LS	$ 150,000	$ 150,000
13	Electrical, Instrumentation & Programming	1	LS	$ 2,400,000	$ 2,400,000
				SUB TOTAL	**$ 7,620,000**
				CONTINGENCIES (30%)	**$ 2,290,000**
				CONSTRUCTION SUB TOTAL (2013 $)	**$ 9,910,000**

	DESIGN - BASIC SERVICE (8.0%)	$ 793,000
	ENGINEERING - ADDITIONAL SERVICES (2.0%)	$ 199,000
	TOPOGRAPHIC SURVEY (0.3%)	$ 30,000
	CONTRACT ADMINISTRATION (3.0%)	$ 298,000
	ENGINEERING SERVICES (3.5%)	$ 347,000
	CONSTRUCTION INSPECTION (3.5%)	$ 347,000
	TESTING (1.0%)	$ 100,000
	BOND INSURANCE (1.0%)	$ 100,000
	MISC. (PRINTING, ETC) (0.5%)	$ 50,000
	ADMINISTRATIVE SUB TOTAL	**$ 2,270,000**
	PROJECT TOTAL (2013 $)	**$ 12,180,000**

NOTES:

1. Preliminary construction prices are based on recent and historical data on local projects in Corpus Christi and costs should be escalated 3% per yr to the midpoint of construction in 2013 dollars.

engineers | architects | contractors

In association with:
Jacobs Engineering Group
Joshua Brown, P.E.

DATE: March 20, 2013
BY: WLB & BHE & JH

PROJECT: Oso WRP Nutrient Removal and Re-rate to 24 MGD - Phase 2 FINAL
PROJECT NO: E12206
DESCRIPTION: Proposed Headworks Structure

Project Estimates

Item	Description	Qty	Unit	Unit Price	Total Price
1	Mobilization	1	LS	$ 360,000	$ 360,000
2	Sludge removal and disposal	1	LS	$ 150,000	$ 150,000
3	Demolition (Removal of buried post thickeners and Existing Headworks facility)	1	LS	$ 350,000	$ 350,000
4	Pier Foundation - (54) 36" dia piers @ 50' Depth)	2700	VF	$ 120	$ 324,000
5	Utility Relocation	1	LS	$ 100,000	$ 100,000
6	Excavation	1	LS	$ 50,000	$ 50,000
7	Modifications to Existing Lift Station Force Mains	500	LF	$ 500	$ 250,000
8	Bar Screen Channel Concrete Structure	1	LS	$ 500,000	$ 500,000
9	Grit Basin Concrete Structure	1	LS	$ 750,000	$ 750,000
10	Bar screens, Compactors, Gates	1	LS	$ 1,500,000	$ 1,500,000
11	Vortex Grit Equipment	4	EA	$ 400,000	$ 1,600,000
12	Miscellaneous Piping	1	LS	$ 300,000	$ 300,000
13	Electrical and Instrumentation	1	LS	$ 500,000	$ 500,000
14	Odor Control Facility Improvements	1	LS	$ 750,000	$ 750,000
				SUB TOTAL	**$ 7,484,000**
				CONTINGENCIES (30%)	**$ 2,250,000**
				CONSTRUCTION SUB TOTAL (2013 $)	**$ 9,734,000**
	DESIGN - BASIC SERVICE (8.0%)				$ 779,000
	ENGINEERING - ADDITIONAL SERVICES (2.0%)				$ 195,000
	TOPOGRAPHIC SURVEY (0.3%)				$ 30,000
	CONTRACT ADMINISTRATION (3.0%)				$ 293,000
	ENGINEERING SERVICES (3.5%)				$ 341,000
	CONSTRUCTION INSPECTION (3.5%)				$ 341,000
	TESTING (1.0%)				$ 98,000
	BOND INSURANCE (1.0%)				$ 98,000
	MISC. (PRINTING, ETC) (0.5%)				$ 49,000
				ADMINISTRATIVE SUB TOTAL	**$ 2,230,000**
				PROJECT TOTAL (2013 $)	**$ 11,964,000**

NOTES:

1. Preliminary construction prices are based on recent and historical data on local projects in Corpus Christi and costs should be escalated 3% per yr to the midpoint of construction in 2013 dollars.

LNV
engineers | architects | contractors

In association with:
Jacobs Engineering Group
Joshua Brown, P.E.

DATE: March 20, 2013
BY: JB & LB & JH

PROJECT: Oso WRP Nutrient Removal and Re-rate to 24 MGD - Phase 2 FINAL
PROJECT NO: E12206
DESCRIPTION: East Plant Aeration Basin Retrofit

Project Estimates

Item	Description	Qty	Unit	Unit Price	Total Price
1	Mobilization	1	LS	$ 210,000	$ 210,000
2	Sludge removal & disposal	1	LS	$ 250,000	$ 250,000
3	Utilty relocation (RS piping)	1	LS	$ 160,000	$ 160,000
4	Demolition (160' baffle wall)	1	LS	$ 100,000	$ 100,000
5	New baffle walls	1	LS	$ 250,000	$ 250,000
6	Yard piping modifications	1	LS	$ 500,000	$ 500,000
7	Mixers, MLR pump & pipe, WAS pump & pipe	1	LS	$ 750,000	$ 750,000
8	New fine bubble diffusers	1	LS	$ 525,000	$ 525,000
9	Upgrades to air piping (automated valves)	1	LS	$ 450,000	$ 450,000
10	Walkway retrofit due to new air pipe	1	LS	$ 250,000	$ 250,000
11	Electrical and Instrumentation	1	LS	$ 850,000	$ 850,000
				SUB TOTAL	**$ 4,295,000**
				CONTINGENCIES (30%)	**$ 1,290,000**
				CONSTRUCTION SUB TOTAL (2013 $)	**$ 5,585,000**
	DESIGN - BASIC SERVICE (8.0%)				$ 447,000
	ENGINEERING - ADDITIONAL SERVICES (2.0%)				$ 112,000
	TOPOGRAPHIC SURVEY (0.3%)				$ 17,000
	CONTRACT ADMINISTRATION (3.0%)				$ 168,000
	ENGINEERING SERVICES (3.5%)				$ 196,000
	CONSTRUCTION INSPECTION (3.5%)				$ 196,000
	TESTING (1.0%)				$ 56,000
	BOND INSURANCE (1.0%)				$ 56,000
	MISC. (PRINTING, ETC) (0.5%)				$ 28,000
				ADMINISTRATIVE SUB TOTAL	**$ 1,280,000**
				PROJECT TOTAL (2013 $)	**$ 6,865,000**

NOTES:

1. Preliminary construction prices are based on recent and historical data on local projects in Corpus Christi and costs should be escalated 3% per yr to the midpoint of construction in 2013 dollars.

engineers | architects | contractors

In association with:
Jacobs Engineering Group
Joshua Brown, P.E.

DATE: March 20, 2013
BY: JB & LB & JH

PROJECT: Oso WRP Nutrient Removal and Re-rate to 24 MGD - Phase 2 FINAL
PROJECT NO: E12206
DESCRIPTION: West Plant Aeration Basin Retrofit

Project Estimates

Item	Description	Qty	Unit	Unit Price	Total Price
1	Mobilization	1	LS	$ 210,000	$ 210,000
2	Sludge removal & disposal	1	LS	$ 250,000	$ 250,000
3	Utilty relocation (RS piping)	1	LS	$ 160,000	$ 160,000
4	Demolition (160' baffle wall)	1	LS	$ 100,000	$ 100,000
5	New baffle walls	1	LS	$ 250,000	$ 250,000
6	Yard piping modifications	1	LS	$ 500,000	$ 500,000
7	Mixers, MLR pump & pipe, WAS pump & pipe	1	LS	$ 750,000	$ 750,000
8	New fine bubble diffusers	1	LS	$ 525,000	$ 525,000
9	Upgrades to air piping (automated valves)	1	LS	$ 450,000	$ 450,000
10	Walkway retrofit due to new air pipe	1	LS	$ 250,000	$ 250,000
11	Electrical and Instrumentation	1	LS	$ 850,000	$ 850,000
				SUB TOTAL	**$ 4,295,000**
				CONTINGENCIES (30%)	**$ 1,290,000**
				CONSTRUCTION SUB TOTAL (2013 $)	**$ 5,585,000**
	DESIGN - BASIC SERVICE (8.0%)				$ 447,000
	ENGINEERING - ADDITIONAL SERVICES (2.0%)				$ 112,000
	TOPOGRAPHIC SURVEY (0.3%)				$ 17,000
	CONTRACT ADMINISTRATION (3.0%)				$ 168,000
	ENGINEERING SERVICES (3.5%)				$ 196,000
	CONSTRUCTION INSPECTION (3.5%)				$ 196,000
	TESTING (1.0%)				$ 56,000
	BOND INSURANCE (1.0%)				$ 56,000
	MISC. (PRINTING, ETC) (0.5%)				$ 28,000
				ADMINISTRATIVE SUB TOTAL	**$ 1,280,000**
				PROJECT TOTAL (2013 $)	**$ 6,865,000**

NOTES:

1. Preliminary construction prices are based on recent and historical data on local projects in Corpus Christi and costs should be escalated 3% per yr to the midpoint of construction in 2013 dollars.

engineers | architects | contractors

In association with:
Jacobs Engineering Group
Joshua Brown, P.E.

DATE: March 20, 2013
BY: WLB & BHE & JH

PROJECT: Oso WRP Nutrient Removal and Re-rate to 24 MGD - Phase 2 FINAL
PROJECT NO: E12206
DESCRIPTION: Proposed East Aeration Basin (Train 3)

Project Estimates

Item	Description	Qty	Unit	Unit Price	Total Price
1	Mobilization	1	LS	$ 420,000	$ 420,000
2	Utility relocation	1	LS	$ 200,000	$ 200,000
3	New splitter box with gates	1	LS	$ 350,000	$ 350,000
4	Isolation Structures (Clarifier & RAS)	2	EA	$ 100,000	$ 200,000
5	Excavation/ fill/ disposal	20000	CY	$ 30	$ 600,000
6	Dewatering	1	LS	$ 250,000	$ 250,000
7	New aeration basin concrete structure	1	LS	$ 1,600,000	$ 1,600,000
8	Yard & Air piping modifications	1	LS	$ 1,100,000	$ 1,100,000
9	Mixers, MLR pump, WAS pump	1	LS	$ 700,000	$ 700,000
10	Diffusers	1	LS	$ 525,000	$ 525,000
11	Air piping (automated valves)	1	LS	$ 450,000	$ 450,000
12	Blower Upgrades & Replacement	1	LS	$ 750,000	$ 750,000
13	Walkways, Safety Rails	1	LS	$ 250,000	$ 250,000
14	Electrical and Instrumentation	1	LS	$ 1,250,000	$ 1,250,000
				SUB TOTAL	**$ 8,645,000**
				CONTINGENCIES (30%)	**$ 2,600,000**
				CONSTRUCTION SUB TOTAL (2013 $)	**$ 11,245,000**
	DESIGN - BASIC SERVICE (8.0%)				$ 900,000
	ENGINEERING - ADDITIONAL SERVICES (2.0%)				$ 225,000
	TOPOGRAPHIC SURVEY (0.3%)				$ 34,000
	CONTRACT ADMINISTRATION (3.0%)				$ 338,000
	ENGINEERING SERVICES (3.5%)				$ 394,000
	CONSTRUCTION INSPECTION (3.5%)				$ 394,000
	TESTING (1.0%)				$ 113,000
	BOND INSURANCE (1.0%)				$ 113,000
	MISC. (PRINTING, ETC) (0.5%)				$ 57,000
				ADMINISTRATIVE SUB TOTAL	**$ 2,570,000**
				PROJECT TOTAL (2013 $)	**$ 13,815,000**

NOTES:

1. Preliminary construction prices are based on recent and historical data on local projects in Corpus Christi and costs should be escalated 3% per yr to the midpoint of construction in 2013 dollars.

LNV
engineers | architects | contractors

In association with:
Jacobs Engineering Group
Joshua Brown, P.E.

DATE: March 20, 2013
BY: WLB & BHE & JH

PROJECT: Oso WRP Nutrient Removal and Re-rate to 24 MGD - Phase 2 FINAL
PROJECT NO: E12206
DESCRIPTION: Proposed West Aeration Basin (Train 4)

Project Estimates

Item	Description	Qty	Unit	Unit Price	Total Price
1	Mobilization	1	LS	$ 330,000	$ 330,000
2	Utility relocation	1	LS	$ 200,000	$ 200,000
3	Isolation Structures (Clarifier & RAS)	2	EA	$ 100,000	$ 200,000
4	Excavation/ fill /disposal	20000	CY	$ 30	$ 600,000
5	Dewatering	1	LS	$ 250,000	$ 250,000
6	New aeration basin concrete structure	1	LS	$ 1,600,000	$ 1,600,000
7	Yard & Air piping modifications	1	LS	$ 900,000	$ 900,000
8	Mixers, MLR pump, WAS pump	1	LS	$ 700,000	$ 700,000
9	Diffusers	1	LS	$ 525,000	$ 525,000
10	Air piping (automated valves)	1	LS	$ 450,000	$ 450,000
11	Blower Upgrades & Replacement	1	LS	$ 750,000	$ 750,000
12	Walkways & Safety Rails	1	LS	$ 250,000	$ 250,000
14	Electrical and Instrumentation	1	LS	$ 1,350,000	$ 1,350,000
				SUB TOTAL	**$ 8,105,000**
				CONTINGENCIES (30%)	**$ 2,440,000**
				CONSTRUCTION SUB TOTAL (2013 $)	**$ 10,545,000**
	DESIGN - BASIC SERVICE (8.0%)				$ 844,000
	ENGINEERING - ADDITIONAL SERVICES (2.0%)				$ 211,000
	TOPOGRAPHIC SURVEY (0.3%)				$ 32,000
	CONTRACT ADMINISTRATION (3.0%)				$ 317,000
	ENGINEERING SERVICES (3.5%)				$ 370,000
	CONSTRUCTION INSPECTION (3.5%)				$ 370,000
	TESTING (1.0%)				$ 106,000
	BOND INSURANCE (1.0%)				$ 106,000
	MISC. (PRINTING, ETC) (0.5%)				$ 53,000
				ADMINISTRATIVE SUB TOTAL	**$ 2,410,000**
				PROJECT TOTAL (2013 $)	**$ 12,955,000**

NOTES:

1. Preliminary construction prices are based on recent and historical data on local projects in Corpus Christi and costs should be escalated 3% per yr to the midpoint of construction in 2013 dollars.

engineers | architects | contractors

In association with:
Jacobs Engineering Group
Joshua Brown, P.E.

DATE: March 20, 2013
BY: WLB & BHE & JH

PROJECT: Oso WRP Nutrient Removal and Re-rate to 24 MGD - Phase 2 FINAL
PROJECT NO: E12206
DESCRIPTION: Maintenance Building

Project Estimates

Item	Description	Qty	Unit	Unit Price	Total Price
1	Mobilization	1	LS	$ 43,000	$ 43,000
2	Site Clearing & Preparation	1	LS	$ 20,000	$ 20,000
3	Metal Building & Foundation (3000 SF)	3000	SF	$ 200	$ 600,000
4	Utility Relocation	1	LS	$ 25,000	$ 25,000
5	Plumbing & HVAC	1	LS	$ 150,000	$ 150,000
6	Electrical Improvements	1	LS	$ 50,000	$ 50,000
				SUB TOTAL	**$ 888,000**
				CONTINGENCIES (30%)	**$ 270,000**
				CONSTRUCTION SUB TOTAL (2013 $)	**$ 1,158,000**
	DESIGN - BASIC SERVICE (8.0%)				$ 93,000
	ENGINEERING - ADDITIONAL SERVICES (2.0%)				$ 24,000
	TOPOGRAPHIC SURVEY (0.3%)				$ 4,000
	CONTRACT ADMINISTRATION (3.0%)				$ 35,000
	ENGINEERING SERVICES (3.5%)				$ 41,000
	CONSTRUCTION INSPECTION (3.5%)				$ 41,000
	TESTING (1.0%)				$ 12,000
	BOND INSURANCE (1.0%)				$ 12,000
	MISC. (PRINTING, ETC) (0.5%)				$ 6,000
				ADMINISTRATIVE SUB TOTAL	**$ 270,000**
				PROJECT TOTAL (2013 $)	**$ 1,428,000**

NOTES:

1. Preliminary construction prices are based on recent and historical data on local projects in Corpus Christi and costs should be escalated 3% per yr to the midpoint of construction in 2013 dollars.

LNV
engineers | architects | contractors

DATE: May 7, 2013
BY: WLB

PROJECT: Oso WRP Nutrient Removal and Re-rate to 24 MGD - Phase 2 FINAL
PROJECT NO: E12206
DESCRIPTION: Laguna Madre WWTP Decommissiong, Transfer Lift Station & Wastewater/Effluent Force Mains

Project Estimates

Item	Description	Qty	Unit	Unit Price	Total Price
1	Mobilization	1	LS	$ 1,000,000	$ 1,000,000
2	Utility Relocation Allowance	1	LS	$ 300,000	$ 300,000
3	Excavation for Wet Well	1	LS	$ 35,000	$ 35,000
4	Dewatering for Wet Well	1	LS	$ 40,000	$ 40,000
5	New 36" Inlet Piping	100	LF	$ 350	$ 35,000
6	Dual Concrete Wet Well	1	LS	$ 150,000	$ 150,000
7	135 HP Submersible Influent Pumps	6	EA	$ 80,000	$ 480,000
8	Lift Station Building	1000	SF	$ 300	$ 300,000
9	LS Yard piping Modifications	1	LS	$ 50,000	$ 50,000
10	Flow Metering	1	EA	$ 125,000	$ 125,000
11	Pump Hoist & Lifting System	1	LS	$ 125,000	$ 125,000
12	Demolition & Decommissioning of LMWWTP	1	LS	$ 750,000	$ 750,000
13	Electrical, Instrumentation & Programming	1	LS	$ 1,000,000	$ 1,000,000
14	Dual 20-in Wastewater Force Main to Oso WRP	29300	LF	$ 280	$ 8,204,000
15	Dual 20-in Wastewater FM Installed across Oso Bay via HDD	4750	LF	$ 650	$ 3,087,500
16	Dual 20-in Wastewater FM across Shoreline Bridge	1700	LF	$ 300	$ 510,000
17	12-in Effluent Force Main to LMWWTP	29300	LF	$ 85	$ 2,490,500
18	12-in Effluent FM installed across Oso Bay via HDD	4750	LF	$ 170	$ 807,500
19	12-in Effluent FM across Shoreline Bridge	1700	LF	$ 100	$ 170,000
21	Dewatering by Well Pointing for both FMs	29300	LF	$ 25	$ 732,500
22	HMACP Pavement Repair (3300 LF)	2567	SY	$ 60	$ 154,000
23	Air Release Valve Manholes & Assembly	20	EA	$ 9,000	$ 180,000
24	Gate Valves @ 4000' Spacing	30	EA	$ 5,500	$ 165,000
				SUB TOTAL	**$ 20,891,000**
				CONTINGENCIES (30%)	**$ 6,270,000**
				CONSTRUCTION SUB TOTAL (2013 $)	**$ 27,161,000**
	DESIGN - BASIC SERVICE (8.0%)				$ 2,173,000
	ENGINEERING - ADDITIONAL SERVICES (2.0%)				$ 544,000
	TOPOGRAPHIC SURVEY (0.3%)				$ 82,000
	CONTRACT ADMINISTRATION (3.0%)				$ 815,000
	ENGINEERING SERVICES (3.5%)				$ 951,000
	CONSTRUCTION INSPECTION (3.5%)				$ 951,000
	TESTING (1.0%)				$ 272,000
	BOND INSURANCE (1.0%)				$ 272,000
	MISC. (PRINTING, ETC) (0.5%)				$ 136,000
				ADMINISTRATIVE SUB TOTAL	**$ 6,200,000**
				PROJECT TOTAL (2013 $)	**$ 33,361,000**

NOTES:

1. Preliminary construction prices are based on recent and historical data on local projects in Corpus Christi and costs should be escalated 3% per yr to the midpoint of construction in 2013 dollars.

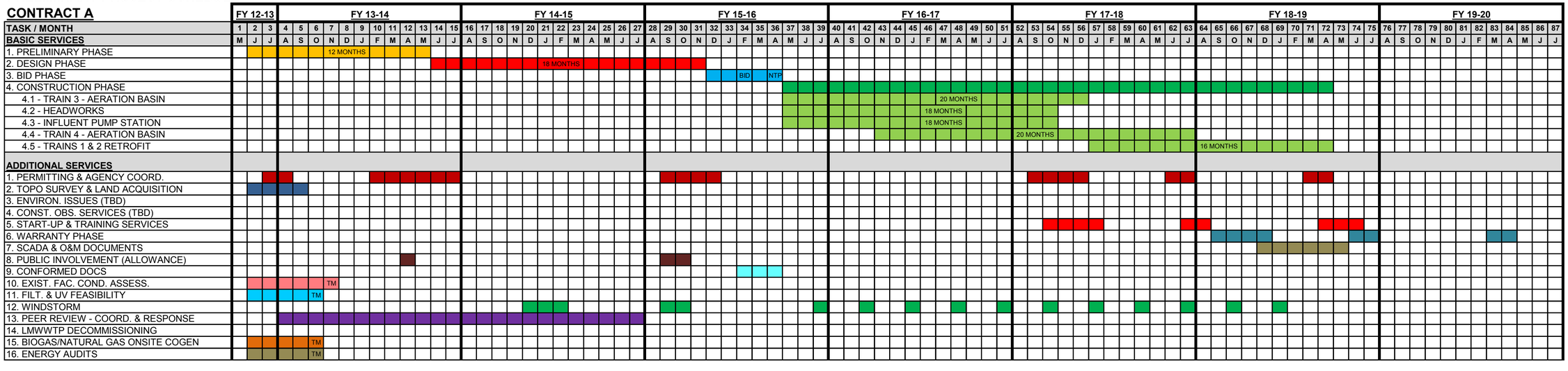
LNV

engineers | architects | contractors

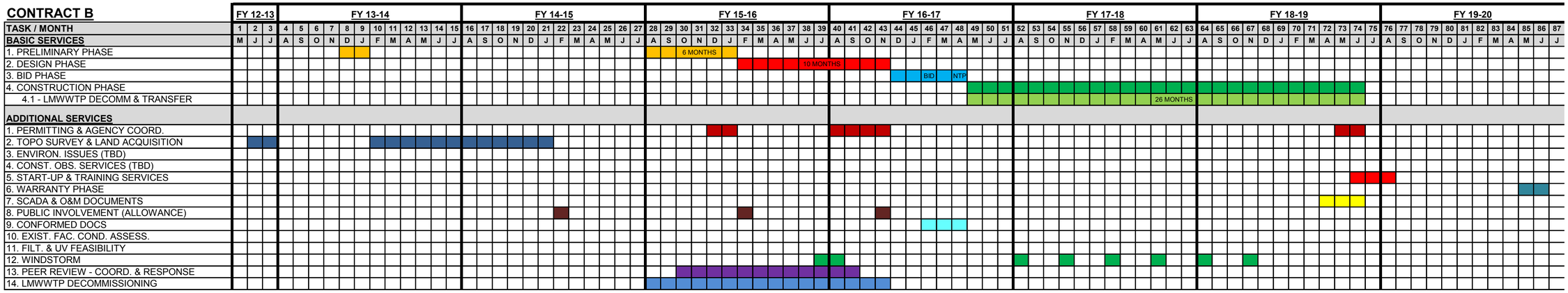
TBPE FIRM NO. F-366

OSO WATER RECLAMATION PLANT NUTRIENT REMOVAL AND RE-RATE TO 24 MGD - PHASE 2 FINAL
PRELIMINARY PROJECT SCHEDULE

CONTRACT A



CONTRACT B



PRELIMINARY COST BREAKDOWN

	TOTAL	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20
1. DESIGN/ENGINEERING	**$10,001**	$592	$2,368	$1,981	$2,378	$1,063	$690	$863	$67
2. CONSTRUCTION*	**$94,561**	$0	$0	$0	$5,256	$24,657	$35,557	$29,090	$0
3. CONTINGENCY (10%)	**$9,456**	$0	$0	$0	$526	$2,466	$3,556	$2,909	$0
4. INSPECTION	**$3,844**	$0	$0	$0	$186	$930	$1,488	$1,240	$0
TOTAL	**$117,862**	**$592**	**$2,368**	**$1,981**	**$8,346**	**$29,116**	**$41,291**	**$34,102**	**$67**

NOTES:

DOLLARS ARE SHOWN IN THOUSANDS.

*CONSTRUCTION COST IS ESCALATED AT 3% PER YEAR TO MIDPOINT OF CONSTRUCTION.

**COSTS SHOWN ABOVE DO NOT INCLUDE FEES ASSOCIATED WITH OTHER CONSULTANTS FOR PEER REVIEW OR OTHER MISCELLANEOUS TASKS, NOR DOES IT INCLUDE COSTS INCURRED BY THE CITY ENGINEERING DEPT FOR CONTRACT ADMINISTRATION AND INSPECTION/TESTING.

City of Corpus Christi
Oso WRP Nutrient Removal and Re-rate to 24 MGD - Phase 2 (FINAL)

May 7, 2013

LNV Project No. 130190

MANHOUR BREAKDOWN FOR SERVICES BY A/E CONSULTANT

CONTRACT A

	Description	LNV Labor Estimate																				
Task No.	FUNCTIONAL TASKS	Principal	Project Manager	Project Engineer	Engineer III	Engineer I	Designer	Senior Cadd Tech	Cadd Tech	PR	PAA	Admin	RPLS	Dir of Survey Parties	PCI	Field Crew (3-Man)	LNV Total	JACOBS	COLWELL ELEC	COLWELL I&C	APAI	Direct Expenses	Admin Fees	Task Total Cost
BASIC SERVICES																								
1	**PRELIMINARY DESIGN PHASE**	48	140	160	180	-	16	80	-	-	-	24	-	-	-	-	$90,612	30,000	-	-	-	210	3,000	
-	1.1 General Design Criteria	4	60	60	100	120	80	120	160	-	-	-	-	-	-	-	$73,916	45,000	27,500	33,500	-	-	10,600	
-	1.2 Treatment Process Units Design Criteria	4	90	120	120	160	120	140	180	-	-	-	-	-	-	-	$101,366	171,500	9,000	15,000	-	-	19,550	
-	1.3 Geotechnical Coordination	2	4	6	6	8	2	4	8	-	-	-	-	-	-	-	$4,624	888	-	-	-	-	89	
-	1.4 Architectural Concepts Development	4	16	48	-	-	8	16	40	-	-	-	-	-	-	-	$16,032	-	-	-	-	-	-	
-	1.5 Preliminary Design Package (30% Design)	24	220	300	300	400	500	600	800	-	-	32	-	-	-	-	$323,956	125,000	98,100	64,800	-	250	28,790	
1	TASK 1 Sub total of Hours	86	530	694	706	688	726	960	1188	0	0	56	0	0	0	0	5634							
1	TASK 1 Sub total of Cost	$16,684	$101,230	$101,324	$83,308	$63,984	$65,340	$83,520	$91,476	$0	$0	$3,640	$0	$0	$0	$0	$610,506	$372,388	$134,600	$113,300	$0	$460	$62,029	$1,293,283
2	**DESIGN PHASE**	60	240	210	210	-	-	-	-	-	-	40	-	-	-	-	$115,520	-	325,000	262,000	-	420	58,700	
-	2.1 General Design	8	80	100	120	160	80	120	200	-	-	-	-	-	-	-	$93,512	65,000	-	-	-	-	6,500	
-	2.2 Treatment Process Units	12	100	120	140	180	120	160	320	-	-	-	-	-	-	-	$121,568	25,000	-	-	-	-	2,500	
-	2.3 60% Design - Plans & Specifications	12	200	240	260	300	600	600	1,000	-	-	40	-	-	-	-	$319,948	244,000	-	-	-	150	24,400	
-	2.4 100% Pre-final Design - Plans & Specifications	12	180	200	260	300	600	600	1,000	-	-	40	-	-	-	-	$310,288	253,000	-	-	-	150	25,300	
-	2.5 Final Design Plans & Specifications	8	120	140	160	200	240	300	600	-	-	40	-	-	-	-	$178,892	120,000	-	-	-	300	12,000	
2	TASK 2 Sub total of Hours	112	920	1010	1150	1140	1640	1780	3120	0	0	160	0	0	0	0	11032							
2	TASK 2 Sub total of Cost	$21,728	$175,720	$147,460	$135,700	$106,020	$147,600	$154,860	$240,240	$0	$0	$10,400	$0	$0	$0	$0	$1,139,728	$707,000	$325,000	$262,000	$0	$1,020	$129,400	$2,564,148
3	**BIDDING PHASE**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$0	-	-	-	-	-	-	
-	3.1 Pre-Bid Conference	2	2	2	4	-	-	-	-	-	-	-	-	-	-	-	$1,534	4,500	1,000	1,000	-	100	650	
-	3.2 Bidding Coordination & Addenda Preparation	2	20	32	54	80	-	24	40	-	-	-	-	-	-	-	$27,860	14,000	6,000	6,000	-	-	2,600	
-	3.3 Bid Evaluation and Recommendation of Award	2	2	4	4	12	-	-	-	-	-	-	-	-	-	-	$2,942	1,731	-	1,200	-	-	293	
3	TASK 3 Sub total of Hours	6	24	38	62	92	0	24	40	0	0	0	0	0	0	0	286							
3	TASK 3 Sub total of Cost	$1,164	$4,584	$5,548	$7,316	$8,556	$0	$2,088	$3,080	$0	$0	$0	$0	$0	$0	$0	$32,336	$20,231	$7,000	$8,200	$0	$100	$3,543	$71,410
4	**CONSTRUCTION PHASE**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$0	-	-	-	-	-	-	
-	4.1 General Project Administration & Meetings	88	176	176	352	440	-	-	-	-	-	-	-	-	-	-	$158,840	64,000	4,500	4,500	-	-	7,300	
-	4.2 Change Orders	8	22	44	88	176	-	-	40	-	-	-	-	-	-	-	$42,010	20,000	7,500	7,500	-	-	3,500	
-	4.3 Perform Site Visits (2 per month @ 44 mnths = 88 Visits)	22	44	44	44	44	-	-	-	-	-	-	-	-	-	-	$28,380	20,000	23,250	23,250	-	1,440	6,650	
-	4.4 Review Submittals and Test Results	2	16	24	100	200	-	-	-	-	-	-	-	-	-	-	$37,348	45,000	37,125	37,125	-	-	11,925	
-	4.5 Issue Interpretations and Clarifications	8	50	100	120	240	-	-	-	-	-	-	-	-	-	-	$62,182	88,586	7,500	7,500	-	-	10,359	
-	4.6 Landscape Architecture	-	2	8	8	-	-	-	-	-	-	-	-	-	-	-	$2,494	-	-	-	-	-	-	
-	4.7 Substantial Completion/Final Acceptance Inspection	2	8	8	12	24	-	-	-	-	-	-	-	-	-	-	$6,732	4,000	5,250	5,250	-	-	1,450	
-	4.8 Record Drawings	-	8	12	32	40	40	80	160	-	-	-	-	-	-	-	$33,656	-	16,500	16,500	-	150	3,300	
4	TASK 4 Sub total of Hours	130	326	416	756	1164	40	80	200	0	0	0	0	0	0	0	3112							
4	TASK 4 Sub total of Cost	$25,220	$62,266	$60,736	$89,208	$108,252	$3,600	$6,960	$15,400	$0	$0	$0	$0	$0	$0	$0	$371,642	$241,586	$101,625	$101,625	$0	$1,590	$44,484	$862,552

City of Corpus Christi
Oso WRP Nutrient Removal and Re-rate to 24 MGD - Phase 2 (FINAL)

May 7, 2013

LNV Project No. 130190

MANHOUR BREAKDOWN FOR SERVICES BY A/E CONSULTANT

CONTRACT A

	Description	LNV Labor Estimate																					
Task No.	FUNCTIONAL TASKS	Principal	Project Manager	Project Engineer	Engineer III	Engineer I	Designer	Senior Cadd Tech	Cadd Tech	PR	PAA	Admin	RPLS	Dir of Survey Parties	PCI	Field Crew (3-Man)	LNV Total	JACOBS	COLWELL ELEC	COLWELL I&C	APAI	Direct Expenses	Admin Fees	Task Total Cost
ADDITIONAL SERVICES																								
1	**PERMITTING & AGENCY COORDINATION**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$0	-	-	-	-	-	-	
-	1.1 Building Permit / Industrial Exemption Affidavit	2	4	4	12	24	-	-	-	-	-	-	-	-	-	-	$5,384	-	-	-	-	-	-	
-	1.2 General Agency Coordination	2	8	12	24	40	-	-	24	-	-	-	-	-	-	-	$12,068	11,500	4,050	-	20,500	-	3,605	
-	1.3 Permit Amendment Application	2	8	12	16	40	-	-	-	-	-	-	-	-	-	-	$9,276	2,000	-	-	55,000	-	5,700	
-	1.4 Special Permitting Services (TBD)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$0	-	-	-	-	-	-	
1	TASK 1 Sub total of Hours	6	20	28	52	104	0	0	24	0	0	0	0	0	0	0	234							
1	TASK 1 Sub total of Cost	$1,164	$3,820	$4,088	$6,136	$9,672	$0	$0	$1,848	$0	$0	$0	$0	$0	$0	$0	$26,728	$13,500	$4,050	$0	$75,500	$0	$9,305	$129,083
2	**TOPOGRAPHIC SURVEY**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	2.1 Site Survey	2	4	12	24	-	8	24	40	-	-	-	8	40	-	140	$46,176	-	-	-	-	-	-	
-	2.2 Subsurface Utility Engineering (Allowance)	2	4	4	-	16	8	24	32	-	-	-	-	32	-	120	$36,768	-	-	-	-	-	-	
-	2.3 Land Acquisition (Allowance)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$0	-	-	-	-	-	-	
2	TASK 2 Sub total of Hours	4	8	16	24	16	16	48	72	-	-	-	8	72	-	260	544							
2	TASK 2 Sub total of Cost	$776	$1,528	$2,336	$2,832	$1,488	$1,440	$4,176	$5,544	$0	$0	$0	$1,312	$6,912	$0	$54,600	$82,944	$0	$0	$0	$0	$0	$0	$82,944
5	**START-UP & TRAINING SERVICES**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	5.1 Facilities Start-Up	5	40	80	80	-	-	-	-	-	-	-	-	-	-	-	29,730	84,786	12,150	12,150	-	-	10,909	
-	5.2 Training	-	20	40	40	-	-	-	-	-	-	-	-	-	-	-	14,380	64,372	-	3,240	-	-	6,761	
-	5.3 Factory Witness Testing	-	10	20	20	-	-	-	-	-	-	-	-	-	-	-	7,190	4,000	-	-	-	-	400	
5	TASK 5 Sub total of Hours	5	70	140	140	0	0	0	0	0	0	0	0	0	0	0	355							
5	TASK 5 Sub total of Cost	$970	$13,370	$20,440	$16,520	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$51,300	$153,158	$12,150	$15,390	$0	$0	$18,070	$250,068
6	**WARRANTY PHASE**	4	40	60	80	80	-	-	-	-	-	-	-	-	-	-	34,056	26,798	11,160	11,160	-	-	4,912	
6	TASK 6 Sub total of Hours	4	40	60	80	80	0	0	0	0	0	0	0	0	0	0	264							
6	TASK 6 Sub total of Cost	$776	$7,640	$8,760	$9,440	$7,440	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$34,056	$26,798	$11,160	$11,160	$0	$0	$4,912	$88,086
7	**SCADA AND O&M DOCUMENTATION**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	7.1 SCADA Documentation	-	4	4	12	16	-	-	-	-	-	-	-	-	-	-	4,252	-	-	12,400	-	-	1,240	
-	7.2 Electronic Operations and Maintenance Manual	-	8	16	24	32	-	-	-	-	-	24	-	-	-	-	11,232	124,852	-	-	-	-	12,485	
7	TASK 7 Sub total of Hours	0	12	20	36	48	0	0	0	0	0	24	0	0	0	0	140							
7	TASK 7 Sub total of Cost	$0	$2,292	$2,920	$4,248	$4,464	$0	$0	$0	$0	$0	$1,560	$0	$0	$0	$0	$15,484	$124,852	$0	$12,400	$0	$0	$13,725	$166,461
8	**PUBLIC INVOLVEMENT (ALLOWANCE)**	12	8	8	12	24	-	16	24	-	-	-	-	-	-	-	11,912	-	-	-	-	125	-	
8	TASK 8 Sub total of Hours	12	8	8	12	24	0	16	24	0	0	0	0	0	0	0	104							
8	TASK 8 Sub total of Cost	$2,328	$1,528	$1,168	$1,416	$2,232	$0	$1,392	$1,848	$0	$0	$0	$0	$0	$0	$0	$11,912	$0	$0	$0	$0	$125	$0	$12,037
9	**CONFORMED CONTRACT DOCUMENTS**	2	8	16	32	50	40	100	180	-	-	-	-	-	-	-	38,838	25,000	7,200	7,200	-	250	3,940	
9	TASK 9 Sub total of Hours	2	8	16	32	50	40	100	180	0	0	0	0	0	0	0	428							
9	TASK 9 Sub total of Cost	$388	$1,528	$2,336	$3,776	$4,650	$3,600	$8,700	$13,860	$0	$0	$0	$0	$0	$0	$0	$38,838	$25,000	$7,200	$7,200	$0	$250	$3,940	$82,428
10	**EXISTING FACILITIES CONDITION ASSESSMENT**	24	100	240	320	480	80	120	180	-	-	40	-	-	-	-	175,296	87,304	21,600	-	-	300	10,890	
10	TASK 10 Sub total of Hours	24	100	240	320	480	80	120	180	0	0	40	0	0	0	0	1584							
10	TASK 10 Sub total of Cost	$4,656	$19,100	$35,040	$37,760	$44,640	$7,200	$10,440	$13,860	$0	$0	$2,600	$0	$0	$0	$0	$175,296	$87,304	$21,600	$0	$0	$300	$10,890	$295,390
11	**FILTRATION & UV DISINFECT FEASIBILITY STUDY**	4	24	40	48	80	24	40	100	-	-	24	-	-	-	-	39,204	50,140	-	-	-	-	5,014	
11	TASK 11 Sub total of Hours	4	24	40	48	80	24	40	100	0	0	24	0	0	0	0	384							
11	TASK 11 Sub total of Cost	$776	$4,584	$5,840	$5,664	$7,440	$2,160	$3,480	$7,700	$0	$0	$1,560	$0	$0	$0	$0	$39,204	$50,140	$0	$0	$0	$0	$5,014	$94,358
12	**WINDSTORM CERTIFICATION**	8	64	140	200	280	-	-	-	-	-	40	-	-	-	-	86,456	-	-	-	-	-	-	
12	TASK 12 Sub total of Hours	8	64	140	200	280	0	0	0	0	0	40	0	0	0	0	732							
12	TASK 12 Sub total of Cost	$1,552	$12,224	$20,440	$23,600	$26,040	$0	$0	$0	$0	$0	$2,600	$0	$0	$0	$0	$86,456	$0	$0	$0	$0	$0	$0	$86,456
13	**PEER REVIEW COORDINATION & RESPONSE**	240	300	480	540	640	-	-	-	-	-	-	-	-	-	-	297,180	48,360	7,290	8,100	-	-	6,375	
13	TASK 13 Sub total of Hours	240	300	480	540	640	-	-	-	-	-	-	-	-	-	-	2200							
13	TASK 13 Sub total of Cost	$46,560	$57,300	$70,080	$63,720	$59,520	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$297,180	$48,360	$7,290	$8,100	$0	$0	$6,375	$367,305
15	**BIO/NATURAL GAS ONSITE COGENERATION**	24	48	72	100	160	40	60	120	-	-	-	-	-	-	-	69,076	59,786	16,200	-	-	-	7,599	
15	TASK 15 Sub total of Hours	24	48	72	100	160	40	60	120	-	-	-	-	-	-	-	624							
15	TASK 15 Sub total of Hours	$4,656	$9,168	$10,512	$11,800	$14,880	$3,600	$5,220	$9,240	$0	$0	$0	$0	$0	$0	$0	$69,076	$59,786	$16,200	$0	$0	$0	$7,599	$152,661
16	**OSO WRP ENERGY AUDIT**	24	280	320	360	420	80	120	240	-	-	72	-	-	-	-	227,196	18,600	21,600	-	-	-	4,020	
16	TASK 16 Sub total of Hours	24	280	320	360	420	80	120	240	-	-	72	-	-	-	-	1916							
16	TASK 16 Sub total of Hours	$4,656	$53,480	$46,720	$42,480	$39,060	$7,200	$10,440	$18,480	$0	$0	$4,680	$0	$0	$0	$0	$227,196	$18,600	$21,600	$0	$0	$0	$4,020	$271,416
																		$529,111	$63,450	$54,250	$75,500			
	UNIT RATES	$194.00	$191.00	$146.00	$118.00	$93.00	$90.00	$87.00	$77.00	$160.00	$75.00	$65.00	$164.00	$96.00	$125.00	$210.00	$3,013,610	$1,948,702	$669,475	$539,375	$75,500	$3,845	$311,687	
																			Subconsultants TOTAL		**$3,233,052**		TOTAL	$ 6,870,086
																			LNV TOTAL		**$3,637,034**			

City of Corpus Christi
Oso WRP Nutrient Removal and Re-rate to 24 MGD - Phase 2 (FINAL)

May 7, 2013

LNV Project No. 130190

MANHOUR BREAKDOWN FOR SERVICES BY A/E CONSULTANT

CONTRACT B

	Description	LNV Labor Estimate																				
Task No.	FUNCTIONAL TASKS	Principal	Project Manager	Project Engineer	Engineer III	Engineer I	Designer	Senior Cadd Tech	Cadd Tech	PR	PAA	Admin	RPLS	Dir of Survey Parties	PCI	Field Crew (3-Man)	LNV Total	JACOBS	COLWELL ELEC	COLWELL I&C	APAI	Direct Expenses	Admin Fees	Task Total Cost
BASIC SERVICES																								
1	**PRELIMINARY DESIGN PHASE**	60	100	160	160	-	16	60	-	-	-	16	-	-	-	-	$80,680	-	-	-	-	210	-	
-	1.1 General Design Criteria	4	60	60	80	100	80	100	120	-	-	-	-	-	-	-	$64,876	-	9,000	11,000	-	-	2,000	
-	1.2 Treatment Process Units Design Criteria	4	90	100	100	120	120	140	160	-	-	-	-	-	-	-	$90,826	-	3,000	5,000	-	-	800	
-	1.3 Geotechnical Coordination	2	4	6	6	8	2	4	8	-	-	-	-	-	-	-	$4,624	-	-	-	-	-	-	
-	1.4 Architectural Concepts Development	2	8	24	-	-	4	8	16	-	-	-	-	-	-	-	$7,708	-	-	-	-	-	-	
-	1.5 Preliminary Design Package (30% Design)	20	180	240	300	400	400	520	680	-	-	32	-	-	-	-	$281,580	-	32,600	21,000	-	250	5,360	
1	TASK 1 Sub total of Hours	92	442	590	646	628	622	832	984	0	0	48	0	0	0	0	4884							
1	TASK 1 Sub total of Cost	$17,848	$84,422	$86,140	$76,228	$58,404	$55,980	$72,384	$75,768	$0	$0	$3,120	$0	$0	$0	$0	$530,294	$0	$44,600	$37,000	$0	$460	$8,160	$620,514
2	**DESIGN PHASE**	60	240	210	210	-	-	-	-	-	-	40	-	-	-	-	$115,520	-	107,000	85,000	-	420	19,200	
-	2.1 General Design	6	80	80	120	120	80	120	160	-	-	-	-	-	-	-	$83,404	-	-	-	-	-	-	
-	2.2 Treatment Process Units	12	80	100	120	140	120	160	280	-	-	-	-	-	-	-	$105,668	-	-	-	-	-	-	
-	2.3 60% Design - Plans & Specifications	12	200	200	240	300	360	520	840	-	-	24	-	-	-	-	$269,828	-	-	-	-	150	-	
-	2.4 100% Pre-final Design - Plans & Specifications	12	200	200	240	300	360	520	840	-	-	24	-	-	-	-	$269,828	-	-	-	-	150	-	
-	2.5 Final Design Plans & Specifications	6	140	140	160	200	240	320	480	-	-	24	-	-	-	-	$173,784	-	-	-	-	300	-	
2	TASK 2 Sub total of Hours	108	940	930	1090	1060	1160	1640	2600	0	0	112	0	0	0	0	9640							
2	TASK 2 Sub total of Cost	$20,952	$179,540	$135,780	$128,620	$98,580	$104,400	$142,680	$200,200	$0	$0	$7,280	$0	$0	$0	$0	$1,018,032	$0	$107,000	$85,000	$0	$1,020	$19,200	$1,230,252
3	**BIDDING PHASE**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$0	-	-	-	-	-	-	
-	3.1 Pre-Bid Conference	2	2	2	4	-	-	-	-	-	-	-	-	-	-	-	$1,534	-	500	500	-	100	100	
-	3.2 Bidding Coordination & Addenda Preparation	2	16	24	40	80	-	24	40	-	-	-	-	-	-	-	$24,276	-	2,000	2,000	-	-	400	
-	3.3 Bid Evaluation and Recommendation of Award	2	2	2	4	12	-	-	-	-	-	-	-	-	-	-	$2,650	-	-	-	-	-	-	
3	TASK 3 Sub total of Hours	6	20	28	48	92	0	24	40	0	0	0	0	0	0	0	258							
3	TASK 3 Sub total of Cost	$1,164	$3,820	$4,088	$5,664	$8,556	$0	$2,088	$3,080	$0	$0	$0	$0	$0	$0	$0	$28,460	$0	$2,500	$2,500	$0	$100	$500	$34,060
4	**CONSTRUCTION PHASE**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$0	-	-	-	-	-	-	
-	4.1 General Project Administration & Meetings	52	52	260	416	416	-	-	-	-	-	-	-	-	-	-	$145,756	-	1,500	1,500	-	-	300	
-	4.2 Change Orders	2	12	24	48	64	-	-	40	-	-	-	-	-	-	-	$20,880	-	2,500	2,500	-	-	500	
-	4.3 Perform Site Visits (2 per month @ 26 mnths = 54 Visits)	27	27	54	54	54	-	-	-	-	-	-	-	-	-	-	$29,673	-	7,750	7,750	-	1,890	1,550	
-	4.4 Review Submittals and Test Results	4	16	40	80	120	-	-	-	-	-	-	-	-	-	-	$30,272	-	12,375	12,375	-	-	2,475	
-	4.5 Issue Interpretations and Clarifications	4	40	80	120	240	-	-	-	-	-	-	-	-	-	-	$56,576	-	2,500	2,500	-	-	500	
-	4.6 Landscape Architecture	-	2	4	4	-	-	-	-	-	-	-	-	-	-	-	$1,438	-	-	-	-	-	-	
-	4.7 Substantial Completion/Final Acceptance Inspection	2	8	8	12	24	-	-	-	-	-	-	-	-	-	-	$6,732	-	1,750	1,750	-	-	350	
-	4.8 Record Drawings	-	8	12	32	40	80	120	240	-	-	-	-	-	-	-	$46,896	-	5,500	5,500	-	150	1,100	
4	TASK 4 Sub total of Hours	91	165	482	766	958	80	120	280	0	0	0	0	0	0	0	2942							
4	TASK 4 Sub total of Cost	$17,654	$31,515	$70,372	$90,388	$89,094	$7,200	$10,440	$21,560	$0	$0	$0	$0	$0	$0	$0	$338,223	$0	$33,875	$33,875	$0	$2,040	$6,775	$414,788

City of Corpus Christi
Oso WRP Nutrient Removal and Re-rate to 24 MGD - Phase 2 (FINAL)

May 7, 2013

LNV Project No. 130190

MANHOUR BREAKDOWN FOR SERVICES BY A/E CONSULTANT

CONTRACT B

Task No.	Description	LNV Labor Estimate																					
	FUNCTIONAL TASKS	Principal	Project Manager	Project Engineer	Engineer III	Engineer I	Designer	Senior Cadd Tech	Cadd Tech	PR	PAA	Admin	RPLS	Dir of Survey Parties	PCI	Field Crew (3-Man)	LNV Total	JACOBS	COLWELL ELEC	COLWELL I&C	APAI	Direct Expenses	Admin Fees	Task Total Cost
ADDITIONAL SERVICES																								
1	**PERMITTING & AGENCY COORDINATION**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$0	-	-	-	-	-	-	
-	1.1 Building Permit / Industrial Exemption Affidavit	-	4	4	12	24	-	-	-	-	-	-	-	-	-	-	$4,996	-	-	-	-	-	-	
-	1.2 General Agency Coordination	32	72	132	164	192	-	-	32	-	-	-	-	-	-	-	$78,904	-	2,000	-	10,000	-	1,200	
-	1.3 Permit Amendment Application	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$0	-	-	-	-	-	-	
-	1.4 Special Permitting Services (TBD)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$0	-	-	-	-	-	-	
1	TASK 1 Sub total of Hours	32	76	136	176	216	0	0	32	0	0	0	0	0	0	0	668							
1	TASK 1 Sub total of Cost	$6,208	$14,516	$19,856	$20,768	$20,088	$0	$0	$2,464	$0	$0	$0	$0	$0	$0	$0	$83,900	$0	$2,000	$0	$10,000	$0	$1,200	$97,100
2	**TOPOGRAPHIC SURVEY**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	2.1 Site Survey	2	4	12	16	-	8	24	40	-	-	-	8	24	-	240	$64,696	-	-	-	-	-	-	
-	2.2 Subsurface Utility Engineering (Allowance)	-	4	-	6	16	8	16	36	-	-	-	-	16	-	140	$38,780	-	-	-	-	-	-	
-	2.3 Land Acquisition (Allowance)	2	6	16	32	-	-	40	80	-	-	240	56	120	-	-	$53,590	-	-	-	-	-	-	
2	TASK 2 Sub total of Hours	4	14	28	54	16	16	80	156	-	-	240	64	160	-	380	1212							
2	TASK 2 Sub total of Cost	$776	$2,674	$4,088	$6,372	$1,488	$1,440	$6,960	$12,012	$0	$0	$15,600	$10,496	$15,360	$0	$79,800	$157,066	$0	$0	$0	$0	$0	$0	$157,066
5	**START-UP & TRAINING SERVICES**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	5.1 Facilities Start-Up	2	48	56	100	-	-	-	-	-	-	-	-	-	-	-	29,532	-	2,960	2,960	-	-	592	
-	5.2 Training	-	16	32	48	-	-	-	-	-	-	-	-	-	-	-	13,392	-	-	-	-	-	-	
-	5.3 Factory Witness Testing	-	12	24	32	-	-	-	-	-	-	-	-	-	-	-	9,572	-	-	-	-	-	-	
5	TASK 5 Sub total of Hours	2	76	112	180	0	0	0	0	0	0	0	0	0	0	0	370							
5	TASK 5 Sub total of Cost	$388	$14,516	$16,352	$21,240	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$52,496	$0	$2,960	$2,960	$0	$0	$592	$59,008
6	**WARRANTY PHASE**	2	12	28	36	44	-	-	-	-	-	-	-	-	-	-	15,108	-	4,440	4,440	-	-	888	
6	TASK 6 Sub total of Hours	2	12	28	36	44	0	0	0	0	0	0	0	0	0	0	122							
6	TASK 6 Sub total of Cost	$388	$2,292	$4,088	$4,248	$4,092	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$15,108	$0	$4,440	$4,440	$0	$0	$888	$24,876
7	**SCADA AND O&M DOCUMENTATION**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	7.1 SCADA Documentation	2	8	16	48	88	-	-	-	-	-	40	-	-	-	-	20,700	-	-	13,200	-	-	1,320	
-	7.2 Electronic Operations and Maintenance Manual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7	TASK 7 Sub total of Hours	2	8	16	48	88	0	0	0	0	0	40	0	0	0	0	202							
7	TASK 7 Sub total of Cost	$388	$1,528	$2,336	$5,664	$8,184	$0	$0	$0	$0	$0	$2,600	$0	$0	$0	$0	$20,700	$0	$0	$13,200	$0	$0	$1,320	$35,220
8	**PUBLIC INVOLVEMENT (ALLOWANCE)**	12	12	16	8	16	-	8	24	-	-	-	-	-	-	-	11,932	-	-	-	-	125	-	
8	TASK 8 Sub total of Hours	12	12	16	8	16	0	8	24	0	0	0	0	0	0	0	96							
8	TASK 8 Sub total of Cost	$2,328	$2,292	$2,336	$944	$1,488	$0	$696	$1,848	$0	$0	$0	$0	$0	$0	$0	$11,932	$0	$0	$0	$0	$125	$0	$12,057
9	**CONFORMED CONTRACT DOCUMENTS**	2	8	16	24	32	32	48	72	-	-	-	-	-	-	-	22,660	-	5,400	5,400	-	250	1,080	
9	TASK 9 Sub total of Hours	2	8	16	24	32	32	48	72	0	0	0	0	0	0	0	234							
9	TASK 9 Sub total of Cost	$388	$1,528	$2,336	$2,832	$2,976	$2,880	$4,176	$5,544	$0	$0	$0	$0	$0	$0	$0	$22,660	$0	$5,400	$5,400	$0	$250	$1,080	$34,790
10	**EXISTING FACILITIES CONDITION ASSESSMENT**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
10	TASK 10 Sub total of Hours	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
10	TASK 10 Sub total of Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
11	**FILTRATION & UV DISINFECT FEASIBILITY STUDY**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11	TASK 11 Sub total of Hours	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
11	TASK 11 Sub total of Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
12	**WINDSTORM CERTIFICATION**	-	16	32	48	64	-	-	-	-	-	24	-	-	-	-	20,904	-	-	-	-	-	-	
12	TASK 12 Sub total of Hours	-	16	32	48	64	0	0	0	0	0	24	0	0	0	0	184							
12	TASK 12 Sub total of Cost	$0	$3,056	$4,672	$5,664	$5,952	$0	$0	$0	$0	$0	$1,560	$0	$0	$0	$0	$20,904	$0	$0	$0	$0	$0	$0	$20,904
13	**PEER REVIEW COORDINATION & RESPONSE**	32	96	96	160	256	-	-	-	-	-	-	-	-	-	-	81,248	-	3,100	3,100	-	-	620	
13	TASK 13 Sub total of Hours	32	96	96	160	256	-	-	-	-	-	-	-	-	-	-	640							
13	TASK 13 Sub total of Cost	$6,208	$18,336	$14,016	$18,880	$23,808	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$81,248	$0	$3,100	$3,100	$0	$0	$620	$88,068
14	**LMWWTP DECOMMISSIONING**	120	160	200	240	260	240	320	400	-	-	24	-	-	-	-	217,340	-	-	-	75,000	-	7,500	
14	TASK 14 Sub total of Hours	120	160	200	240	260	240	320	400	-	-	24	-	-	-	-	1964							
14	TASK 14 Sub total of Cost	$23,280	$30,560	$29,200	$28,320	$24,180	$21,600	$27,840	$30,800	$0	$0	$1,560	$0	$0	$0	$0	$217,340	$0	$0	$0	$75,000	$0	$7,500	$299,840
	UNIT RATES	$194.00	$191.00	$146.00	$118.00	$93.00	$90.00	$87.00	$77.00	$160.00	$75.00	$65.00	$164.00	$96.00	$125.00	$210.00	$2,598,363	$0	$205,875	$187,475	$85,000	$3,995	$47,835	

Subconsultants TOTAL **$478,350**

LNV TOTAL **$2,650,193**

TOTAL $ 3,128,543

EXHIBIT "B"
MANDATORY INSURANCE REQUIREMENTS & INDEMNIFICATION
FOR A/E PROFESSIONAL SERVICES/CONSULTANT SERVICES
(Revised October 2010)

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 shall 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 or in connection with the negligent performance of Consultant's services 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%

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: LNV, INC.

P. O. BOX: N/A

STREET ADDRESS: 801 Navigation, Ste 300 **CITY:** Corpus Christi **ZIP:** 78408-

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
Dan S. Leyendecker	Marina Advisory Board

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: **Dan S. Leyendecker, P.E.** **Title:** **President**
(Type or Print)

Signature of Certifying Person: **Date:** 1-22-13

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.