AGENDA
ITEM

11

AGENDA STAFF REPORT

DATE: October 23, 2019

TO: Mayor and City Council

APPROVED BY: David B. Dale, City Manager KP for D.D.

PREPARED BY: Lilliana Falomir, Public Works Manager

SUBJECT: Authorize the City Manager to Sign Agreement of Professional Services with Lee & Ro, Inc. for Engineering Services for Sewer Lift Station No. 9 and 11, Sewer Collection and Water Distribution System Improvement Project.

==========

Recommendation:

Authorize the City Manager to Sign Agreement of Professional Services with Lee & Ro, Inc. for Engineering Services for Sewer Lift Station No. 9 and 11, Sewer Collection and Water Distribution System Improvement Project.

Background:

On September 3, 2019, the City of Calexico Public Works Department solicited proposals from qualified engineering firms to provided engineering services for Sewer Lift Station No. 9 and 11, Sewer Collection and Water Distribution System Improvement Project. The project will include sewer bypass pumping, rehabilitating sewer manholes if necessary, installation of new manholes, replacement of existing 8-inch force main pipelines, and installing and connecting each existing sewer service laterals along the new pipeline alignment. The project design will also include the lift station upgrades, replacement of the 12-inch diameter Asbestos Cement (AC) water pipeline running north/southerly from State Hwy 98 north along Ollie Avenue, then east-westerly along Vernado Drive (10" diameter existing). The existing AC pipelines shall be abandoned in place. There is approximately 3,000 linear feet of 12-inch diameter PVC asbestos cement (AC) pipe water pipeline to be replaced. The project will include connecting each existing water service along the pipeline routes, fire hydrants, valves and connections to existing buried water pipelines.

Discussion & Analysis:

On September 25, 2019, the Office of the City Clerk received two (2) proposals. The proposals were reviewed by Public Works staff. The

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consultants were evaluated on the basis of scope of work, experience, references and project schedule.

Firm	Cost Proposal
Lee & Ro, Inc.	$366,152.00
PACE	$480,355.00

The firm that ranked the highest of the evaluation and provided the lowest proposals is Lee & Ro, Inc. In addition, Lee & Ro, Inc. demonstrated in their RFP knowledge and understanding of the engineering design, scope of work and state requirements for Sewer Lift Station No. 9 and 11, Sewer Collection and Water Distribution System Improvement Project. For these reasons, City staff is recommended that the City Council of the City of Calexico authorize the City Manager to sign agreement of Professional Services with Lee & Ro, Inc.

Fiscal Impact:

Capital Improvement Program – Wastewater and Water Enterprise Funds
$366,152.00

Coordinated With:

Public Works Department.
Finance Department.

Attachment(s):

1. Agreement of Professional Services between City of Calexico and Lee & Ro, Inc.
2. Request for Proposals for Engineering Services for Sewer Lift Station No. 9 and 11, Sewer Collection and Water Distribution System Improvement Project.

AGREEMENT FOR PROFESSIONAL SERVICES

This Agreement is made and entered into as of the 6th day of November, 2019, by and between the City of Calexico ("City") and Lee & Ro, Inc. ("Consultant").

RECITALS

A. Consultant is specially trained, experienced and competent to perform the special services which will be required by this Agreement; and

B. Consultant possesses the skill, experience, ability, background, certification and knowledge to provide the services described in this Agreement on the terms and conditions described herein.

AGREEMENT

1. Scope of Services. The Consultant shall furnish the following services in a professional manner. Consultant shall perform the services described on Exhibit A which is attached hereto and incorporated herein by reference. Consultant shall provide said services at the time, place, and in the manner specified in Exhibit A, subject to the direction of the City through its staff that it may provide from time to time.

2. Time of Performance. The services of Consultant are to commence upon execution of this Agreement and shall continue until all authorized work is approved by the City. All such work shall be completed no later than December 31, 2020. Time is of the essence for every provision of this agreement that states a time for performance and for every deadline imposed by the City.

3. Compensation. Compensation to be paid to Consultant shall be as set forth in Exhibit B, which is attached hereto and incorporated herein by reference. Payment by City under this Agreement shall not be deemed a waiver of defects, even if such defects were known to the City at the time of payment.

4. Method of Payment. Consultant shall submit monthly billings to City describing the work performed during the preceding month. Consultant's bills shall include a brief description of the services performed, the date the services were performed, the number of hours spent and by whom, and a description of any reimbursable expenditures. City shall pay Consultant no later than 30 days after approval of the monthly invoice by City staff.

5. Ownership of Documents. All plans, studies, documents and other writings prepared by and for Consultant, its officers, employees and agents and subcontractors in the course of implementing this Agreement, except working notes and internal documents, shall become the property of the City upon payment to Consultant for such work, and the City shall have the sole right to use such materials in its discretion without further

compensation to Consultant or to any other party. Consultant shall, at Consultant's expense, provide such reports, plans, studies, documents and other writings to City upon written request.

6 Independent Contractor. It is understood that Consultant, in the performance of the work and services agreed to be performed, shall act as and be an independent contractor and shall not act as an agent or employee of the City. Consultant shall obtain no rights to retirement benefits or other benefits which accrue to City's employees, and Consultant hereby expressly waives any claim it may have to any such rights.

7. Interest of Consultant. Consultant (including principals, associates and professional employees) covenants and represents that it does not now have any investment or interest in real property and shall not acquire any interest, direct or indirect, in the area covered by and during this Agreement or any other source of income, interest in real property or investment which would be affected in any manner or degree by the performance of Consultant's services hereunder. Consultant further covenants and represents that in the performance of its duties hereunder no person having any such interest shall perform any services under this Agreement.

Consultant is not a designated employee within the meaning of the Political Reform Act because Consultant:

a. will conduct research and arrive at conclusions with respect to his/her rendition of information, advice, recommendation or counsel independent of the control and direction of the City or of any City official, other than normal agreement monitoring; and

b. possesses no authority with respect to any City decision beyond rendition of information, advice, recommendation or counsel. (FPPC Reg. 18700(a)(2).)

8. Professional Ability of Consultant. City has relied upon the professional training and ability of Consultant to perform the services hereunder as a material inducement to enter into this Agreement. Consultant shall therefore provide properly skilled professional and technical personnel to perform all services under this Agreement. All work performed by Consultant under this Agreement shall be in accordance with applicable legal requirements and shall meet the standard of quality ordinarily to be expected of competent professionals in Consultant's field of expertise.

9. Indemnity. Consultant agrees to indemnify, including the cost to defend, the City, and its officers, agents and employees from any and all claims, demands, costs or liability that arise out of, or pertain to, or relate to the negligence, recklessness, or willful misconduct of Consultant and its agents in the performance of services under this contract. This indemnity does not apply to liability for damages for death or bodily injury to persons, injury to property, or other loss, damage or expense arising from the sole negligence, willful misconduct or defects in design by the City or its agents, servants, or independent contractors who are directly responsible to the City, or the active negligence of the City.

To the fullest extent permitted by law, the Consultant shall (1) immediately defend and (2) indemnify the City, and its councilmembers, officers, agents, and employees from and against all liabilities regardless of nature or type that arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of the Consultant, or its employees, agents, or subcontractors. Liabilities subject to the duties to defend and indemnify include, without limitation, all claims, losses, damages, penalties, fines, and judgments; associated investigation and administrative expenses; defense costs, including but not limited to reasonable attorneys' fees; court costs; and costs of alternative dispute resolution. The Consultant's obligation to indemnify applies unless it is finally adjudicated that the liability was caused by the sole active negligence or sole willful misconduct of an indemnified party. If it is finally adjudicated that liability is caused by the comparative active negligence or willful misconduct of an indemnified party, then Consultant's indemnification obligation shall be reduced in proportion to the established comparative liability.

(b) The duty to defend is a separate and distinct obligation from Consultant's duty to indemnify. Consultant shall be obligated to defend, in all legal, equitable, administrative, or special proceedings, with counsel approved by the City, the City and its councilmembers, officers, agents, and employees, immediately upon tender to Consultant of the claim in any form or at any stage of an action or proceeding, whether or not liability is established. An allegation or determination that persons other than Consultant are responsible for the claim does not relieve Consultant from its separate and distinct obligation to defend under this section. The obligation to defend extends through final judgment, including exhaustion of any appeals. The defense obligation includes an obligation to provide independent defense counsel if Consultant asserts that liability is caused in whole or in part by the negligence or willful misconduct of the indemnified party. If it is finally adjudicated that liability was caused by the comparative active negligence or willful misconduct of an indemnified party, Consultant may submit a claim to the City for reimbursement of reasonable attorneys' fees and defense costs in proportion to the established comparative liability of the indemnified party.

(c) The review, acceptance or approval of the City's work or work product by any indemnified party shall not affect, relieve or reduce the City's indemnification or defense obligations. This Section survives completion of the services or the termination of this contract. The provisions of this Section are not limited by and do not affect the provisions of this contract relating to insurance.

10. Insurance Requirements.

a. Consultant, at Consultant's own cost and expense, shall procure and maintain, for the duration of the contract, the following insurance policies.

i. Workers' Compensation Coverage. Consultant shall maintain Workers' Compensation Insurance and Employer's Liability Insurance for his/her employees in accordance with the laws of the State of California. In addition,

Consultant shall require each subcontractor to similarly maintain Workers' Compensation Insurance and Employer's Liability Insurance in accordance with the laws of the State of California for all of the subcontractor's employees. Any notice of cancellation or non-renewal of all Workers' Compensation policies must be received by the City at least thirty (30) days prior to such change. The insurer shall agree to waive all rights of subrogation against City, its officers, agents, employees and volunteers for losses arising from work performed by Consultant for City. This provision shall not apply if Consultant has no employees performing work under this Agreement. If the Consultant has no employees for the purposes of this Agreement, Consultant shall sign the "Certificate of Exemption from Workers' Compensation Insurance" which is attached hereto as Exhibit C.

i. General Liability Coverage. Consultant shall maintain commercial general liability insurance in an amount not less than one million dollars ($1,000,000) per occurrence for bodily injury, personal injury and property damage. If a commercial general liability insurance form or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to the work to be performed under this Agreement or the general aggregate limit shall be at least twice the required occurrence limit.

iii. Automobile Liability Coverage. Consultant shall maintain automobile liability insurance covering bodily injury and property damage for all activities of the Consultant arising out of or in connection with the work to be performed under this Agreement, including coverage for owned, hired and non-owned vehicles, in an amount of not less than one million dollars ($1,000,000) combined single limit for each occurrence.

iv. Errors and Omissions Liability. Consultant shall maintain errors and omissions liability insurance for all work performed under this Agreement in an amount of not less than one million dollars ($1,000,000).

b. Policy Endorsements. Each general liability and automobile liability insurance policy shall be with insurers possessing a Best's rating of no less than A:VII and shall be endorsed with the following specific language:

i. The City of Calexico, its elected or appointed officers, officials, employees, agents and volunteers are to be covered as additional insureds with respect to liability arising out of work performed by or on behalf of the Consultant, including materials, parts or equipment furnished in connection with such work or operations.

ii. This policy shall be considered primary insurance as respects the City, its elected or appointed officers, officials, employees, agents and volunteers. Any insurance maintained by the City, including any self-insured retention

the City may have, shall be considered excess insurance only and shall not contribute with it.

iii. This insurance shall act for each insured and additional insured as though a separate policy had been written for each, except with respect to the limits of liability of the insuring company.

iv. Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the City, its elected or appointed officers, officials, employees, agents or volunteers.

v. The insurance provided by this policy shall not be suspended, voided, canceled, or reduced in coverage or in limits except after thirty (30) days written notice has been received by the City.

c. Deductibles and Self-Insured Retentions. Any deductibles or self-insured retentions must be declared to and approved by the City. At the City's option, Consultant shall demonstrate financial capability for payment of such deductibles or self-insured retentions.

d. Certificates of Insurance and Endorsements. Consultant shall provide certificates of insurance with original endorsements to City as evidence of the insurance coverage required herein. Certificates of such insurance shall be filed with the City on or before commencement of performance of this Agreement. Current certification of insurance shall be kept on file with the City at all times during the term of this Agreement.

11. Compliance with Laws. Consultant shall use the standard of care in its profession to comply with all applicable federal, state and local laws, codes, ordinances and regulations.

12. Licenses. Consultant represents and warrants to City that it has all licenses, permits, qualifications, insurance and approvals of whatsoever nature which are legally required of Consultant to practice its profession. Consultant represents and warrants to City that Consultant shall, at its sole cost and expense, keep in effect or obtain at all times during the term of this Agreement, any licenses, permits, insurance and approvals which are legally required of Consultant to practice its profession. Consultant shall obtain a City of Calexico Business License.

13. Controlling Law Venue. This Agreement and all matters relating to it shall be governed by the laws of the State of California and any action brought relating to this Agreement shall be held exclusively in a state court in the County of Imperial, California.

14. Written Notification. Any notice, demand, request, consent, approval or communication that either party desires or is required to give to the other party shall be in writing and either served personally or sent prepaid, first class mail. Any such notice, demand, etc.

shall be addressed to the other party at the address set forth herein below. Either party may change its address by notifying the other party of the change of address. Notice shall be deemed communicated within 48 hours from the time of mailing if mailed as provided in this section.

If to City:	City of Calexico, City Manager 608 Heber Ave. Calexico, CA 92231
If to Consultant:	Lee & Ro, Inc. 1199 South Fullerton Road City of Industry, CA 91748

15. Consultant's Books and Records.

a. Consultant shall maintain any and all ledgers, books of account, invoices, vouchers, canceled checks, and other records or documents evidencing or relating to charges for services, or expenditures and disbursements charged to City for a minimum period of three (3) years, or for any longer period required by law, from the date of final payment to Consultant to this Agreement.

b. Consultant shall maintain all documents and records which demonstrate performance under this Agreement for a minimum period of three (3) years, or for any longer period required by law, from the date of termination or completion of this Agreement.

c. Any records or documents required to be maintained pursuant to this Agreement shall be made available for inspection or audit, at any time during regular business hours, upon written request by the City Manager, City Attorney, City Auditor or a designated representative of these officers. Copies of such documents shall be provided to the City for inspection at City Hall when it is practical to do so. Otherwise, unless an alternative is mutually agreed upon, the records shall be available at Consultant's address indicated for receipt of notices in this Agreement.

d. Where City has reason to believe that such records or documents may be lost or discarded due to dissolution, disbandment or termination of Consultant's business, City may, by written request by any of the above named officers, require that custody of the records be given to the City and that the records and documents be maintained in City Hall. Access to such records and documents shall be granted to any party authorized by Consultant, Consultant's representatives, or Consultant's successor-in-interest.

16. Entire Agreement. This Agreement constitutes the complete and exclusive statement of Agreement between the City and Consultant. All prior written and oral communications,

including correspondence, drafts, memoranda, and representations, are superseded in total by this Agreement.

17. Amendments. This Agreement may be modified or amended only by a written document executed by both Consultant and City and approved as to form by the City Attorney.

18. Waiver. No failure on the part of either party to exercise any right or remedy hereunder shall operate as a waiver of any other right or remedy that party may have hereunder.

19. Execution. This Agreement may be executed in several counterparts, each of which shall constitute one and the same instrument and shall become binding upon the parties when at least one copy hereof shall have been signed by both parties hereto. In approving this Agreement, it shall not be necessary to produce or account for more than one such counterpart.

20. Assignment and Subcontracting. The parties recognize that a substantial inducement to City for entering into this Agreement is the professional reputation, experience and competence of Consultant. Assignments of any or all rights, duties or obligations of the Consultant under this Agreement will be permitted only with the express consent of the City. Consultant shall not subcontract any portion of the work to be performed under this Agreement without the written authorization of the City. If City consents to such subcontract, Consultant shall be fully responsible to City for all acts or omissions of the subcontractor. Nothing in this Agreement shall create any contractual relationship between City and subcontractor nor shall it create any obligation on the part of the City to pay or to see to the payment of any monies due to any such subcontractor other than as otherwise is required by law.

21. Termination. This Agreement may be terminated by the City immediately for cause or by either party without cause upon fifteen days' written notice of termination. Upon termination, Consultant shall be entitled to compensation for services performed up to the effective date of termination.

SIGNATURES ON FOLLOWING PAGE

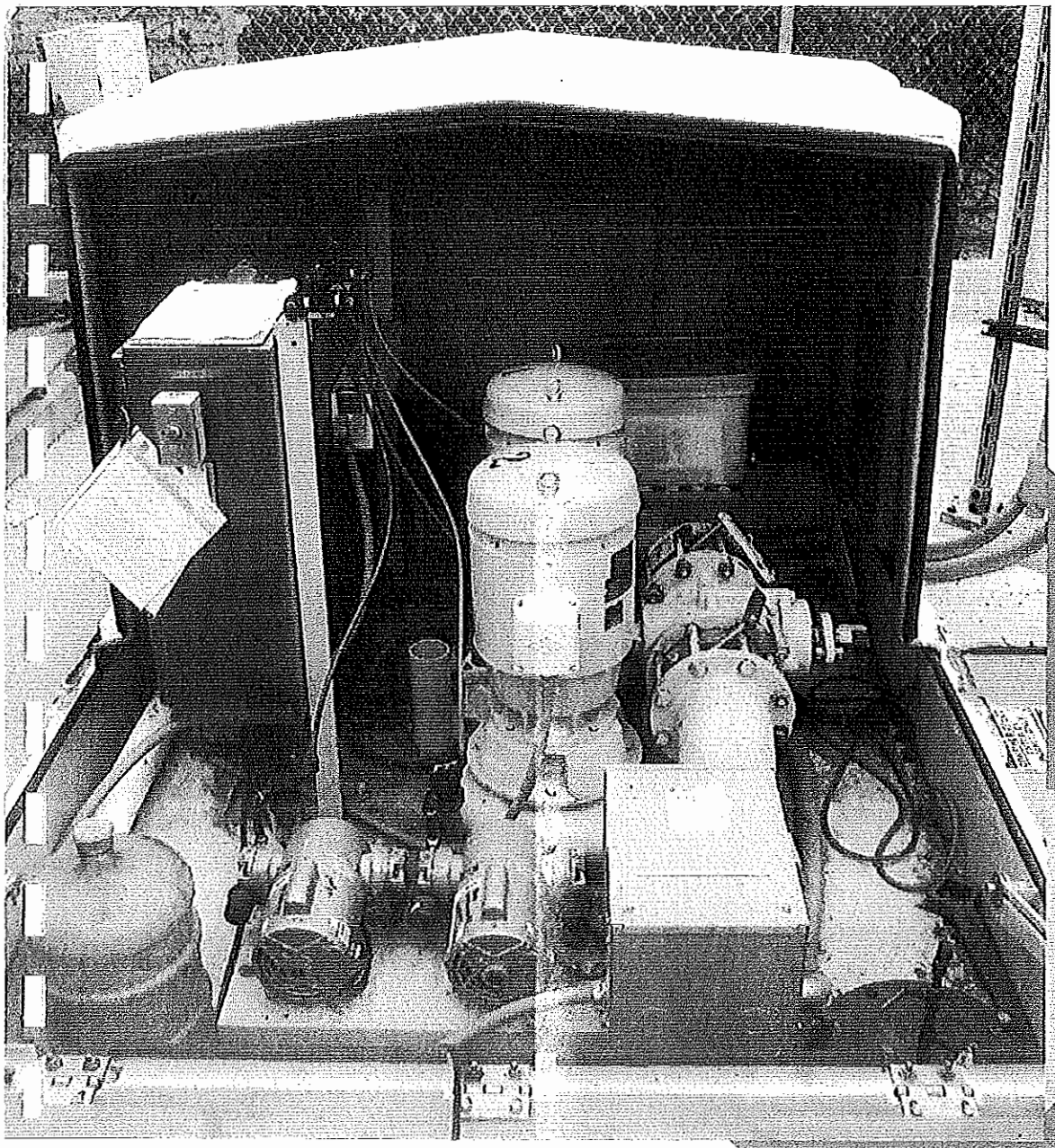
IN WITNESS WHEREOF, the parties have caused this Agreement to be executed on the date first written above.

CITY OF CALEXICO:	CONSULTANT:
_____	_____
David Dale City Manager	
APPROVED AS TO FORM:	ATTEST:
_____	_____
Carlos Campos City Attorney	Gabriela Garcia City Clerk

EXHIBIT A

SCOPE OF SERVICES

(proposal dated September 25, 2019)



PROPOSAL FOR

Sewer Lift Station No. 9 and 11, Sewer Collection and Water Distribution System Improvement Project

September 25, 2019

Proposal By
LEE & RO, Inc.
1199 S. Fullerton Road
City of Industry, CA 91748
(626) 912-3391

1199 South Fullerton Road, City of Industry, CA 91748
Tel: (626) 912-3391
Fax: (626) 912-2015

LEE & RO, Inc.

www.LEE-RO.co

September 25, 2019

Office of the City Clerk
City Hall, City of Calexico
608 Heber Avenue
Calexico, CA 92231
Attn: Lilliana Falomir, Public Works Manager

Subject: Proposal for Engineering Services for the Sewer Lift Station No. 9 and 11, Sewer Collection and Water Distribution System Improvement Project

Dear Ms. Falomir:

LEE & RO Inc. is pleased to submit this proposal for the Sewer Lift Station No. 9 and 11, Sewer Collection and Water Distribution System Improvement Project. LEE & RO has successfully completed—on time and within budget—many lift stations, sewer pipeline upgrades, and water distribution pipeline upgrades with similar scope and design. We will complete this project on time and within budget as well. We have designed and provided construction support services for lift station projects that included new or upgraded pumps, valves, electrical and I&C equipment, and emergency storage basins, as well as performed numerous designs and construction support services for sewer force mains, gravity sewers, and water distribution pipeline projects of similar scale.

LEE & RO's understands that in order to accommodate future build out of the El Portal and Las Palmas Subdivisions, the City desires to improve Lift Station Nos. 9 and 11 (LS-9 and LS-11 respectively) to increase their pumping capacity. The project will also include upgrading sewer force mains discharging from LS-9 and LS-11, upgrading gravity pipelines along Scaroni Rd, Vernado Dr, and Ollie Ave, and upgrading an existing water distribution line along Ollie Ave and Vernado Dr. To accomplish this work, the project will include sewer bypass pumping, rehabilitating sewer manholes (if necessary), installation of new manholes, replacement of existing force main pipelines, and installing and connecting existing sewer and water service laterals along the new pipeline alignments.

The individuals authorized to respond to the RFP are as follows:

PRIMARY CONTACT FOR PROPOSAL	Dhiru Patel, President (626) 912-3391 ext: 209 Dhiru.Patel@lee-ro.com
ALTERNATE CONTACT FOR PROPOSAL	Amritendu Maji, PE (626) 912-3391 ext: 252 Amritendu.Maji@lee-ro.com

We have prepared this proposal in strict accordance with the RFP instructions. We will provide the specified services in accordance with the RFP scope of services. The RFP scope of services and our scope of work tasks, as identified in this proposal, have been used to develop our fee proposal, which is included separately. If LEE & RO is selected for the project, we will review the recommendations and calculations presented in the Initial Assessment provided with the RFP and present our findings to the City before moving on to the design phase of the project. The fee proposal included is valid for ninety (90) days.

Should you have any questions regarding our technical proposal or fee proposals, please do not hesitate to contact us. We thank you for your consideration of this proposal and we look forward to working with you.

Sincerely,

LEE & RO, Inc.

Dhiru Patel, PE, President

Table of Contents

A. Project Understanding, & Approach

The following provides a brief overview of the project and our understanding of the scope of services. In addition, the LEE & RO's technical approach and methodology to performing the engineering services are addressed herein.

The City of Calexico (City) owns and operates Sewer Lift Station Nos. 9 & 11 (LS-9 and LS-11 respectively). The City anticipates two major residential developments, the El Portal Subdivision and the Las Palmas Subdivision, will soon be approved for construction which will significantly impact the City's sewer collection system. LS-9 and LS-11 were constructed in 1979 and have limited sewer capacity, and the existing upstream and downstream force mains and gravity main pipelines are undersized to convey the increased flows from the La Jolla Palms, El Portal, and Las Palmas developments at full build out.

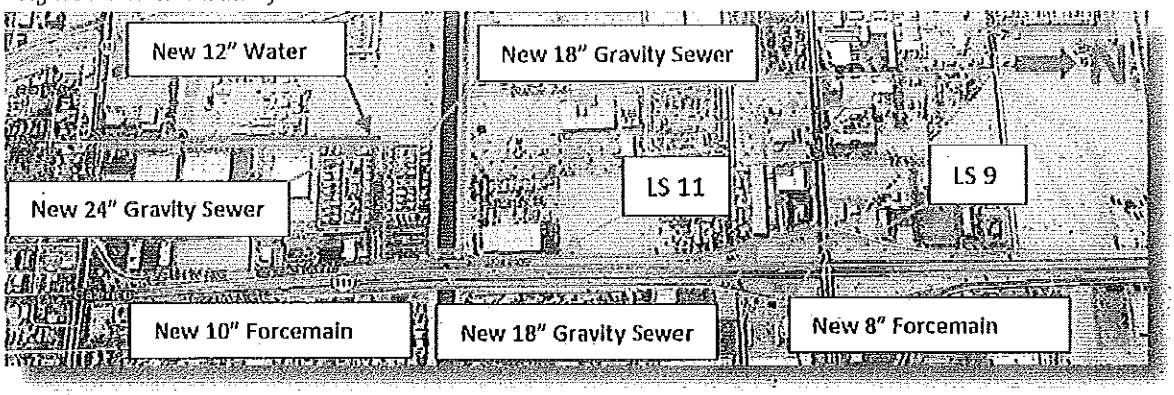
Sewer flow from the La Jolla Palms, El Portal, and Las Palmas Subdivisions are first lifted from the La Jolla Palms Lift Station via an 8-inch force main pipeline to an 18-inch gravity pipeline located along Scaroni Road, and then travels by gravity to LS-9. Based on the information provided in the Initial Assessment Report prepared by The Holt Group, Inc. (THG), the lift station capacities are 0.36 million gallons per day (MGD) each for both lift stations LS-9 and LS-11.

LS-9 consists of a 6-foot diameter, 19-foot deep concrete wet well with a Gorman-Rupp brand packaged pump station. The duplex pump station is equipped with two (2) 250 gallons per minute (gpm), 25-foot total dynamic head (TDH) centrifugal pumps. LS-9 is fed by two (2) sewer influent pipelines – an 18-inch diameter gravity sewer pipeline extending along Scaroni Road and another sewer influent pipeline originating from a nearby abandoned business establishment. Wastewater from LS-9 is discharged through a 6-inch diameter PVC force main pipeline to a manhole south of the Scaroni Road and Cole Boulevard intersection. The wastewater is then transmitted south to LS-11 via an 8-inch gravity pipeline.

LS-11 consists of a 6-foot diameter, 19-foot deep concrete wet well with a Gorman-Rupp brand packaged pump station. The duplex pump station is equipped with two (2) 250 gallons per minute (gpm), 25-foot total dynamic head (TDH) centrifugal pumps. LS-11 is fed by an 8-inch diameter sewer influent pipeline. Wastewater from LS-11 is discharged through an 8-inch diameter PVC force main pipeline to a manhole south of the Scaroni Road and Vernado Drive intersection. The wastewater then flows by gravity west along an existing 12-inch gravity pipeline along Vernado Drive.

The City desires to upgrade and increase the capacity of LS-9 and LS-11 and replace existing force mains and gravity sewer systems to accommodate the future build out of the La Jolla Palms, El Portal, and Las Palmas developments. The City also desires the existing 15-inch gravity pipeline located along Ollie Ave be replaced with a 24-inch gravity pipeline, which will be connected to a 24-inch stub-out that will be installed as part of Caltrans' State Highway 98 widening project. Additionally, the City desires to replace an existing 12-inch diameter Asbestos Concrete (AC) water pipeline running north/southerly from State Highway 98 north along Ollie Avenue, then east/westerly along Vernado Drive, with a 12-inch diameter C905 PVC water pipeline. The improvement work is summarized below in *Figure 2-1.*

Figure 2-1 Work Summary

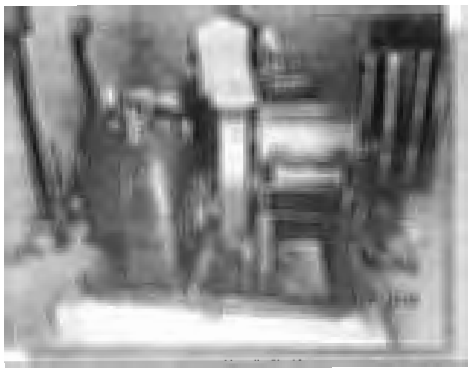


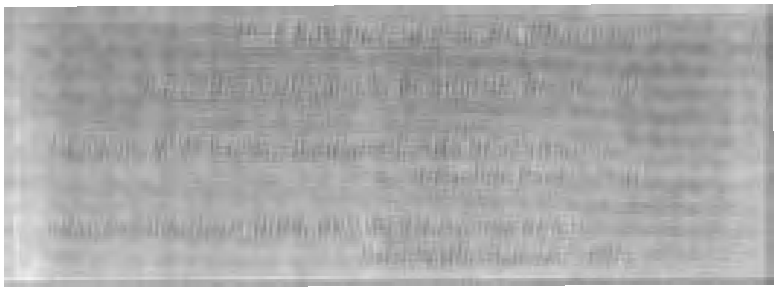
PROJECT APPROACH

LEE & RO's team is staffed with multi-disciplinary engineers that allows for quick coordination and decision making for projects such as this. The team will be led by Amritendu Maji (Project Manager), who is a licensed Civil Engineer with 23 years of hands on experience including numerous lift and pump station designs. Our team has worked closely with the City over the recent years and clearly understands the City's processes, goals, and standards which will allow for a smooth project and City peace of mind.

Careful upfront planning is required to properly facilitate the construction phasing of the LS-9 and LS-11 facilities, as well as upgrading the existing sewer and water pipelines. The LEE & RO team is dedicated to accomplishing these tasks while minimizing the impacts to the newly developed community. Our seasoned team of engineers and quality control staff will assure constructability is built into the plans. This will allow for an economical and a well-coordinated construction process. LEE & RO has dosigned numerous sewage pumping stations and is very familiar with the design process. A similar self-priming station designed by LEE & RO is shown in **Figure 2-2.**

Figure 2-2 Self Priming Pump Station





If selected for design, LEE & RO will request from the City all as-built and ongoing project documentation (i.e. drawings for past and ongoing projects along Ollie Ave, Vernado Dr, and Scaroni Rd, etc.) to assist with the design process. Additionally, LEE & RO will request flow data for the sewer collection systems and pipelines associated with LS-9 and LS-11 to verify the information included in the Initial Assessment by THG. After reviewing the RFP, it is LEE & RO's understanding that the City will provide the pothole work required for this project.

PROJECT COMMUNICATION

LEE & RO will maintain close communication with the City. The City will have continuous access to the LEE & RO project manager as the single point of contact. LEE & RO will submit monthly progress reports to document and report project progress and any issues need to be resolved. LEE & RO plans to elevate the issues as soon as possible before they impact the project cost and schedule.

PROJECT DOCUMENTATION

LEE & RO will utilize Project Decision Logs (PDL) to document the project understanding and decisions made by the City or other stakeholders. All project stakeholders will be invited to participate in the decision-making process and the PDL will be utilized as primary documentation for tracking decisions made.

ADHERE TO CODES & STANDARDS

LEE & RO will pay attention to various codes and standards during the preparation of design documents. We believe that consistent application of codes & standards expedites the design and construction process.

CONSTRUCTABILITY REVIEWS

Constructability review is an essential part of any engineering design project. LEE & RO will perform constructability/biddability review at approximately 60% & 90% design completion. Constructability review is an interactive design process for determining value added services, material quality, process functionality, and O&M requirements and, as a result, quality constructability review reduces the project risks as well as project costs .

COST MANAGEMENT & CONTROL

Proactive project budget management is extremely important. During design, LEE & RO will continuously monitor the project construction cost to ensure the project can be delivered within the City's construction budget. All cost estimates are developed using Excel spreadsheets, facilitating regular updates. Any unusual change in the estimated project construction cost will be quickly brought to the City's attention.

QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

Using our experience gained from similar projects, we continually enhance our QA/QC procedures. LEE & RO has developed and utilizes **QA/QC Checklists**, which list approximately 700 items which need to be checked in water infrastructure facility engineering and design disciplines. The LEE & RO QA/QC team must develop detailed project-specific QA/QC checklists to correct deficiencies in the design deliverables. Quality control reviews will occur upon completion of specific tasks and work products prior to submittal for client review. Key elements of our QA/QC approach include:

a. Interactive stakeholder communication to agree on schedule and key technical drivers

b. Ensure that all calculations, drawings, specifications, construction cost estimates are thoroughly checked.

c. Constructability reviews at 60% & 90% design completion.

d. Continually value-engineer to identify cost saving opportunities without compromising quality

LEE & RO's standard QA/QC checklist for the design deliverables (plans, specifications and construction cost estimates) covers.

✓ Show existing site and as-built conditions as accurately as possible.

✓ Clearly delineate the contractor's work and responsibilities on the drawings and specifications.

✓ Show adequate design details, especially for equipment that must fit into confined spaces.

✓ Eliminate conflicts between specifications and plans, and among disciplines.

✓ Develop construction sequencing and startup commissioning plan early during design.

✓ Produce dependable construction cost estimates.

LEE & RO is currently working on the design of a wastewater treatment plant for the City of Calexico and is extremely familiar with the City's standards and requirements. The LEE & RO team will work with the City staff to ensure that the City gets a product that is maintenance friendly and will last a long time with minimal maintenance.

Our Definition of Success Fun, Growth, and Financial Rewards.

Pride in What We Do We provide cost-effective public works engineering solutions that enhance the quality of the environment and quality of living.

Client Satisfaction Clients come first. We value all clients, listen to clients, and strive to provide quality services.

Integrity We are professionals who do right, are committed, and accountable

Innovation We innovate and try to find ways to produce more with less.

Team Work We respect each other. We are open-minded, share knowledge and delegate.

SCOPE OF WORK

LEE & RO's scope of work includes, but is not limited to the following items:

1. LEE & RO's subconsultant (The Prizm Group) will complete a topographic survey of the sites – including research for all existing underground and above ground utilities along the pipeline alignment, easements and right-of-ways, existing elevations of teps of all manholes along the alignment, and inverts of all sewer pipelines entering the sewer manholes. Also the survey will, include other improvements as needed and above ground improvements. Elevations will be based on current established benchmarks. A topographic map will be prepared showing the above items.

2. LEE & RO will include in the scope of work and fee a geotechnical report, completed by a registered geotechnical engineer in the State of California. The geotechnical report and work will include the installation of piezometers, which will be installed along the length of the gravity sewer pipelines at 200 feet on center and at each of the pump station locations during the project design period to determine the water table depth. The piezometers will be installed by LEE & RO's subconsultant (Associated Soils Engineering) in coordination with the LEE & RO.

3. The water table depth elevation and date the water table depth was obtained will be illustrated on the gravity sanitary sewer pipeline plan and profile sheets and on the pump station cross-section plan sheet. Separate trench sections above the water table and at or below the water table will be illustrated on the plans. Dewatering specifications will be provided, if required. LEE & RO will review water disposal requirements with the Regional Water Quality Control Board during the project design. The location at which water can be disposed of will be determined during the project design. The water disposal requirements and location at which water is to be disposed will be included in the plans or specifications.

4. LEE & RO will complete a field inspection of all sewer manholes along the alignments. It is LEE & RO's understanding that City staff will assist in opening the manholes if necessary. LEE & RO will determine if it is feasible to rehabilitate the existing manholes and will prepare a brief preliminary report with alternatives and recommendations; if a new alignment with new manholes is more efficient, use of trenchless technologies, or if excavating and replacing the sewer mains and rehabilitating the manholes in situ is preferable. Final engineering will not begin until the City agrees to the findings in the brief report.

5. LEE & RO will coordinate with the City Public Works Department to obtain locations of the existing sewer laterals. LEE & RO will also ensure that all existing underground utilities that are on record are depicted on the plans, including sewer laterals. If potholing is required to find any sewer laterals, the potholing shall be completed by City forces. Details will be provided as needed or directed by the City.

6. LEE & RO will coordinate with the City Fire Department to obtain exact locations of new fire hydrants.

7. LEE & RO will ensure that all existing underground utilities that are on record are depicted on the plans, including sewer laterals. It is LEE & RO's understanding that if potholing is required to find any sewer laterals, the potholing will be completed by City forces. Details will be provided as needed or directed by the City.

8. LEE & RO will provide improvement plans that will include A.C. pavement demolition and replacement requirements and details. Pipeline trenches in pavement areas will require a 1 foot wide, 1 ½ inch deep pavement grinding area along each side of the pipeline trench.

9. LEE & RO will provide erosion control plans along the length of the water, gravity sanitary sewer and sanitary sewer force main, as well as for the pump stations.

10. LEE & RO will prepare a sequence of construction section indicating the chronological order that major construction items are to be completed. The City of Calexico Staff will review and provido comments regarding the sequence of construction during the project design reviews.

11. A sheet index map will be provided with the improvement plans illustrating the sanitary sewer force main, gravity sewer main and water pipeline plan and profile sheets and the sewer lift station plan sheets. The stationing along the pipeline will be illustrated on the index plans. A benchmark table will be illustrated on the sheet index map. Temporary benchmarks will be placed along gravity sanitary sewer pipeline sections 200 feet on center and at each sewer lift station during the project design and illustrated on the index and plan and profile sheets.

12. A note will be placed on the plans requiring the contractor to pothole all utilities which may conflict with the pump stations, sanitary sewer force main, gravity sewer main and water pipeline. The contractor will be required to obtain the underground utility elevations and verify that conflicts do not exist with the new pipelines and pump stations prior to commencing new pipeline and pump station excavation work.

13. The scope of work will include all work necessary for completing final stamped engineering plans and details, specifications and bidding documents. Plans will include plan and profile view of the pipeline in scale 1" = 30' or as recommended by LEE & RO. The scope will also include meetings with the City as necessary during design, attending a pre-bid meeting, bidding and construction services - such as answering bidder's questions, attending a preconstruction meeting, answering RFIs, etc. Construction management will be completed under a separate task order in the future.

14. LEE & RO's subconsultant will provide traffic control plans for construction.

15. The parcel owner information and APN number of each lot bordering a pipeline section will be illustrated on the plans. The building outlines serviced with water or sanitary sewer services will be illustrated on the plans.

16. LEE & RO will forward draft improvement plans to the gas, power, telephone, television and any other pertinent utility companies for review and comment during the project design.

17. LEE & RO will coordinate obtaining Customer Service Proposals (CSPs) from the Imperial Irrigation District Energy Department for the demolition of the existing sewer lift station electrical services and the installation of new power services for the sewer lift stations. It is LEE & RO's understanding that the City of Calexico will pay for all fees relative to the CSPs.

18. LEE & RO will coordinate obtaining an Encroachment Permit from the IID and any other required agencies for installing the 8-inch sanitary sewer force main crossing at the All-American Canal along Scaroni Road. It is LEE & RO's understanding that the City of Calexico will pay for all fees relative to the IID encroachment permit.

19. LEE & RO will provide Sewer Lift Station electrical plans and specifications stamped by a Registered Electrical Engineer in the State of California. The electrical plans will include an alarm monitoring and pump system remote terminal unit (RTU) communication system.

20. A backup power or pumping system bypass will be included in the Sewer Lift Station Design.

21. LEE & RO will prepare an Engineers' opinion of probable cost.

TECHNICAL APPROACH

In this section, we discuss our technical approach to upgrading the **Lift Station Nos. 9 and 11**, as well as the upgrades to the sewer and water pipelines. To match the City's expectations, the following technical approach will reflect the recommendations provided in the Initial Assessment prepared by THG. Through continued coordination with the City, LEE & RO's team will verify the design approach presented in the Initial Assessment during design to confirm the recommendations and provide alternatives as desired by the City in order to provide reliable sewer lift stations and infrastructure. LEE & RO's current design approach does not differ from the recommendations made by THG, and this section is only intended to summarize the scope of work to confirm to the City of our understanding of the project goals.

LIFT STATION NOS. 9 & 11

CIVIL

The entrances to the sewer lift stations will be concrete. A new chain link fence with privacy slats and a gate will be provided for the sewer lift stations. A minimum of 1 foot of Class 2 Base er a concrete surface section will be placed within the interior of each sewer lift station compound within the exterior chain link fence. A water service with a meter and backflow preventer will be provided to supply wash down water to the new sewer lift stations.

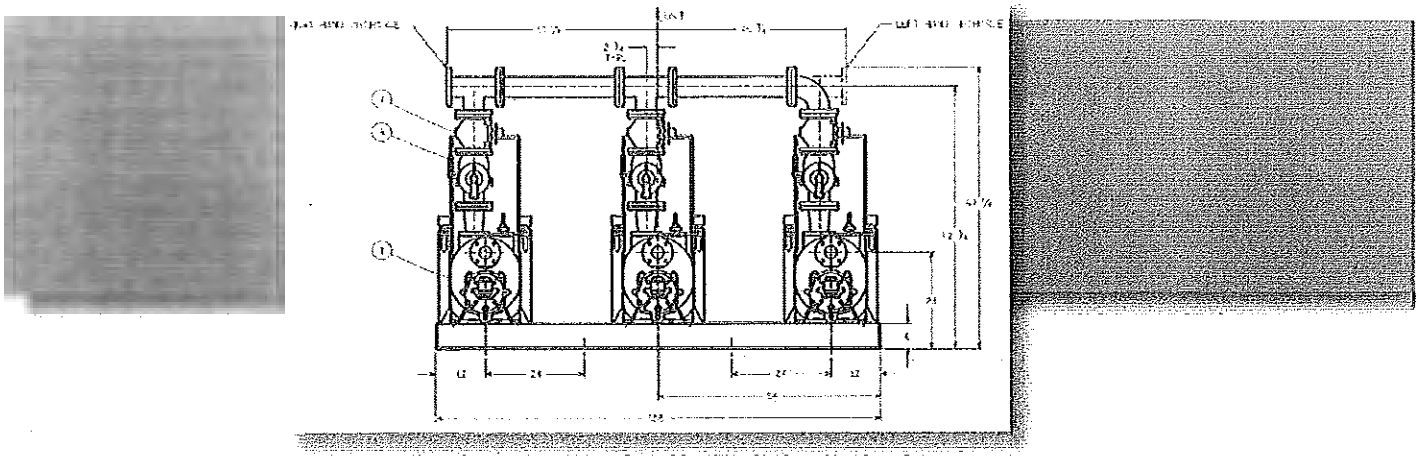
STRUCTURAL

The existing concrete wet wells will be replaced with new, 12-foot diameter concrete wet wells. The wet well walls will be coated with a polyurethane or epoxy coating system to provide the wet well with increased resilience against corrosion. New concrete support slabs will be placed at the top of the sewer lift station wet wells to support and secure the skid-mounted pump stations. All new concrete structures, foundations, and support pads will be designed based on the findings of the geotechnical report.

MECHANICAL

The existing pumps will be replaced with a skid-mounted sewer lift station with centrifugal pumps operating in a triplex configuration. Two (2) active pumps will operate at a flow of 500 gpm each, with a combined capacity of 1000 gpm, which is greater than the anticipated peak flow condition of 896 gpm listed in the Initial Assessment. The third 500 gpm pump will serve as a standby to provide redundancy to the lift station. The lift station piping will be equipped with upstream piping connections, downstream piping fittings, valves and check valves, pressure gauges, air vacuum and release valves, a flowmeter, and other required mechanical components. Piping will be provided to allow for a temporary pumping bypass during maintenance or emergency situations. A section of a typical triplex system is shown in **Figure 2-3.**

Figure 2-3 Self Priming Pump Station



Based on the available information in the Initial Assessment Report included in the RFP, LEE & RO computed the system curves for the two lift stations. These values are preliminary and will be refined and finalized during the design phase when more detailed information on the lift stations are available. Using the system curves, LEE & RO selected appropriate Gorman Rupp pump curves such that the total pumping capacity is 1,000 gpm when 2 pumps are in operation. **Figure 2-4** shows the Flow Vs. Head Curves (System Curve and Pump Curves) for Lift Station No. 9, while **Figure 2-5** shows the Flow Vs. Head Curves (System Curve and Pump Curves) for Lift Station No. 11.

Figure 2-4 - Flow Vs. Head Curves for Lift Station No. 9

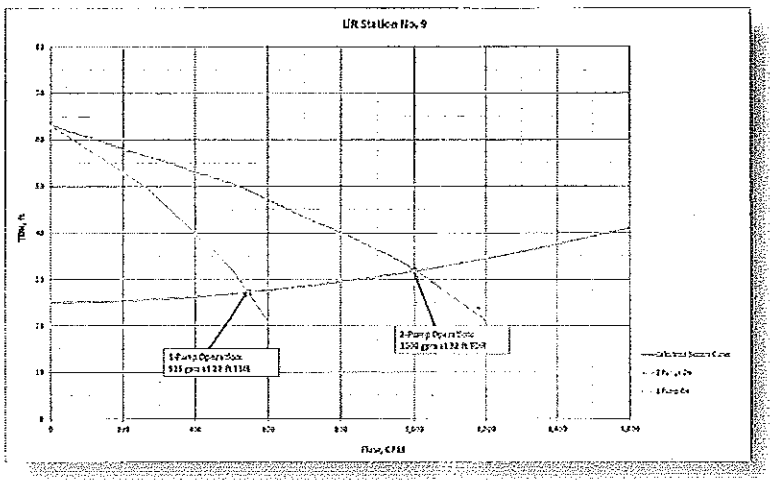
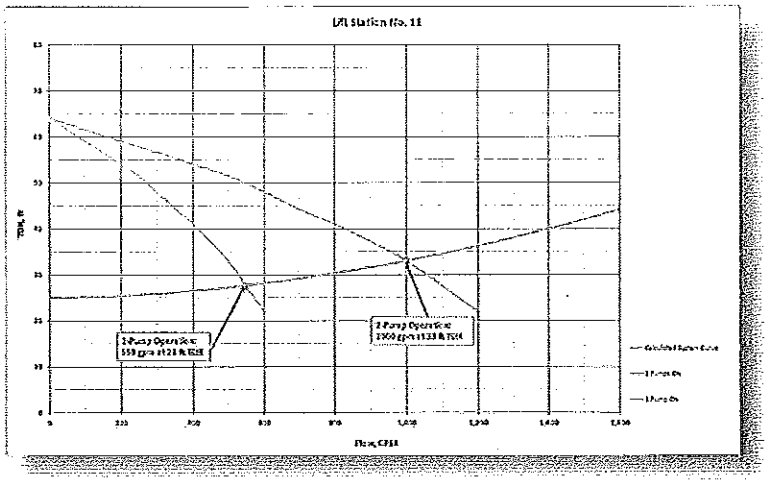
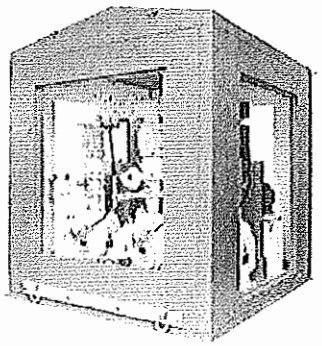


Figure 2-5 - Flow Vs. Head Curves for Lift Station No. 11



LEE & RO recognizes the City's preference for Gorman-Rupp pumps and will base our design on the packaged lift stations manufactured by Gorman-Rupp. If selected for design, LEE & RO will analyze the suction lift capability of the pumps to verify the feasibility of operating this system, as the existing wet well is 19 feet deep which is near the suction lift limitations on these types of pumping systems. LEE & RO has contacted Gorman-Rupp representative of this area and they recommended that the ReliaSource® 8x9 system shown in the **Figure 2-6** below be used to house the triplex system.

Figure 2-6 - Reliasource® 8x9 Above-Ground Lift Station



ReliaSource® 8x9 Above-Ground Lift Station

Accommodates Gorman-Rupp Super T Series® or Ultra V Series®
self-priming centrifugal, heavy duty solids-handling pumps

Specifications:

- Pump Size: 3" (75 mm), 4" (100 mm), 6" (150 mm), 8" (200 mm)
- Max. Capacity: 2600 GPM (164.0 lps)
- Max. Head: 160' (49.0 m)
- Max. Solids: 3" (76.2 mm)
- Max Temperature: 160°F (71°C)
- Motor – Voltage: 200 V 3P, 230 V 1P, 230 V 3P, 460 V 3P
- Motor – Cycles: 60 Hz
- Horsepower: 2 HP to 60 HP

ELECTRICAL/INSTRUMENTATION

The new sewer lift stations will be supplied with motor control centers (MCCs) and control systems to activate and de-activate the pumps. Enclosures will be provided for the skid-mounted sewer lift station and electrical components. The new sewer lift station will be supplied with alarm systems to detect pump failure and high-water levels. Additionally, a new remote terminal unit will be installed to forward alarms and telemetry information to an operations center location designated by the City. New lighting will be provided to illuminate the sewer lift station compounds. An emergency backup generator will be installed to provide a redundant power supply in the event of any interruption to the electrical service. If selected for design, LEE & RO will evaluate the need for a new electrical service for the new lift station.

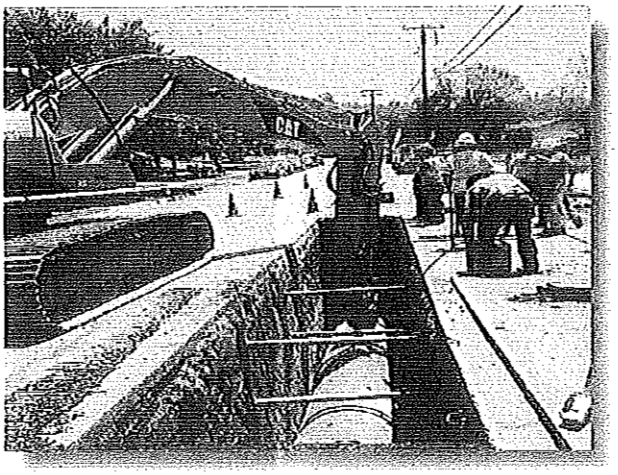
SEWER AND WATER PIPELINES REPLACEMENT

Based on the recommendations made in the Initial Assessment prepared by THG, the following improvements will be made to the existing sewer and water pipelines:

1. Increase the force main downstream of LS-9 from 6-inch diameter to 8-inch diameter.
2. Increase the gravity sewer pipeline downstream of LS-9 and upstream of LS-11 from 8-inch diameter to 18-inch diameter.
3. Increase the force main downstream of LS-11 from 8-inch diameter to 10-inch diameter.
4. Increase the existing gravity sewer pipeline along Vernado Drive from Scaroni Drive to Ollie Ave from 12-inch diameter to 18-inch diameter.
5. Increase the existing gravity sewer pipeline along Ollie Ave from 15-inch diameter to 24-inch diameter.
6. Replace the existing 12-inch diameter AC water pipeline along Ollie Ave and Vernado Dr with a 12-inch C905 PVC water pipeline.
    a. Reconnect existing water services along the pipeline routes, fire hydrants, valves, and connections to the existing buried water pipelines after installation of the new 12-inch water pipeline.

LEE & RO understands that installation of pipelines can have significant impacts on the City's residents and will work closely with the City to sequence and time the construction and installation work to minimize the negative effects of construction. For example, construction and installation of the new water pipeline, as well as the sewer pipeline, along most of Ollie Ave can be accomplished at night with minimal affect on traffic and without noise complaints, as the area is primarily industrial. The same applies to the sewer pipeline along Scaroni Drive north of the All-American Canal and south of Cole Blvd.

Figure 2-7 Typical Residential Sewer Trench/Installation



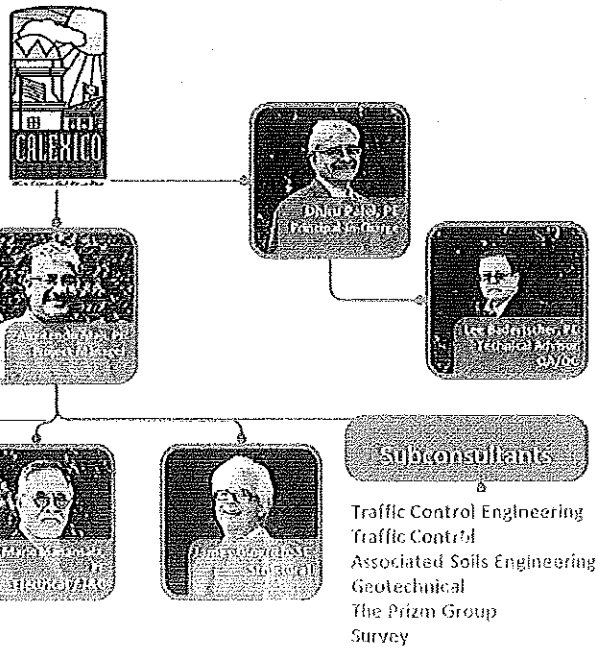
LEE & RO is well-versed in sewer and manhole bypass operations through experiences with numerous past projects. If selected for design, LEE & RO will design a reliable sewer and manhole bypass plan to accommodate the existing daily and peak flows in the sewer collection system. Additionally, LEE & RO will perform a surcharge analysis to ensure that no complications arise from the sewer and manhole bypass operations.

Figure 2-8 Typical Sewer Bypass Pump Setup

B. Team

LEE & RO personnel proposed for this project have managed and engineered many projects with very similar design elements as those in the District's lift station modifications and emergency storage basin project. The LEE & RO team organization, identifying the roles and responsibilities of proposed key personnel and specialty subconsultants, is shown in Exhibit B.1. Brief biographies for key team member staff are included below. Detailed resumes are included in Appendix 1.

The current workload for the proposed team members is such that all are immediately available to commence work on the project. The project team is sufficiently staffed so all necessary work tasks can be completed on schedule and in a timely manner.



Amritendu Maji, PE
Project Manager

City of Industry Office

Amritendu Maji is a Civil Engineer and Project Manager with over 20 years of progressive experience in the planning, design, construction, and administration of public works projects. He has been responsible for preparing plans and specifications, construction cost estimates, bid documents, and permit applications for site development, roadways, water & wastewater conveyance and distribution facilities including pipelines, pump stations and reservoirs, and stormwater and flood control facilities. He has considerable experience in hydraulics and hydraulic modeling, as well as preparation of feasibility studies and technical reports. He has provided constructability review and QA/QC of technical reports, plans & specifications, construction cost estimates, and other bid documents. He has provided construction administration and support services including construction site visits, conducting progress meetings, review of shop drawings, responding to RFIs, analysis & preparation of change orders, start-up & commissioning and review & approval of contractors' pay requests and project closeout. He also has considerable experience in the preparation of permits including the Federal Section 404 (Clean Water Act) for work in wetlands, Section 408 (Rivers and Harbors Act) for federally constructed structures like levees and floodwalls, and permits from the State Transportation and Development offices for work in and around State and Federal Highways etc. His relevant experience includes:

- Pump Station 65 Upgrade, City of San Diego
- Pump Station 2 (PS2) Power Reliability Upgrade and Power Generation Project, City of San Diego
- Miramar Pump Station Rehabilitation and Upgrading Project, San Diego County Water Authority, San Diego.
- Sludge Pump Station Upgrading, South Bay Water Reclamation Plant (SBWRP), City of San Diego.
- Trinidad Pump Station Rehabilitation, City of Coronado.
- Hauck Mesa Storage Reservoir and Pipeline Surge Protection Project, San Diego County Water Authority (SDCWA).

Roman Silvestre, PE
Civil/Mechanical Engineer

City of Industry Office

Roman Silvestre Manages projects (design and construction of reservoirs, tanks, wells, booster pump stations, control buildings, PRV's etc.) for Plant Design Section by determining project objectives, developing schedules and project budgets, composing project documents, reviewing and approving design plans, selecting consultants, coordinating activities, assigning and monitoring personnel and assigned tasks, managing projects including costs and budgets, preparing reports, performing and supervising design activities, attending and conducting public meetings, reviewing plans for conformance to regulations and standards and resolving conflicts. Produces, reviews, and administers contract documents by designing and writing specifications, writing and sealing legal descriptions, preparing cost estimates, conducting public participation programs, receiving permits, evaluating and recommending bids, monitoring contractors work progress, adjusting designs, negotiating change orders, supervising tests and completing plans. Mr. Silvestre is proficient in Bentley's Engineering Software; Microstation V8i, Water Modeling, AutoPIPE V8i, StormCAD V8i, WaterCAD V8i, WaterGEMS V8i, Structural Modeler V8i, RAM Structural System V8i, StaadPro V8i, SewerCAD V8i, PowerDraft V8i, GEOPAK Civil Engineering Suite V8i, PowerCivil V8i, Microsoft Software; Microsoft Project, Word, Excel, PowerPoint. InfoWater, AutoCAD 2018. His relevant experience includes:

Murthy Kadiyala, PE, PLS
Project Manager

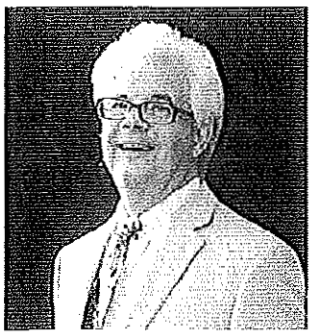
City of Industry Office

As a licensed professional engineer and land surveyor, Murthy Kadiyala has municipal water infrastructure engineering, design, and construction experience in water and wastewater conveyance systems including trunk sewers, force mains, water transmission mains, and storage tanks. Murthy has extensive experience with hydraulics/hydrology and modeling experience with H2ONet, InfoWater, WaterCAD, SewerCAD, and ArcGIS. He also has high-level skills in AutoCAD Civil 3D, TerraModel and MicroStation applications. Murthy as a licensed surveyor has solid experience in property boundary legal and right of way (ROW) analysis and land surveying both field and office. He has also served in the responsible role of a water and wastewater plan checker for many years. His knowledge of service connections and private developments including land title and encumbrances has enabled him to resolve ROW issues early in the design process. Murthy has engineered water and wastewater conveyance projects which require extensive permitting, and traffic mitigation. Murthy has considerable experience with trenchless construction including micro-tunneling, jack & bore and horizontal directional drilling. His relevant experience includes:

Mario Manansala, PE
Electrical / I&C

City of Industry Office

Mario Manansala is an electrical engineer with over 40 years' experience in designing electrical power distribution systems; preparing construction bid documents, including plans and specifications; performing electrical calculations in support of the electrical plans; coordinating construction activities to ensure projects are fully completed in an efficient manner; performing field inspections to ensure work is performed in accordance with the design intent; and developing and implementing test procedures so that the design requirements of the installation are met. He has broad knowledge of NEC, IEEE, UL, and NFPA codes and standards applicable to electrical system design and operation. Having worked with several electrical manufacturers such as Westinghouse, ABB and Klockner Moeller, he has a long practical experience with the industrial application of electrical equipment. His experience includes:



James Gingrich, SE
Structural Engineer

City of Industry Office

James Gingrich is a California registered structural engineer with more than 30 years of structural analysis, engineering, design, constructability analysis, value engineering, project coordination, and construction management experience. He has been the structural project manager, QA/QC reviewer, and lead structural engineer for planning, investigation and condition assessment, preparation of preliminary & final design, seismic analysis and upgrading, and construction phase engineering services for a wide variety of concrete and steel structures for water conveyance and pumping facilities, water storage, treatment and distribution facility projects for Metropolitan Water District (MWD) of Southern California. His experience and expertise include rehabilitation & retrofit engineering designs for existing facilities. His representative experience includes lead designer for the Lake Matthew Outlet Facilities, Colorado River Aqueduct Pumping Plant Seismic Upgrades, and Oxidation Retrofit (Ozone Disinfection) Projects for MWD's Mills, Jensen, Weymouth, Skinner, and Diemer Water Treatment Plants. His relevant experience includes:

Dhiru Patel, PE
Principal-in-Charge

City of Industry Office

Dhiru Patel has over 30 years of water and wastewater facilities engineering, project management and business management experience. He has managed and overseen projects involving study, PDR, final design and construction support phases for distribution, conveyance, treatment and supporting facilities for water/wastewater/water reclamation projects. He has extensive experience with project management, plant and process engineering studies, preliminary engineering, final design, construction engineering support, troubleshooting, and operations and maintenance (O&M) support for water and wastewater treatment facilities. Dhiru serves as Principal-in-Charge and Project Director for many of our as needed engineering services contracts. As the Principal-in-Charge for this contract, Dhiru will have corporate responsibility for the entire project team's performance. His relevant experience includes:

Lee Badertscher, PE
Technical Advisor & QA/QC

City of Industry Office

Lee Badertscher has over 30 years of planning, design, and construction experience with treatment plants, pipelines, storage and pump station facilities for water agencies. Mr. Badertscher is a CA registered professional "Civil," "Electrical," and "Control Systems" Engineer. He has successfully completed multiple roles such as project manager, civil engineer, electrical engineer, instrumentation and control systems (I&C) engineer, and construction manager. He has managed large and small diameter pipeline projects as well as rehabilitation of concrete and metal structures. He also has hands-on experience with a wide variety of process and mechanical equipment, piping, and electrical and instrumentation systems related to pipelines. He recently managed Silver Lake Reservoir Complex project involving reservoir and large diameter pipeline related facilities. Mr. Badertscher also has extensive construction management, start-up and commissioning, and operations and maintenance (O&M) experience. His relevant experience includes:

SUBCONSULTANT

Traffic Control Engineering (TCE)
Traffic Control — Brea, CA

TRAFFIC CONTROL ENGINEERING, INC.

TCE designs and prepares traffic control plans and also provides consulting for Caltrans as well as various cities, counties, water agencies and sanitation districts, private contractors throughout Southern California. TCE has maintained a close working relationship with Caltrans and other transportation agencies facilitating expedient project approvals. TCE expertise includes traffic control plans and detour plans, conducting traffic impact studies and alternative alignment evaluation for construction of various underground utility lines.

Associated Soils Engineering (ASE)
Geotechnical — Signal Hill, CA

ASSOCIATED SOILS ENGINEERING, INC.

ASE, incorporated in 1974 in the State of California, has provided geotechnical design, material testing, and construction testing services for over four decades in Southern California and can use the vast experience, information and data gathered over the years to provide quick and cost-effective geotechnical solutions to a wide variety of public works construction projects. ASE has provided geotechnical engineering services on many of LEE & RO's projects since 2000. ASE is very familiar with the geology of the Southern California areas through their previous geotechnical investigation work.

The Prizm Group (TPG)
Topographic Survey Engineering — Corona, CA

THE PRIZM GROUP

The Prizm Group (TPG) is owned and operated by Vincent Kleppe, who has been a Licensed Land Surveyor and registered Civil Engineer for over 16 years. The dual licensure of the principal has allowed TPG to provide services in both disciplines which has resulted in a thorough understanding of the need for complete and accurate field surveys.

C. Experience & References

Sewer Pump Station 65 Upgrades
City of San Diego

LEE & RO provided engineering and design for this $5 million pump station upgrade project. The existing pump station was equipped with two sets of vertical centrifugal pumps, two 150-hp pumps, and two 400-hp pumps. This project increased the Station's design capacity and provided provisions for a standby pump. In addition, to improving operational flexibility and reliability, the soft starters were replaced with variable frequency drives. The existing 400-hp pumps replaced with new 500-hp motors and larger impellers. A third new 500-hp pump was be installed in the empty bay with suction and discharge piping, fittings, and valves as required, serving as a standby unit. The upgrades included the modification of electrical equipment, wiring and conduits, instrument and control devices, and will require larger transformers from SDG&E to serve the new 500-hp motors. Aside from the capacity upgrade, the existing wet well was modified to a self-cleaning wet well.

Client Contact

- Ivan Hoffman, PE, Project Manager
- (619) 533-5190
- Ihoffman@Sandiego.Gov

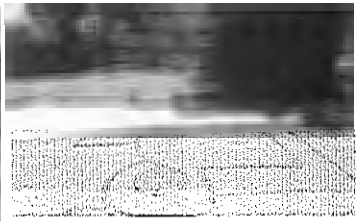
Wastewater Pump Station 2
Reliability Upgrades & Power Generation System
City of San Diego

The City of San Diego's Wastewater Pump Station 2 (PS2) conveys all wastewater flows (up to 432 mgd) from the San Diego Metro Wastewater Collection System to the Point Loma Wastewater Treatment Plant (PLWTP) via dual 87-inch force mains and the Point Loma Tunnel. PS2's lineup consists of eight (8) pumps - six driven by 2,250 HP electric motors and two others driven by 2,500 HP natural gas engines.

The final design and under construction includes: (1) replace two engine-driven pumps with two 2,250 HP electric driven motors through new variable frequency drives (VFDs), (2) provide two natural gas engine generators rated at 3MW each, which will be available to pumps at all times for force main surge protection during multiple pump operation, and (3) install two 4MW diesel engine emergency generators. The project includes a new 3-story building to house the generators, cooling systems, electrical switchgear, and cranes. The building site requires extensive foundation work including piling. The design includes extensive site preparation and utility relocation work. The existing raw sewage shell and tube exchangers will be modified and integrated as a part of the new engine cooling system, reducing overall cost.

Client Contact

- Jianmin Pan - Construction Manager
- (619) 533-6692
- Jpan@Sandiego.gov



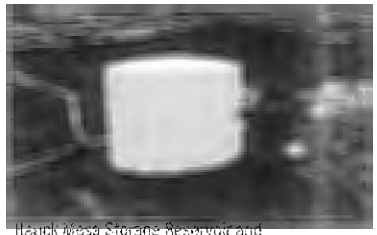
Trinidad Lift Station No. 29 and
Force Main Replacement Project
City of Huntington Beach

The existing Trinidad Sewer Lift Station No. 29 and Sewer Force Main were originally constructed in 1979. These existing sewer facilities are on the verge of failure due to corrosion and are in need for replacement. The City of Huntington Beach retained LEE & RO to develop design documents for the demolition of the existing wet well/dry well sewer lift station and the construction of the new Trinidad Sewer Lift Station No. 29. The existing 4" force main which extends north along Trinidad Lane, crosses over the Inland Waterway by means of a bridge. The existing 4" force main is suspended with hangers off the bottom of the bridge deck at the crossing of the waterway. Approximately 800 LF of 4" ductile iron pipe (DIP) will replace the existing force main. The new sewer lift station will consist of two submersible recessed-impeller non-clog pumps which will be able to produce a total pumping capacity of 250 gpm at 55' TDH and an emergency standby generator. These pumps will pump within a newly constructed 20-foot deep, cast-in-place concrete wet well which will have a polyurethane interior coating. This wet well will be constructed below the groundwater table and shoring and dewatering are of major concern. LEE & RO will develop design details and specifications to help ensure public safety during excavation and no sewer spills during construction. Coordination with the California Coastal Commission is required due to the proximity of the lift station with coastal waters.

This project demonstrates our ability to design lift stations and copperdams that do not require dewatering.

Client Contact

- Andrew Ferrigno, PE
- (714) 536-5281
- Aferrigno@Surfcity-HB.org

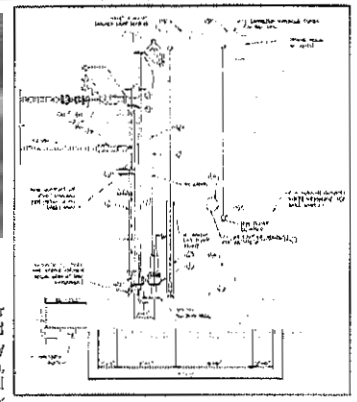


Hauck Mesa Storage Reservoir and
Pipeline Surge Protection Project
San Diego County Water Authority (SDCWA)

SDCWA operates two aqueduct systems to transport water from the north to the south of the county. SDCWA planned to construction of a flow regulatory storage (FRS) facility along the First Aqueduct to allow for surge protection, emergency storage and to balance system flows and install a storage reservoir with flow control facilities at Hauck Mesa. LEE & RO performed the surge analysis, hydraulic system analysis and prepared construction documents for this $12.5 million facility. The Hauck Mesa project is situated 2.5 miles east of I-15, and 0.7 mile east of the SDCWA's Valley Center Pump Station. The existing tank and appurtenant piping will be demolished and will be replaced by the new 80-foot diameter, 1.1 MG capacity concrete reservoir with a 42-inch gravity drain system. The existing unpaved access road to the site and around the proposed reservoir will be upgraded to a minimum 15-foot-wide pavement and the site will be enclosed within a fenced area. The hill on the northeast side will be partially to allow more beneficial usage of the site. A new underground flow control facility (FCF) will include electronically actuated and controlled isolation valve and a cone valve for flow control valve. The flow control facility will be located in a concrete vault located below ground within the fenced site. The other 66-inch valves will be located within concrete valvevaults with access hatches. The vaults and the FCF design allow maintenance of the equipment inside. The motor control center housing the PLC will be located in a room inside the underground FCF while the other electrical equipment and panels will be located in an aboveground CMU enclosure. LEE & RO investigated several types of reservoirs including carbon steel tanks (bolted and welded) and pre-stressed concrete tanks. Based on the site conditions, available budget and the SDCWA's needs, an AWWA D110 Type I Pre-stressed Concrete tank was selected as it best met all the conditions

Client Contact

- Kirk Whitaker, PE
- (858) 522-6350
- Kwhitaker@SDCWA.org



Slater Lift Station Replacement
City of Huntington Beach

The Slater Lift Station has reached the end of its expected service life and is scheduled for replacement. The City of Huntington Beach has retained LEE & RO to construct a new submersible lift station including the following elements: (1) new wet well with submersible pumps and submersible pressure sensors with backup float for level/pump control; (2) new isolation valves and piping in below grade valve vault; (3) new flow meter located in below grade valve vault; (4) Manual transfer switch with lug panel for City's portable generator connection; (5) conversion of existing wet well into manhole and new sewer pipe from manhole to wet well; (6) new discharge manhole and forcemain from lift station to new discharge manhole; (7) new electrical service and control panels; (8) demolition/ abandonment of existing lift station facilities.

Client Contact

- Andrew Ferrigno, PE
- (714) 536-5281
- Aferrigno@Surfcity-HB.org

Exhibit C.1: Wastewater (Raw Sewage) Pump Station Engineering Experience

Station Name and Location (PS, Pump Station) (PP, Pumping Plant) (LS, Lift Station)	Client (Owner)	New or Upgrade	Station Capacity (gpm)	No. of Pumps incl. Spare	Pump Capacity, each (gpm)	Total Dynamic Head, (feet)	Motor, each (HP)	Variable Freq. Drives	Self Cleaning Wet Well	Const. Cost ($ Million)	Project Status
PS 2, San Diego	City of San Diego	Upgrade.	300,000	8	42,850	175	2,250	Yes	No	$57.00	In Const.
Bitter Point PS, Newport Beach	Orange County Sanitation Dist.	New	28,000	5	5,600	63	200	Yes	Yes	$21.00	In Service
PS 119, Sacramento	City of Sacramento	New	20,000	6	7,000	53	125	Yes	No	$4.00	In Service
PS 65, San Diego	City of San Diego	Upgrade	17,430	3	8,715	145	500	Yes	Yes	$5.50	In Service
PP 691, San Pedro	City of Los Angeles	Upgrade	12,720	3	6,360	114	280	Yes	No	$3.00	In Const.
Hansen Pump Station	City of Tracy	Upgrade	10,000	3	5,000	65	100	Yes	Yes	$4.50	In Service
San Juan Creek LS, Las Flores	Santa Margarita Water Dist.	New	8,000	5	2,000	120	150	Yes	Yes	$2.50	In Service
Los Molinos PS, San Clemente	City of San Clemente	Upgrade	6,400	3	3,200	85	100	Yes	No	$0.80	In Service
PP 666, Wilmington	City of Los Angeles	Upgrade	5,000	3	2,500	80	85	Yes	No	$1.64	In Service
Beachwood PS, Burbank	City of Burbank	Upgrade	5,000	3	2,100	150	150	Yes	No	$1.30	In Service
PP 676, Wilmington	City of Los Angeles	Upgrade	4,000	3	2,000	85	85	Yes	No	$1.63	In Const.
Burr Street LS, Palm Desert	Coachella Valley Water District	New	4,000	3	2,000	120	150	Yes	No	$3.25	In Const.
Lift Station No. 81-01, Palm Desert	Coachella Valley Water District	Upgrade	3,500	3	2,000	100	150	Yes	No	$3.00	In Const.
PP 677, Wilmington	City of Los Angeles	Upgrade	4,000	3	2,000	60	85	Yes	No	$1.60	In Const.
North City PS, San Diego	City of San Diego	New	2,900	2	2,900	210	300	Yes	Yes	$4.30	In Service
PS 45, San Diego	City of San Diego	New	1,900	2	1,900	290	200	Yes	Yes	$6.50	In Service
New York Creek PS, El Dorado Hills	El Dorado Irrigation District	New	1,820	3	910	155	88	No	Yes	$1.10	In Service
14th Street PS, Newport Beach	Orange County Sanitation Dist.	New	1,800	3	900	40	15	Yes	Yes	$4.00	In Service
Slater Lift Station	City of Huntington Beach	Upgrade	785	2	785	30	25	Yes	No	$1.20	In Design
Algonquin Lift Station	City of Huntington Beach	New	1,500	2	950	50	40	No	No	$2.20	In Service
La Quinta PS, Palm Desert	Coachella Valley Water District	Upgrade	1,500	3	750	65	50	Yes	No	$1.40	In Service
Las Flores LS, Las Flores	Santa Margarita Water District	Upgrade	1,250	2	1,250	300	150	No	No	$1.50	In Service
Kifer PS, Sunnyvale	City of Sunnyvale	Upgrade	900	2	450	22	10	No	No	$0.50	In Service
"A" Street PS, Newport Beach	Orange County Sanitation Dist.	New	800	3	400	30	10	Yes	Yes	$3.80	In Service
Industrial LS, Thousand Oaks	City of Thousand Oaks	Upgrade	800	2	800	60	20	No	Yes	$0.80	In Service
Bombay Beach LS, Coachella	Coachella Valley Water Dist.	Upgrade	750	3	500	50	15	No	No	$1.00	In Service
North Shore LS, Coachella	Coachella Valley Water Dist.	Upgrade	750	3	500	50	15	No	No	$0.90	In Service
Concord PS, Concord	Central Contra Costa San. Dist.	Upgrade	600	3	300	40	40	Yes	No	$0.40	In Service
Olsen Road PS, Thousand Oaks	City of Thousand Oaks	Upgrade	500	2	500	220	40	No	No	$0.70	In Service
Trinidad LS, Huntington Beach	City of Huntington Beach	New	350	2	350	45	10	No	No	$0.80	In Service
PS 50, San Diego	City of San Diego	Rehab	350	2	350	55	10	No	No	$1.50	In Service
PS 49, San Diego	City of San Diego	Rehab	200	2	200	45	7.5	No	No	$1.40	In Service
PS 13, San Diego	City of San Diego	New	100	2	100	65	10	No	No	$0.30	In Service

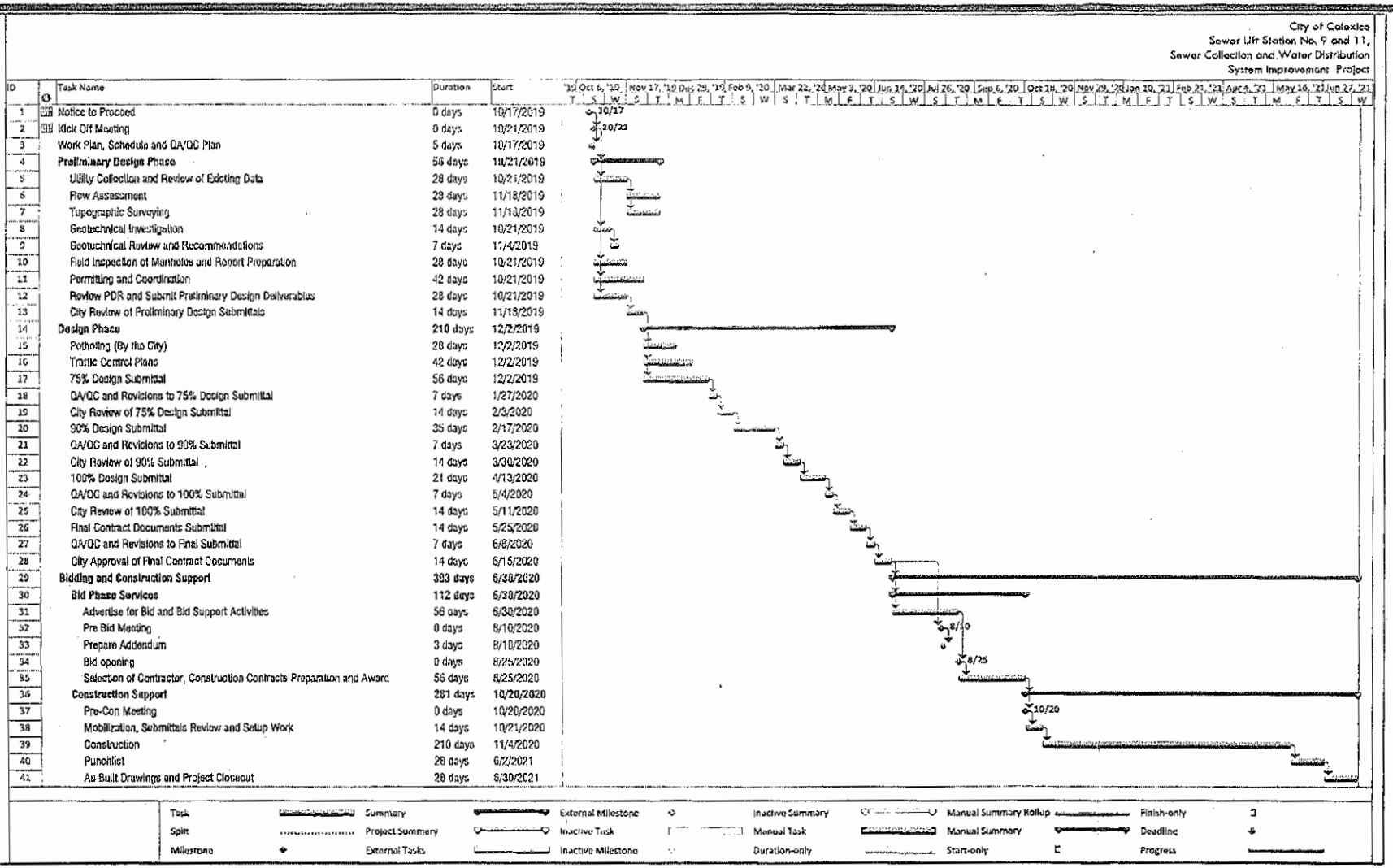
Exhibit C.2: Generator Experience Matrix

[illegible]	City of San Diego	2 (Gas Driven)	3,000	4,160	Indoor	In Construction
[illegible]	[illegible]	2	4,000	4,160	Indoor	
Hyperion Secondary Effluent Pump Station, Playa del Rey	West Basin Municipal Water District	1	3,000	4,160	Outdoor	In Construction
Weymouth Water Treatment Plant, La Verne	Metropolitan Water District of So. Ca.	1	2,250	4,160	Indoor	In Service
Stone Canyon Filtration Plant, Los Angeles	City of Los Angeles	1	2,000	4,160	Indoor	In Service
Sand Canyon Water Pump Station, Santa Clarita	Castaic Lake Water Agency	1	1,750	4,160	Indoor	In Service
Water Reclamation Plant No. 10, Palm Desert	Coachella Valley Water District	1	1,500	480	Outdoor	In Service
Wastewater Treatment Plant, Indio	Valley Sanitary District	1	1,500	480	Outdoor	In Service
Miramar Water Pump Station, San Diego	San Diego County Water Authority	1	1,500	480	Trailorable	In Service
Bitter Point Wastewater Pump Station, Newport Beach	Orange County Sanitation District	1	1,250	480	Outdoor	In Service
Water Reclamation Plant No. 4, Thermal	Coachella Valley Water District	1	1,250	480	Outdoor	In Service
Sewer Pump Station 77, San Diego	City of San Diego	1	1,000	480	Indoor	In Service
Wastewater Pumping Plant 691, San Pedro	City of Los Angeles	1	800	480	Outdoor	In Service
Wastewater Pumping Plant 654, Ballona Creek	City of Los Angeles	2	800	480	Indoor	In Construction
San Vicente Water Pump Station, Santa Monica	City of Santa Monica	1	750	480	Indoor	In Service
Sewer Pump Station 45, San Diego	City of San Diego	1	750	480	Indoor	In Service
San Juan Creek Lift Station, Santa Margarita	Santa Margarita Water District	1	750	480	Outdoor	In Service
Brawley Wastewater Treatment Plant, Brawley	City of Brawley	1	750	480	Outdoor	In Service
Booster Pump Station 3501	Coachella Valley Water District	1	750	480	Outdoor	In Construction
Rabello & Northside Water Pump Station, Santa Clara	City of Santa Clara	2	600 /400	480	Outdoor	In Service
Lift Station 81-03, Indio	Coachella Valley Water District	1	500	480	Outdoor	In Construction
14th Street Wastewater Pump Station, Newport Beach	Orange County Sanitation District	1	500	480	Indoor	In Service
La Quinta Sewage Lift Station, Palm Desert	Coachella Valley Water District	1	500	460	Outdoor	In Service
Wastewater Pumping Plant 676, Wilmington	City of Los Angeles	1	500	480	Outdoor	In Service
Wastewater Pumping Plant 666, Fries	City of Los Angeles	1	500	480	Outdoor	In Service
Wastewater Pumping Plant 677, Hawaiian	City of Los Angeles	1	500	480	Outdoor	In Service
Stormwater Pump Stations, San Francisco	Mission Bay Development Co.	3	500	480	Outdoor	In Service
Holtville Wastewater Treatment Plant, Holtville	City of Holtville	1	500	480	Outdoor	In Service
Lift Station 81-01, Indio	Coachella Valley Water District	1	400	480	Outdoor	In Construction
Hamilton Water Plant, Sunnyvale	City of Sunnyvale	1	350	480	Outdoor	In Service
Wastewater Pumping Plant 632, Sunset	City of Los Angeles	1	350	480	Outdoor	In Construction
Joint Wastewater Treatment Plant, Laguna Niguel	South Orange County WW Authority	1	250	480	Indoor	In Service
A Street Wastewater Pump Station, Newport Beach	Orange County Sanitation District	1	250	480	Indoor	In Service
Wastewater Pumping Plant, North yard	City of Los Angeles	2	250	240/480	Trailorable	In Construction
Wastewater Pumping Plant 648, Thompson	City of Los Angeles	1	250	480	Outdoor	In Construction
Del Avion Lift Station, Laguna Niguel	Moulton Niguel Water District	1	250	480	Indoor	In Construction
New York Creek Lift Station, El Dorado Hills	El Dorado Irrigation District	1	200	480	Indoor	In Service

D. Project Schedule

City of Calexico
Sewer Lift Station No. 9 and 11,
Sewer Collection and Water Distribution
System Improvement Project

ID	Task Name	Duration	Start
1	Notice to Proceed	0 days	10/17/2019
2	Kick Off Meeting	0 days	10/21/2019
3	Work Plan, Schedule and QA/QC Plan	5 days	10/17/2019
4	**Preliminary Design Phase**	**56 days**	**10/21/2019**
5	Utility Collection and Review of Existing Data	28 days	10/21/2019
6	Row Assessment	28 days	11/18/2019
7	Topographic Surveying	28 days	11/18/2019
8	Geotechnical Investigation	14 days	10/21/2019
9	Geotechnical Review and Recommendations	7 days	11/4/2019
10	Field Inspection of Manholes and Report Preparation	28 days	10/21/2019
11	Permitting and Coordination	42 days	10/21/2019
12	Review PDR and Submit Preliminary Design Deliverables	28 days	10/21/2019
13	City Review of Preliminary Design Submittals	14 days	11/18/2019
14	**Design Phase**	**210 days**	**12/2/2019**
15	Potholing (By the City)	28 days	12/2/2019
16	Traffic Control Plans	42 days	12/2/2019
17	75% Design Submittal	56 days	12/2/2019
18	QA/QC and Revisions to 75% Design Submittal	7 days	1/27/2020
19	City Review of 75% Design Submittal	14 days	2/3/2020
20	90% Design Submittal	35 days	2/17/2020
21	QA/QC and Revisions to 90% Submittal	7 days	3/23/2020
22	City Review of 90% Submittal ,	14 days	3/30/2020
23	100% Design Submittal	21 days	4/13/2020
24	QA/QC and Revisions to 100% Submittal	7 days	5/4/2020
25	City Review of 100% Submittal	14 days	5/11/2020
26	Final Contract Documents Submittal	14 days	5/25/2020
27	QA/QC and Revisions to Final Submittal	7 days	6/8/2020
28	City Approval of Final Contract Documents	14 days	6/15/2020
29	**Bidding and Construction Support**	**393 days**	**6/30/2020**
30	**Bid Phase Services**	**112 days**	**6/30/2020**
31	Advertise for Bid and Bid Support Activities	56 days	6/30/2020
32	Pre Bid Meeting	0 days	8/10/2020
33	Prepare Addendum	3 days	8/10/2020
34	Bid opening	0 days	8/25/2020
35	Selection of Contractor, Construction Contracts Preparation and Award	56 days	8/25/2020
36	**Construction Support**	**281 days**	**10/20/2020**
37	Pre-Con Meeting	0 days	10/20/2020
38	Mobilization, Submittals Review and Setup Work	14 days	10/21/2020
39	Construction	210 days	11/4/2020
40	Punchlist	28 days	6/2/2021
41	As Built Drawings and Project Closeout	28 days	6/30/2021



E. INSURANCE REQUIREMENTS

LEE & RO's insurance coverage is listed below. It meets or exceeds the insurance requirements identified in the RFQ.

TYP	CARRIER	EFF DATE	EXP DATE	PER OCCURRENCE	AGGREGATE	POLICY NO.
[illegible]	Sentinel Insurance Co.	11/01/2018	11/01/2019	$1,000,000	$2,000,000	20SBWEG2776
[illegible]	Hartford Insurance Co.	11/01/2018	11/01/2019	$1,000,000	$1,000,000	20UEGZH5830
[illegible]	Hartford Insurance Co.	11/01/2018	11/01/2019	$1,000,000	Each	20WEBAU8U8V
[illegible]	Sentinel Insurance Co.	11/01/2018	11/01/2019	$5,000,000	$5,000,000	20SBWEG2776
[illegible]	ACE American Insurance Co.	10/17/2018	10/17/2019	$1,000,000	$1,000,000	G25659831006

Appendix

Resumes

DHIRU PATEL, PE Principal-in-Charge

REGISTRATIONS

Professional Chemical Engineer, State of California #CH4264

EDUCATION

M.S. Chemical Engineering, University of Southern California, Los Angeles, CA
B.S. Chemical Engineering, Indian Institute of Technology, Bombay, India

Dhiru Patel has over 32 years of water and wastewater facilities engineering, project management and business management experience. He has managed and overseen projects involving study, PDR, final design and construction support phases for distribution, conveyance, treatment and supporting facilities for water/wastewater/water reclamation projects. He has considerable experience in managing Metropolitan projects, and is familiar with the Metropolitan facilities, design standards and project/design management practices. He has extensive experience with project management, plant and process engineering studies, preliminary engineering, final design, construction engineering support, troubleshooting, and operations and maintenance (O&M) support for water and wastewater treatment facilities. He has extensive knowledge of current environmental and safety regulations pertaining to water treatment facilities.

REPRESENTATIVE PROJECT EXPERIENCE

Hyperion Secondary Effluent Pumping Station (HSEPS) Expansion Project, Hyperion Treatment Plant (HTP), West Basin Municipal Water District (WBMWD), Carson. Project Director for $11 million pumping capacity expansion project (from 70 to 90 mgd) including a connection of 60-inch secondary effluent supply pipe to the pressurized HTP's secondary effluent channel (wet tapping) and addition of two new 20 MGD pumps (190 feet of TDH), each driven by 800 HP, 4,160V motor and VFD. Work includes CFD modeling of pump intake system to satisfy the Hydraulic Institute's requirements; construction of a 40 feet deep vertical structure in a tight site for installation of the additional vertical turbine pumps; mitigation of construction impact at the El Segundo Water Recycling Plant and HTP (minimum shutdown period); connection of 48" pump effluent header to the Existing 60-inch Pressure Main in Vista Del Mar, a busy highway; and addition of a 3,000-kW emergency generator.

Yorba Linda Blvd. Booster Station and Pipeline Project, Yorba Linda Water District, Yorba Linda. Principal-In-Charge responsible for planning and design of a $5 million project consisting of a new 5,000 gpm booster pump station and 4,700 LF of 24-inch transmission pipeline. The design included a siting analysis for the new pump station and a surge analysis and hydraulic modeling of the new pipeline. The project also included civil design, including grading and drainage, retaining walls, security fencing, landscaping and irrigation, and demolition of an existing pump station; structural and architectural features including foundations, masonry walls, and roof; mechanical including suction and discharge headers, a pressure reducing station, valves, and building ventilation system; and electrical including a new SCE power service, MCCs, PLC control and SCADA, a telemetry system compatible with the District's existing radio, and intrusion alarms and other security measures.

Beachwood Wastewater Pump Station Upgrades and Force Main Replacement, City of Burbank. Project Director for a $9.5 million force main and pump station project. The existing pump station had a capacity of 5.9 mgd. The 12,000 feet long existing force main was 18-inch dia. cement mortar-lined-and-coated steel pipeline constructed in 1972. This project upsized the existing force main to a new 24-inch dia. HDPE pipe. The preject included four trenchless crossings. Extensive public outreach, including a series of community meetings, was conducted because there was major community opposition to the existing alignment. The final alignment was through busy streets and is heavily congested with utilities (to avoid residential neighborhood). There were numerous stakeholders involved, such as MTA, Metrolink, MWD, and private property owners. The upgraded pump station, equipped with 3-150hp closed impeller pumps, has a capacity of 7.2 mgd.

Various Water Resources and Treatment Plant Engineering Services, Santa Clarita Valley Water Agency, Santa Clarita. Principal-In-Charge and Project Director responsible for overseeing various engineering and design services for a variety of engineering projects at the SCVWA water distribution, conveyance, treatment, and support facilities including the Earl Schmidt Filtration Plant, Rio Vista Water Treatment Plant, Earl Schmidt Intake Pump Station, and transmission mains such as 54-inch Castaic Lake Conduit bypass and 24-inch Magic Mountain Pipeline. The general scope of services required includes performing condition assessment, conducting evaluations and studies, preliminary designs, final designs, preparation of specifications, and engineering services during construction.

Water Recycling Plant and Recycled Water Distribution Projects, West Basin Municipal Water District, Carson. Principal-In-Charge and Project Director responsible for overseeing various engineering services and construction management services projects for West Basin. The engineering services projects include the Verification of Electrical System Documentation Project at the Edward C. Little Water Reclamation Facility and satellite facilities, the Ferric Chleride Full Scale Demonstration Test Project at Hyperion Wastewater Treatment Plant, and the Variable Frequency Drives Design Project for the barrier pumps at the Edward C. Little Water Reclamation Facility. The construction management services project includes the Construction Management, Inspection and Testing Services for Anza Ave. Lateral and Imperial Ave. Lateral Project in El Segundo and Torrance.

Pederson Reservoir Seismic Upgrade and Rehabilitation, City of Thousand Oaks. Principal-In-Charge for the conditien assessment, seismic evaluation and structural retrofit of the 3 MG capacity partially buried concrete reservoir. The seismic evaluation identified structural deficiencies that had to be addressed to meet the current seismic loads requirements under the 2010 California Building Code. The condition assessment concluded that the existing structure, with strategic modifications and retrofits, is still capable of previding service for another 25 years with proper maintenance and periodic inspections. The project designed included seismic reinforcing of the columns and jeints.

Water Treatment Plant Improvements and Rehabilitation Projects. Metropolitan Water District of Southern California, Los Angeles. Principal in Charge and QA/QC officer (since 2002) fer numerous plant improvements and rehabilitation projects at the five water treatment plants (aggregate construction cost over $175 million at 600 mgd Weymeuth, 700 mgd Skinner, 600 mgd Jensen, 300 mgd Mills, and 500 mgd Diemer Plants); $50 million new chlorine storage/containment and chlorination systems at Skinner, Jensen and Mills; $20 million electrical system improvements at Weymouth; $15 million electrical system fer Weymouth Oxidation Retrofit Program (ORP) preject; $5 million chemical tank farms at Diemer; $24 million Module 1 and 2 rehabilitation and chemical system improvement at Mills; $7 million Washwater Reclamation Plant No. 2 improvements at Skinner; and $15 million site electrical system improvements supporting the ORP and Module 7 projects.

Chlorine Containment and Handling Facilities (CCHFs) for Skinner, Jensen, and Mills Filtration Plants, Metropolitan Water District of Southern California. As Project Manager prepared preliminary design reports and final design documents and provided construction support services for CCHFs at three MWD water treatment plants. Each CCHF has an estimated construction cost of approximately $17 million and contains either 90-ton chlorine rail cars er 19-ton trailers and includes chlorinators, evaporators, chlorine gas and solution piping, ventilation, and a chlorine scrubbing system.

Collection System Pumping Plants Rehabilitation and Generator Replacement Project (TOS 21 CIP 7181, 7182, 7183, 7186), Bureau of Engineering, City of Los Angeles. Principal-In-Charge responsible for the rehabilitation of four City of Los Angeles pumping plants located in Terminal Island. This $6.9 million includes the removal and replacement of the existing pumps, suction and discharge piping and valves, VFDs, emergency standby generators, and ATS. All existing generators are being replaced with Tier 4 Compliant generators. During the pre-design phase of this project, performed an extensive condition assessment which also identified several other areas within each pumping plant in need of modifications, such as ventilation systems, wet well corrosion, structural defects, and NFPA electrical code violations.

AMRITENDU MAJI, PE Project Manager

REGISTRATIONS

Civil Engineer, California #87036

EDUCATION

University of Arizona, MS Engineering Mechanics
University of Southern Illinois, MS Civil Engineering
Jadavpur University, BS Civil Engineering

Amritendu Maji is a Civil Engineer and Project Manager with over 23years of progressive experience in the planning, design, construction, and administration of public works projects. He has been responsible for preparing plans and specifications, construction cost estimates, bid documents, and permit applications for pump stations and reservoirs, site development, roadways, water & wastewater conveyance and distribution facilities including pipelines and stormwater and flood control facilities. He has designed pump stations with capacities ranging from 100 gpm to 1,000,000 gpm and larger. He has considerable experience in hydraulics and hydraulic modeling, as well as preparation of feasibility studies and technical reports. He has provided constructability review and QA/QC of technical reports, plans & specifications, construction cost estimates, and other bid documents. He has provided construction administration and support services including construction site visits, conducting progress meetings, review of shop drawings, responding to RFIs, analysis & preparation of change orders, start-up & commissioning and review & approval of contractors' pay requests and project closeout. He also has considerable experience in the preparation of permits including the Federal Section 404 (Clean Water Act) for work in wetlands, Section 408 (Rivers and Harbors Act) for federally constructed structures like levees and floodwalls, and permits from the State Transportation and Development offices for work in and around State and Federal Highways etc.

REPRESENTATIVE PROJECT EXPERIENCE

Pump Station 2 (PS2) Power Reliability Upgrade and Power Generation Project, City of San Diego. Civil Engineer for design and construction of a $56 million power systems upgrading project. PS2 has a pumping capacity of 432 MGD and houses six 2,250 HP electric motor driven pumps and two 2,400 HP engine driven pumps. This project is to replace two engine driven pumps with 2,250 HP motor driven pumps, install two 3,000 kW natural gas engine driven generators (prime power), and two 4,000 kW diesel engine driven emergency generators in an 8,000-sq. ft. and 40 ft. high building (providing a total of 14 megawatt of power). The new generation system will power 2,500 HP sewage pumps and mitigates damaging hydraulic surge on the force mains. Project challenge`s included permitting with the San Diego County Air Pollution Control District, power feed arrangement with SDG&E, meeting EPA Class I Reliability requirements, and development a tall large tall building on a very tight and constrained site adjacent to Mission Bay right next to the San Diego Airport.

Pump Station 65 Upgrade, City of San Diego. Provided engineering and construction support services for this $5 million pump station upgrading project. In this project, the Soft starters were replaced with variable frequency drives, existing 400-hp motors were replaced with new 500-hp motors, and a new 500-hp motor driven pump was installed to increase capacity of the station to 25 MGD. The PLC and the SCADA system were upgraded. This project won an APWA award in 2019.

Miramar Pump Station Rehabilitation and Upgrading Project, San Diego County Water Authority, San Diego. Projcct Engineer for upgrading of an 80 cfs (51.7 MGD) capacity potable water pump station delivering water from the Miramar Water Treatment Plant to member agencies. The scope of work includes comprehensive condition assessment and hydraulic & surge analysis. This $5 million upgrade project includes replacement of pumps, seismic reinforcement, forced air ventilation, replacement of all existing 2.3 kV electrical equipment with 4.16 kV system, addition of automatic pump controls, SCADA integration, noise control, and site improvements.

Sludge Pump Station Upgrading, South Bay Water Reclamation Plant (SBWRP), City of San Diego. Project Civil Engineer for engineering, design and construction support services for installation of sludge pumps and grinders at SBWRP, located at 2411 Dairy Mart Road. Operations Staff has pre-purchased two sludge pumps and two grinder pumps to replace five air-driven sludge pumps. In addition, two existing water-cooled air compressors need to be replaced with two air-cooled air compressors. Developed civil & mechanical design and assisted with pump and grinder control strategies, and designed piping and valves.

Hauck Mesa Storage Reservoir and Pipeline Surge Protection Project, San Diego County Water Authority (SDCWA). SDCWA operates two aqueduct systems to transport water from the north to the south of the county. To allow for surge protection to the 66-inch line, emergency storage and balance system flows this project will install a storage reservoir with flow control facilities at the Hauck Mesa site. The existing tank and appurtenant piping will be demolished and will be replaced by the new 80-foot diameter, 1.1 MG capacity concrete reservoir with a 42-inch gravity drain system. The existing unpaved access road will be paved with pervious pavement and the site will be enclosed by a new perimeter fence. A new underground flow control facility (FCF) will include electronically actuated and controlled isolation valve and a cone valve for flow control valve. Based on the site conditions, available budget and the SDCWA's needs, an AWWA D110 Type I Pre-stressed Concrete tank was selected as it best met all the conditions. As the project engineer, Mr. Maji was responsible for the design of the tank, tank foundations, tank access, flow control facility vaults, and site improvements. Mr. Maji was also responsible for permitting and regulatory compliance and correspondence with various stakeholder agencies including DWR and local governments.

Buena Outfall Force Main, Phase III, City of Vista. Project Engineer for an $8 million, 4.5-mile-long, 24-inch HDPE gravity sewer and force main which will interconnect to the existing Buena Outfall force main east of El Camino Real. The existing City of Vista sewer pump stations serves the Buena Outfall force main, which conveys wastewater to the Encina Water Pollution Control Facility in the City of Carlsbad. The project is unique due to the alignment topography along Palomar Airport Read, which is the primary corridor of the region. The project also includes two vortex drop manholes and active and passive odor control scrubbers (bioreactors). The Project includes one jack and bore trenchless segment under El Camino Real. The Outfall hydraulically transition from a pressure force main to a gravity sewer two times within the 4.5-mile alignment. This work also includes obtaining Caltrans permits for work in their rights of way.

Water Supply Facility Upgrading Projects. States of Louisiana and Mississippi. Served as Project Manager for: New Chlorination Facility & Building at the East Bank Water Treatment Plant, Jefferson Parish (pre-engineered metal building and associated piping and site work); Security Improvements at Mississippi River Intake Structures for Jefferson Parish Water Treatment Plant (installation of dolphins and buoys); Replacement of Hurricane Katrina Related Waterline Replacement Program in the French Quarters, New Orleans (line sizes varied from 8- to 30-inch in diameter); 24-inch dia., 5,300 feet long water main along the East Judge Perez Drive for St. Bernard Parish; New 500,000 gallon capacity elevated water storage tank in Reggio for St. Bernard Parish; and three (3) new 1 million gallon elevated water storage tanks in Biloxi. As many of these projects were in wetland areas, Federal 404 permits were prepared and obtained to allow work in these areas.

Cunningham Way Tank No.1 Seismic Retrofit, City of San Bruno. Project Engineer for replacement an aging 2.5 MG steel tank located within 1 mile of the San Andreas Fault. Preliminary design weighed three different alternatives for the City which included analysis of seismic retrofit of the existing steel tank, or the construction of Type I and Type III prestressed concrete tanks. The project includes new piping and appurtenances such as a new seismic valve, flexible expansion joints (EBAA Flextend), new reservoir mixing system, new tank access stairway & man-ways, and interior access ladders. Site security features included as anti-climb fencing, CCTV monitoring, and intrusion alarms.

Water and Wastewater System Modeling and CIP Development, US Navy Base San Diego (NBSD). Project Engineer for preparation of a Baseline Assessment Report including development & analysis of hydraulic models using WaterGEMS and SewerGEMS. The water pipe sizes ranged from 6-inch to 16-inch dia. and 160,000 LF. The sewer sizes ranged from 4-inch to 24-inch dia. and 70,000 LF. Hydraulic analysis was performed on the base sewer model which is topologically checked and loaded based on demands. The water model was checked and loaded with demand data from 700 meters and calibrated using the Darwin Calibrator tool. For sewers the computed depth to diameter ratios were used to identify the hydraulically deficient reaches. Structurally deficient reaches were identified based on CCTV review.

LEE BADERTSCHER, PE TECHNICAL ADVISOR & QA/QC

REGISTRATIONS

Electrical Engineer, California #E19641
Control Systems Engineer, California, #CS7297
Civil Engineer, California #C43789

EDUCATION

BS, Civil Engineering, Utah State University

Lee Badertscher has over 30 years of planning, design, and construction experience with water/wastewater treatment and water reclamation plants, pipelines and pumping stations. He has serviced Metropolitan projects continuously for the last 12 years. Mr. Badertscher is a professional "Civil," "Electrical," and "Control Systems" Engineer registered in the State of California. He has successfully completed multiple roles such as project manager, civil engineer, process engineer, I&C systems engineer, and construction manager. Mr. Badertscher has hands-on experience with a wide variety of process and mechanical equipment, piping, and electrical and instrumentation systems. Mr. Badertscher also has extensive construction management, plant start-up and commissioning, and O&M experience.

REPRESENTATIVE PROJECT EXPERIENCE

Yorba Linda Blvd. Booster Station and Pipeline Project, Yorba Linda Water District, Yorba Linda. Project Manager responsible for planning and design of a $5 million project consisting of a new 5,000 gpm booster pump station and 4,700 LF of 24-inch transmission pipeline. The design included a siting analysis for the new pump station and a surge analysis and hydraulic modeling of the new pipeline. The project also included civil design, including grading and drainage, retaining walls, security fencing, landscaping and irrigation, and demolition of an existing pump station; structural and architectural features including foundations, masonry walls, and roof; mechanical including suction and discharge headers, a pressure reducing station, valves, and building ventilation system; and electrical including a new SCE power service, MCCs, PLC control and SCADA, a telemetry system compatible with the District's existing radio, and intrusion alarms and other security measures.

Hyperion Secondary Effluent Pumping Station (HSEPS) Expansion Project, Hyperion Treatment Plant (HTP), West Basin Municipal Water District (WBMWD), Carson. Lead Design Engineer for $11 million pumping capacity expansion project (from 70 to 90 mgd) including a connection of 60-inch secondary effluent supply pipe to the pressurized HTP's secondary effluent channel (wet tapping) and addition of two new 20 MGD pumps (190 feet of TDH), each driven by 800 HP, 4,160V motor and VFD. Work includes CFD modeling of pump intake system to satisfy the Hydraulic Institute's requirements; construction of a 40 feet deep vertical structure in a tight site for installation of the additional vertical turbine pumps; mitigation of construction impact at the El Segundo Water Recycling Plant and HTP (minimum shutdown period); connection of 48" pump effluent header to the Existing 60-inch Pressure Main in Vista Del Mar, a busy highway; and addition of a 3,000 kW emergency generator with a fuel storage system.

On-Call Professional Engineering Services for Capital Improvement Program Implementation, Moulton Niguel Water District. Lee has served as lead engineer and design manager on several task orders issued by MNWD under this three year $950,000 on-call contract. Some of these projects that Lee has worked on include:

- Del Avion Lift Station Auxiliary Generator Replacement Project – Replacement of a 250 kW emergency generator at the Del Avion wastewater lift station.
- Aliso Creek Lift Station Rehabilitation – Replacement of discharge valves and re-orientation of discharge piping for lift station pumps.
- Lower Boundary Oak Lift Station Upgrade – Complete rehabilitation and upgrade of lift station including replacement of packaged lift station with new submersible pumps, new electrical and instrumentation, new discharge piping & valves and recoating of the existing wet well steel lines.
- Saddleback Pump Station Auxiliary Pump & Engine Replacement – Prepare a preliminary design technical memorandum and evaluating different alternatives for replacing the existing propane engine driven vertical turbine pump. Alternative analysis includes hydraulic modeling to assess the ability of the design to meet normal daily demands and fire flows.

- Upper Salada Electrical Switchgear Replacement – Replacement of main switchboard, MCC with VFDs, and ATS. Includes design for temporary power during construction and coordination with SDG&E for the temporary power design and installation.
- Service Entrance Replacements at 3 Stations – Replacement of existing main switchboard, MCCs and ATS at three District pumping stations, Regional Lift Station, Crown Point Recycled Water Pump Station and La Paz Underground Pump Station.

Steven Anderson (Ellis Avenue) Pump Station, Orange County Sanitation District. Fountain Valley. Lead Electrical and I&C Engineer for a new $30 million, 60 mgd pump station design and construction project. Responsible for design and construction phase services for power distribution, lighting, pump controls, automation, SCADA, and fire and intrusion alarm systems. The station was to balance the flow between Wastewater Treatment Plant 1 and Plant 2 and to provide adequate influent flow to $400 million Groundwater Replenishment System (GWRS) project located next door, Orange County Water District. The pump station is equipped with six 10 mgd capacity pumps. Each pump is equipped with a screw centrifugal impeller and driven by a 200 hp motor through a variable frequency drive. The 12-kV power for the station is fed from the Plant's Central Generation System. Also, responsible for the construction support including start-up, commissioning and training services.

Southside Facility Improvements (Construction Package C) at J. B. Latham Treatment Plant. Project Manager for construction phase and currently providing construction support services for a major electrical system upgrades and rehabilitation of 13 secondary clarifiers. The project includes a new electrical building to house new switchgear and MCCs which supplies power to three existing MCCs and four new MCCs. Project also includes new duct banks, conduits, and electrical feeders throughout the plant. The secondary clarifier rehabilitation includes new mixed liquor isolation gates, chain & flight sludge collectors, launders/weirs, skimmers and telescoping valves. Structural rehabilitation includes restoration of failing and spalled concrete to the original lines and grades with casted new imbeds and coated.

Collection System Pumping Plants Rehabilitation and Generator Replacement Project (TOS 21 CIP 7181, 7182, 7183, 7186), Bureau of Engineering, City of Los Angeles. Project Manager responsible for the rehabilitation of four City of Los Angeles pumping plants located in Terminal Island. This $6.9 million includes the removal and replacement of the existing pumps, suction and discharge piping and valves, VFDs, emergency standby generators, and ATS. All existing generators are being replaced with Tier 4 Compliant generators. During the pre-design phase of this project, performed an extensive condition assessment which also identified several other areas within each pumping plant in need of modifications, such as ventilation systems, wet well corrosion, structural defects, and NFPA electrical code violations.

Potable Water Booster Pump Stations (BPS), Fountain Valley & Huntington Beach, Orange County Sanitation District. Project Manager for preliminary design report, preparation of plans and specifications, and construction phase engineering services for two water booster pump stations and air-gap facilities. The existing 750 gpm FV BPS was expanded to a capacity of 3,400 gpm @ 80 psig. Three existing 25 hp pumps were replaced with two 2,200 gpm 125 hp pumps. The existing HB BPS was demolished and a new BPS was added in a new larger building. The new HB BPS consisted of three 30 hp pumps (each 350 gpm @ 80 psig); two 150 hp pumps (2,250 gpm @ 80 psig); and two 13,000-gallon capacity air break tanks. The MCCs were modified to accommodate the new pump VFDs and PLC based controls.

Odor Control Scrubber Modification, Wastewater Treatment Plants 1 & 2, Orange County Sanitation District, Fountain Valley. Project Manager for $4 million design modifications (for controls, electrical, and chemical feeds) for twenty-one (21) chemical odor control scrubbers at two wastewater plants. Project also included installation of state-of-the-art ATI chlorine and Vapex hydrogen sulfide detectors for accurate chemical dosage control and scrubber efficiency monitoring

JAMES GINGRICH, PE Structural Engineer

REGISTRATION
Civil Engineer, CA #C34701
Structural Engineer, CA #S3023

EDUCATION
BS Civil Engineering, California State Polytechnic University, Pomona
Graduate courses in Structural Dynamics & Advanced Structural Analysis, Cal State Los Angeles

James Gingrich is a California registered structural engineer with more than 30 years of structural analysis, engineering, design, constructability analysis, value engineering, project coordination, and construction management experience. He has been the structural project manager, QA/QC reviewer, and lead structural engineer for planning, investigation and condition assessment, preparation of preliminary & final design, seismic analysis and upgrading, and construction phase engineering services for a wide variety of concrete and steel structures for water conveyance and pumping facilities, water storage, treatment end distribution facility projects for Metropolitan Water District (MWD) of Southern California. His experience and expertise include rehabilitation & retrofit engineering & designs for existing facilities. His representative experience includes lead designer for the Lake Matthew Outlet Facilities, Colorado River Aqueduct Pumping Plant Seismic Upgrades, and Oxidation Retrofit (Ozone Disinfection) Projects for MWD's Mills, Jensen, Weymouth, Skinner, and Diemer Water Treatment Plants.

REPRESENTATIVE PROJECT EXPERIENCE

Hyperion Secondary Effluent Pumping Station (HSEPS) Expansion Project, Hyperion Treatment Plant (HTP), West Basin Municipal Water District (WBMWD), Carson. Lead Structural Engineer for $11 million pumping capacity expansion project (from 70 to 90 mgd) including a connection of 60-inch secondary effluent supply pipe to the pressurized HTP's secondary effluent channel (wet tapping) and addition of two new 20 MGD pumps (190 feet of TDH), each driven by 800 HP, 4,160V motor and VFD. Work includes CFD modeling of pump intake system to satisfy the Hydraulic Institute's requirements; construction of a 40 feet deep vertical structure in a tight site for installation of the additional vertical turbine pumps; mitigation of construction impact at the El Segundo Water Recycling Plant and HTP (minimum shutdown period); connection of 48" pump effluent header to the Existing 60-inch Pressure Main in Vista Del Mar, a busy highway; and addition of a 3,000-kW emergency generator.

Radial Gate Refurbishment Project, CRA Replacement Project, Metropolitan. Structural Engineer for the preliminary engineering and final design services for refurbishment and replacement of eight large hydraulic radial gates along CRA - Iron Mountain Wasteway, Eagle Wasteway to Reservoir, Eagle Reservoir Spillway, Eagle Sandtrap, Hinds Sandtrap, Coxcomb Wasteway, Rice Wasteway, and Vidal Wasteway. This project is to enhance water supply reliability of the CRA. These gates were installed during the original CRA construction in the late 1930s and have been in operation since the CRA was commissioned into service in 1941. The gate inspection performed in 2003 and 2011 revealed various stages of deterioration. LEE & RO performed field investigation and assessment of the gates and developed a specific refurbishment and rehabilitation of each gate and supporting structures and appurtenances. Total estimated project construction cost is $7 million.

2016-17 and 2017-18 Reservoir Management Systems Replacement Projects, Moulton Niguel Water District. Lead Structural Engineer for the design, and construction support services for the conversion of on-site hypochlorite generation systems to bulk liquid sodium hypochlorite for ammonia chloramine disinfection at five (5) different water reservoir sites in the MNWD service area. Each site contains one or two potable water storage reservoirs that supply domestic water to the local communities. The water is disinfected utilizing chloramines in the reservoirs to maintain the desired residual chlorine concentration prior to delivery. Each disinfection facility contains sodium hypochlorite and ammonia storage and feeding systems and included a CMU block chemical storage building, storage tanks, chemical piping, analyzers, and dosage control, chemical leak detection systems, sample and drain piping, electrical, process monitoring SCADA, HVAC, safety devices, and site utilities.

Oxidation Retrofit Projects (ORPs) at Five Water Treatment Plants, Metropolitan Water District of Southern California (MWD). Lead Structural Engineer responsible for structural analysis and preparation of structural drawings & specifications and construction phase engineering for the $850 million ORP projects at 520 mgd Weymouth, 750 mgd Jensen, 220 mgd Mills, 630 mgd Skinner, and 300 mgd capacity Diemer Water Treatment Plant. Also, served as lead QA/QC structural engineer for structural designs produced by outside consultants. during preliminary design and provided Structural QA/AC reviews for the final design.

Hauck Mesa Reservoir, Pipeline and Surge Protection Project, San Diego County Water Authority. Lead Structural Engineer for final design of a $13 million water storage and surge protection project consisting of 2.1 MG capacity prestressed concrete reservoir, large diameter piping, and valve vaults, surge control systems, retaining walls and various site improvements.

Filter Building and Filter Complex Seismic Upgrades, Weymouth Water Treatment Plant, MWD. Lead Structural Engineer for preliminary and final design of a large seismic upgrade project for the filter buildings and filter complex at the 520 mgd capacity Weymouth Water Treatment Plant in the City of La Verne. In 2016 received the American Concrete Institute Excellence in Concrete Construction Awards (First Place Award in Repair and Restoration Category at Southern California Chapter and Second Place at the National Convention)

Seismic Retrofit of Colorado River Aqueduct (CRA) Pumping Plant Buildings, MWD. Project Manager and Lead Structural Engineer for the seismic retrofit of the pump house buildings at the Hinds, Eagle Mt, Iron Mt, Gene and Intake pumping plants. Developed seismic retrofit concepts, and prepared construction drawings including calculations and specifications for construction and Metropolitan forces work.

Phase 4 Plant Expansion, Skinner Water Treatment Plant, MWD. Lead Structural Engineer responsible for the preparation of Module 7 structural construction drawings, calculations, and specifications. The phase 4 plant expansion project included the addition of 110 mgd Module No. 7 (clarifiers and filters), a 34 mgd capacity Washwater Reclamation Plant No. 3, new and consolidated chemical tank farms and feed systems, sludge handling facilities expansion, new water pumping stations; and related work.

Seismic Retrofit of Colorado River Aqueduct (CRA) Discharge Pipelines, MWD. Project Manager and Lead Structural Engineer for the seismic retrofit of the delivery pipelines (penstocks) at the Hinds, Eagle Mt, Iron Mt, Gene and Intake pumping plants. Developed retrofit concepts and prepared construction drawings, calculations, and specifications for construction and Metropolitan forces work. Performed the finite element dynamic structural analysis of the pipelines.

Seismic Retrofit of Electrical Buildings Nos. 1 and 2, Mills Water Treatment Plant, MWD. Design Manager and Lead Structural Engineer for the preliminary and final design for the seismic retrofit of two existing buildings, including mentoring & training the design and structural calculations of junior structural engineers.

Burr St. Lift Station (LS 81-03), Coachella Valley Water District, Indio. Lead Structural Engineer for preliminary and final design of the new LS 81-03 wastewater pump station having a construction value of $5.9 million. The submersible pumps are located in 12-foot diameter x 50 ft deep wet well. The project included large diameter pump suction and discharge manifolds which require extensive structural anchors and supports.

Lake Mathews Outlet Facilities, MWD. Lead Structural Engineer responsible for the preparation of structural construction drawings, calculations, and specifications. Performed the finite element dynamic structural analysis of the new outlet tower structure.

MURTHY KADIYALA, PE, PLS Civil/Pipelines

REGISTRATIONS

Civil Engineer, California #C73472
Professional Land Surveyor, L9180

EDUCATION

BE Civil Engineering, Osmania University, Hyderabad, India
MS Civil Engineering, Michigan State University, East Lansing, Michigan

As a licensed professional engineer and professional land surveyor, Murthy Kadiyala has over 15 years of municipal civil and infrastructure engineering, design, and construction experience in water and wastewater conveyance systems including water transmission mains, trunk sewers, and force mains, storage tanks, and pump stations. Murthy has extensive experience with hydraulics and hydrology and modeling expertise with H2ONet, InfoWater, WaterCAD, SewerCAD, and ArcGIS. He also has high-level skills in AutoCAD Civil 3D, TerraModel and MicroStation applications. Murthy is a licensed surveyor with experience in property boundary legal analysis and land surveying both field and office. He has also served in the responsible role of a water and wastewater plan checker for many years. His knowledge of the service connections to private developments including land title and encumbrances has enabled him to resolve potential issues early in the design process. Murthy has engineered water and wastewater conveyance projects which require extensive permitting, right-of-way acquisition and analysis, traffic & noise mitigation, and public relations. Murthy has engineering experience with trenchless construction including micro-tunneling and jack and bore.

REPRESENTATIVE PROJECT EXPERIENCE

Newhope Trunk Sewer, Orange County Sanitation District (OCSD), Fountain Valley. Staff Engineer and QA/QC team member for the $100 million, 54-inch dia, 38,000 LF trunk sewer replacement project in the State College Blvd. in the Cities of Fullerton and Anaheim. Engineering services include investigating utilities, preparing construction documents suitable for bidding, assisting OCSD with the acquisition of easements and right of way, obtaining permits, and conducting a public outreach programs. Murthy is coordinating the efforts of the utility investigation by overseeing an ASCE SUE Level A Utility Investigation through the Cities of Fullerton, Anaheim, and Orange.

Regional Force Main and Recycled Water Construction, Jurupa Community Services District (JCSD), Jurupa Valley. Project Engineer a project aimed to utilize available utility corridor within the new Van Buren bridge crossing Santa Ana River along Van Buren Blvd. to replace the existing siphons underneath the river bed. Murthy's responsibility included as the plan check engineer for JCSD for review and conformance with the District's Standards. Murthy's responsibility expanded and selected the pipe material, appurtenances, tie-in connections, transitions including the double-ball joints to protect against an earthquake. For the regional force main, the design was approved with a 24-inch dia. fusion bonded HDPE through the bridge deck which transitioned to ductile iron pipe in the ground behind the bridge approach slabs. Project also included a recycled water pipeline, an 18-inch dia. welded steel pipe, cement mortar lined, and tape wrapped within the bridge deck followed by cement mortar lined and coated pipe in the ground behind the bridge approach slabs.

Well No. 125 Replacement - Equipping Well No. 177, Rancho California Water District. As the Project Manager Murthy is providing design and bid phase services for the existing District Well 125 facility which is being replaced with a new well (Well 177) facility at a different site. This project includes equipping the new well (Well 177) with discharge, pump-to-waste, and pressure relief piping; new deep well vertical turbine pump and motor; new electrical service; installation of District furnished electrical panels and chlorine generation equipment; concrete pads for the District furnished equipment; site grading; and site/security fencing.

Irrigation Main Replacement Project, Coachella Valley Water District, Palm Desert. Project Engineer for engineering and design of replacement of 18,500 LF of irrigation piping of various sizes (ranging from 18 to 30 in. dia.). The existing pipeline has experienced hydraulic surging and numerous leaks that adversely impact the delivery of canal water to the District's customers. Replacing the concrete pipe with new C905 PVC pipe and the removal of baffle stands will convert the canal water distribution system from gravity flow to a pressurized system, effectively eliminating the surging and water losses. This $7 million project also installs new in-line meters at the delivery points to reduce energy consumption. Existing irrigation services must be maintained during construction, and a temporary highline for bypassing will be required to maintain service. The existing pipeline alignment lies in a 10-foot wide USBR easement. Evaluated alternative alignments and slip lining or CIPP lining. Project requires permits from the Riverside County Transportation Dept., California Regional Water Quality Control Board, and the State Water Resources Control Board's Division of Drinking Water.

State College Boulevard Water Main Realignment Project, City of Anaheim. Project Engineer for the design of the $2.5 million water main project along the State College Boulevard in the City of Anaheim. This project relocates water mains that were interfering with a new 54-inch trunk sewer to be constructed between the 91 Freeway and Howell Avenue. The project included replacement of 400 LF of 6-in and 10-in CIP to 12-in DI pipe; 2,700 LF of 6-in CIP to 12-in DI pipe; and 400 LF of 18-in concrete cylinder pipe to 18-in DI pipe. State College Boulevard is a busy arterial with numerous underground utilities. The City of Anaheim electrical facilities are underground, and waterlines must avoid buried duct banks. Waterlines were designed to provide an adequate vertical clearance around 8 ft x 8 ft RCB storm drain culverts and 45-in and 81-in dia. storm drains.

Chino I and II Intertie Water Transmission Main, Chino Basin Desalter Authority (CDA), Ontario. Project Engineer/Lead Design Engineer responsible for hydraulic analysis and assisted in the design of a water transmission main for collecting water from Desalter I Well Site No. 13 and Desalter II Well Sites 12, 13, and 14, to CDA's existing 30-inch CML/CMC at the Hamner Avenue and Bellegrave Avenue intersection. The pipelines consist of 5,000 LF of 30-inch dia. CML/CMC steel pipe from Harrison Avenue at 56th Street and 9,000 LF of 24-inch dia. steel pipe along Bellegrave Avenue from Harrison Avenue to Hamner Avenue.

South Milliken Water Transmission Main Project, City of Ontario. Project Manager and Lead Designer for a project that was complex in terms of large size water pipelines that needed to be relocated outside of the proposed overpass along Milliken Avenue crossing Union Pacific Railroad (UPRR) and Mission Boulevard bordering the Cities of Ontario and Eastvale. Responsible for relocation and realignment of 2,000 LF each of existing 16-, 18-, 20-, 30- and 42-inch dia. welded steel cement mortar lined and coated pipes. The challenge was to stay clear of the overpass footprint including retaining walls, bridge columns, etc. to make sure the pipelines are accessible for maintenance in the future. Murthy also coordinated and obtained easements. Cathodic protection of the relocated pipelines was also designed to quell the corrosion effects of active currents protecting nearby gas transmission mains.

Edwards Varsity Water Main Replacement Project, City of Huntington Beach. Project Manager for engineering, design and construction support services for replacement of approximately 3,150 LF of potable water pipelines, service laterals, and appurtenances. The project is in the residential community immediately northwest of the intersection of Edwards and Varsity Streets. The project is to replace 8-in. and 6-in. asbestos cement pipe (ACP) with AWWA C900 PVC pipe. Construction documents prepared fully described the best management practices (BMPs). Project issues included removal and disposal to AC pipe, community outreach and public relations, traffic control during construction and minimizing water service disruption.

Van Buren Regional Force Main and Recycled Water Main, Jurupa Community Services District (JCSD), Mira Loma. Project Manager for a water transmission project to utilize available utility corridor within the new Santa Ana River bridge crossing along Van Buren Blvd. and to replace the existing siphons underneath the riverbed. Selected the pipe material, appurtenances, tie-in connections, transitions including the double-ball joints to protect against ground shaking due to an earthquake. For the bridge crossing the design was approved with a 24-inch dia. fusion bonded HDPE through the bridge deck which transitioned to a ductile iron pipe in the ground behind the bridge approach slabs. The project also included an 18-inch dia. welded steel recycled water pipeline pipe, cement mortar lined (CML) and tape wrapped within the bridge deck followed by CML and coated pipe behind the bridge approach slabs. Responsible for reviewing and responding to the contractor's submittals and RFIs during construction.

MARIO MANANSALA PE Electrical Engineer/I&C

REGISTRATIONS

Professional Electrical Engineer: California (1991), #C13693
Arizona (1995), and Philippines (1975

EDUCATION

BSEE, Electrical Engineering, University of the Philippines

Mario Manansala is an electrical engineer with over 40 years' experience in designing electrical power distribution systems; preparing construction bid documents, including plans and specifications; performing electrical calculations in support of the electrical plans; coordinating construction activities to ensure projects are fully completed in an efficient manner; performing field inspections to ensure work is performed in accordance with the design intent; and developing and implementing test procedures so that the design requirements of the installation are met. He has broad knowledge of NEC, IEEE, UL, and NFPA codes and standards applicable to electrical system design and operation. Having worked with several electrical manufacturers such as Westinghouse, ABB and Klockner Moeller, he has a long practical experience with the industrial application of electrical equipment.

REPRESENTATIVE PROJECT EXPERIENCE

Mills Water Treatment Plant Electrical System Improvement Project, Metropolitan. Lead Electrical Engineer for the Mills plant electrical system reliability. This project is to increase the reliabilities of the Mills plant electrical system. The plant has now single radial system with only one source of power system from the RPU (Riverside Public Utility). This system offers no redundancy, therefore, if the plant loses the utility source, either they have to bring generator(s) on the line, or the plant will have total black out. So, the plant is very vulnerable to a total plant shut down caused by single point of failure. The goal of this project is to bring the second source of utility power and upgrade the whole plant power system to the dual seurce redundant system. To achieve this goal, Mr. Lee increased the HVAC system and installed a new HVAC system (currently, this building has no HVAC system).

Radial Gate Refurbishment Project, CRA Replacement Project, Metropolitan Lead Electrical Engineer for the preliminary engineering and final design services for refurbishment and replacement of eight large hydraulic radial gates along CRA - Iron Mountain Wasteway, Eagle Wasteway to Reservoir, Eagle Reservoir Spillway, Eagle Sandtrap, Hinds Sandtrap, Coxcomb Wasteway, Rice Wasteway, and Vidal Wasteway. This project is to enhance water supply reliability of the CRA. These gates were installed during the original CRA construction in the late 1930s and have been in operation since the CRA was commissioned into service in 1941. The gate inspection performed in 2003 and 2011 revealed various stages of deterioration. LEE & RO performed field investigation and assessment of the gates and developed a specific refurbishment and rehabilitation of each gate and supporting structures and appurtenances. Total estimated project construction cost is $7 million.

Palos Verdes Reservoir, Metropolitan Water District. Mario was the lead electrical engineer overseeing the final design for this water reservoir plant upgrade. The design involved the electrical system supporting the upgrades to the sodium hypochlorite feed systems, the rainwater collection system, and the electric utility service upgrade.

CRA 6.9kV Power Cable Replacement, Metropolitan Water District. Mario was the lead electrical engineer for the preliminary design and the final design for this main pumping plant cable replacement. The design involved the evaluation of the replacement cables, and the cable termination methods and materials, and the distribution routing.

Plant 143, Highland, California, East Valley Water District. Mario ala was the electrical engineer for preliminary design report and the final design for this water treatment plant upgrade. The design involved the electrical system supporting the upgrades to the chemical feed systems, washwater recycle system, the new emergency generators, and the electric utility service. Mario provided the electrical design and the construction support.

Plant 150, Highland, California, East Valley Water District. Mario was the electrical engineer for preliminary design report and the final design for this new water treatment plant. The design involved the electrical system supporting the chemical feed systems, washwater recycle system, the emergency generators, and the electric utility service. Mario provided the electrical design and the construction support. He introduced the use of high resistance neutral grounding system, environmentally friendly less flammable liquid filled power transformers, and generator load banks.

R. B. Diemer Ozone Retrofit Project, Metropolitan Water District. Mario was the on-site electrical engineer providing construction support for this $220 million, 520-mgd ozonation project involving the addition of an ozone generation, ozone contractor/destruct, switchgear and emergency generator buildings.

Binh Hung WWTP, Ho Chi Ming City, Vietnam. Mario was the O&M electrical engineer providing training of the operation and maintenance personnel for this premier wastewater treatment facility project in this country, involving the primary and secondary treatment facilities, substation, switchgear and emergency diesel generators.

Lake Skinner Ozone Retrofit Project, Metropolitan Water District. Mario was the on-site electrical engineer providing construction support for this $190 million, 630-mgd ozonation project involving the addition of an ozone generation, ozone contractor/destruct, switchgear buildings and extension of the emergency generator building.

Owens Lake Dust Mitigation Program, Phase 7, Metropolitan Water District. Mario was the electrical engineer for this $100 million project involving the addition of shallow flood turnouts, lateral valves, and pump station facilities around the lakebed. Electric power is distributed underground at 4.8kv and transformed down to 480v at each facility. Mario provided the electrical design and construction support.

Plant 134 Upgrade, Highland, California, East Valley Water District. Mario served as the electrical engineer for the upgrade and expansion task, consisting of increasing the plant's capacity from 4 mgd to 8 mgd by adding a new membrane filtration system, while keeping the existing plant in operation. The design also involves upgrades to the chemical feed systems, washwater recycle system, and the electric utility service. Mario provided the electrical design and the construction support.

Camp Pendleton Marine Corps Base, P-113 Advanced Water Treatment/ Reverse Osmosis Project, Metropolitan Water District. Mario was responsible for the electrical design and construction support for the $50 million new water treatment plant in this design-build project. He implemented the use of high resistance neutral grounding system, environmentally friendly less flammable liquid filled power transformer, and generator load bank, including the automatic transfer, synchronization and parallel operation of the standby diesel generators.

Anaerobic Digester Rehabilitation and Upgrading, Treatment Plant No. 1, Orange County Sanitation District. The $35 million project involved the rehabilitation and upgrade of an anaerobic sludge digestion system consisting of 12 digesters and four digester control buildings. The scope of engineering services included condition assessment and asset management of the digester structures and equipment. The project components, which were included in the final design, included replacement of sludge feed, mixing, and circulation pumps; replacement of heat exchangers; modification and replacement of sludge and gas piping and valves; replacement of hot water boilers and heating system components; upgrading of electrical systems and control system; process automation; and rehabilitation of structures and equipment

ROMAN SILVESTRE PE Civil / Mechanical

REGISTRATIONS
Registered Civil Engineer (Arizona 53214)

EDUCATION
Bachelor's Degree in Civil Engineering
University of Santo Tomas, Manila, Philippines - March 1987

Roman Silvestre Manages projects (design and construction of reservoirs, tanks, wells, booster pump stations, control buildings, PRV's etc.) for Plant Design Section by determining project objectives, developing schedules and project budgets, composing project documents, reviewing and approving design plans, selecting consultants, coordinating activities, assigning and monitoring personnel and assigned tasks, managing projects including costs and budgets, preparing reports, performing and supervising design activities, attending and conducting public meetings, reviewing plans for conformance to regulations and standards and resolving conflicts. Produces, reviews, and administers contract documents by designing and writing specifications, writing and sealing legal descriptions, preparing cost estimates, conducting public participation programs, receiving permits, evaluating and recommending bids, monitoring contractors work progress, adjusting designs, negotiating change orders, supervising tests and completing plans. Mr. Silvestre is proficient in Bentley's Engineering Software; Microstation V8i, Water Modeling, AutoPIPE V8i, StormCAD V8i, WaterCAD V8i, WaterGEMS V8i, Structural Modeler V8i, RAM Structural System V8i, StaadPro V8i, SewerCAD V8i, PowerDraft V8i, GEOPAK Civil Engineering Suite V8i, PowerCivil V8i, Microsoft Software; Microsoft Project, Word, Excel, PowerPoint. InfoWater, AutoCAD 2018.

REPRESENTATIVE PROJECT EXPERIENCE

City of Tucson Water Department, 22nd St. Reservoir Site Improvements
Equip Well SC-003A Equip Well SC-008A Equip Well SC-005A Equip Well SC-013A Equip Well A-061A Equip Well A-062A
Escalante Road Reservoir Rehabilitation and Miscellaneous Repairs Camino Rancho "B-C" Zone Booster Modification
Diamond Bell Water System Modifications Danforth "E-F" Zone Booster Modifications Houghton Road Reclaimed Reservoir
Kolb "C" Zone Reservoir Roof Repair
New Reclaim 1.5MG Tertiary Effluent Forebay Reservoir & Pump
Station Rauscher Reservoir Rehabilitation and Misc. Repairs
Ritz Carlton Resort "F+" Zone Booster Station Modifications Sin Vacas Booster Site Improvements
The Canyons "H-I" Zone Booster Station Site Improvements UA Science & Tech Park "F-G" Booster Station
Kauai Department of Water Anini to Kilauea Pipeline Kilauea 1.0MG Tank
Kapahi 1.0MG Tank
Lihue Mill Bridge Waterline Omao-Lawai Pipeline
Kolo Road Main Replacement Kalaheo System Improvements
Halewili Road Water Main Replacement Hanapepe-Eleele Booster Pump Replacement Hanalei Waterlines
Grove Farms 18-inch Cross County Line Drill & Test Wailua Homestead Well No.3 Hanapepe & Koloa Well MCC Improvements Drill & Test Kilauea Well
Koloa Road, Omao Road Main Replacement Construct Kalaheo Surface Water Treatment Kukuiolono 0.5MG Tank
Kalaheo Water Main Installation Replaco Grove Farms Tanks 1 & 2

Kauai Department of Water - Lihue, Kauai, HI Civil. As an Engineer III, Roman managed projects and reviewed construction drawings prepared by licensed engineers/firms to ensure that they are in compliance with the Kauai DOW's Water System Standards. Facilities managed and reviewed included water wells/pumps, storage tanks, water mains/pipelines, water meter laterals, control buildings. Managed and reviewed preliminary engineering reports, geologist reports, shop drawings, billings and feasibility studies. Taken the lead in the selection process of design consultants for Kauai DOW Capital Improvement Projects and Capital Rehabilitation and Replacement Projects. Prepared scope of works for design purposes, Board Reports, contracts, change orders, and negotiated cost proposals. Responsible for completing spacifications and request for proposals for construction projects. Performs site investigation for design purposes. Performs construction field inspections to ensure the projects are constructed according to the approved plans and specifications. Perform hydraulic analysis and studies using WaterGems and provided recommendations for design purposes.

Polar Consulting Engineers, Inc. - San Mateo. Project Engineer Performed construction administration by working closely with contractors and coordinate with other consultants in the projects to ensure that contract documents are followed, quality upheld and correct procedures and materials used. Reviewing construction documents and checking shop drawings. Perform structural investigation of existing buildings, including evaluation of design and performance and identifying cause of materials and building system failures. On-site monitoring of retrofit work. Extensive civil and structural surveys on a variety of projects including report writing.

Kensington Healthcare, Inc. - Bellflower. Office Manager Overall Operations Management include creating, communicating, and implementing the company's vision, mission, and overall direction. Leading the development and implementation of the overall company's strategy. Overseeing the complete operation of the company in accordance with the direction established in the strategic plans.

Prime Edifice, Inc. - Mandaluyong City, Philippines. Project Manager Prepared cost estimates, establish budget and project schedule, review and monitor all design and/or construction documents for conformance with budget and schedule, negotiate, award and write subcontracts and material purchases, initiate and obtain permits, insurance and bond requirements prior to construction, monitor and control all change orders, RFIs and submittals. Conduct daily and weekly meetings with staff and owners/clients, monitor superintendents on monthly schedule and safety requirements. Prepare reports and forecasts for owners and assist in developing new business including presentations.

Mammoth Engineering & Const. - Pampanga, Phils. Project Engineer - Directed construction operations, and maintenance activities at project site. Direct/participate in surveying to lay out installations and establish reference points, grades, and elevations to guide construction. Analyze survey reports, maps, drawings, blueprints, aerial photography, and other topographical or geologic data to plan projects. Estimate quantities and cost of materials, equipment, or labor to determine project feasibility. Inspect project sites to monitor progress and ensure conformance to design specifications and safety or sanitation standards. Prepare or present public reports, such as bid proposals, environmental impact statements, and property and right-of-way descriptions. Reviews test soils and materials to determine the adequacy and strength of foundations, concrete, asphalt, or steel.

Matawan Investment - Saipan, Marianas Island. Project Engineer - Prepared preliminary engineering reports pertaining to various infrastructure projects. Preparation of local and federal regulatory permit applications for public sector projects. Perform design calculations of utilities projects such as gas, water and sanitary sewer systems. Preparation of construction drawings, details and technical specifications for utilities and site development projects. Design of site development projects including electrical substations. Direct administration and construction operation of utility construction projects.

EXHIBIT B

SCHEDULE OF CHARGES

F. Exhibit 1 FEE

Labor Category:
E8 Managing Engineer; E7 Supervising Engineer; E5 Senior Engineer; E4 Engineer; E2 Assistant Engineer; T4 Designer; T2 Assistant Designer; A1 Word Processor; S1 Survey Field Crew; S2 Survey Technician; S3 Survey Manager

Project Tasks	E8	E7	E5	E4	E2	T4	T3	A1	Total Hours	Total Labor	Other Direct Costs	Sub-Consultant Fees	TOTAL
	$260	$236	$195	$181	$141	$141	$106	$96					
Project Management and Meetings													
Kickoff Meeting, Agenda and Minutes (1 Meeting)		8	8		8			1	25	$4,672	$200		$4,872
Technical Review Meetings with City (3 Meetings)		24	24		24			3	75	$14,016	$600		$14,616
Coordination Meetings with Regulatory Agencies, Private Utilities etc. (2 Meetings)		16	16		16				48	$9,152	$400		$9,552
Invoicing and Project Progress Reports	2	16						16	34	$5,832	$300		$6,132
Subtotal Project Management and Meetings	2	64	48	0	48	0	0	20	182	$33,672	$1,500	$0	$35,172
Preliminary Design Phase													
Topographic Surveying including Preparation of Base Map		1	2	8	40		24		75	$10,258	$500	$18,795	$29,553
Contact Utilities to Obtain Existing Data and Plot Existing Data on Base Map		1	4	24	40		40	1	110	$15,336	$500		$15,836
Geotechnical Report including Installation and Monitoring of Piezometers		2	4	8	12			2	28	$4,584	$500	$41,665	$46,749
Field Inspection of Manholes and Preparation of Report	2	4	40	40	40		24	4	154	$25,072	$500		$25,572
Coordination Work to Obtain Location of Existing Sewer Laterals		4	12	16	24		24	2	82	$12,300	$200		$12,500
Coordination with City Fire Dept. to Obtain Exact Location of Fire Hydrants		2	4	4	8			1	19	$3,200	$50		$3,250
Coordination with City for Potholing to Obtain Location of Existing Utilities		1	2	4	8				15	$2,478	$50		$2,528
Coordination with Private Utility Companies		1	2	24	24				51	$8,354	$200		$8,554
Coordination with Imperial Irrigation District Energy Department		1	2	4	4				11	$1,914	$50		$1,964
Coordination and Permitting with IID and others for Canal Crossing Permit		1	2	8	16			2	29	$4,522	$50		$4,572
Subtotal Preliminary Design Phase	2	18	74	140	216	0	112	12	574	$88,018	$2,600	$60,460	$151,078
Design Phase													
Preparation of Traffic Control Plans		4	16	4	16			2	42	$7,236	$200	$42,000	$49,436
Preparation of 75% Design Documents (Plans, Specifications and Construction Cost Estimate)	2	16	40	40	40	24	40	8	210	$33,368	$200		$33,568
75% QA/QC and Submittal	16	2	2	4	4		8	1	37	$7,254	$500		$7,754
Preparation of 90% Design Documents (Plans, Specifications and Construction Cost Estimate)	2	16	40	40	40	24	40	8	210	$33,368	$200		$33,568
90% QA/QC and Submittal	16	2	2	4	4		8	1	37	$7,254	$500		$7,754
Preparation of 100% Design Documents (Plans, Specifications and Construction Cost Estimate)	1	8	16	16	24	8	24	4	101	$15,604	$200		$15,804
100% QA/QC and Submittal	8	2	2	4	4		8	1	29	$5,174	$500		$5,674
Preparation of Final Documents (Plans, Specifications and Construction Cost Estimate)	1	4	8	8	16	8	16	4	65	$9,676	$200		$9,876
Final QA/QC and Submittal	8	1	2	2	4		4	1	22	$4,152	$1,000		$5,152
Subtotal Design Phase	54	55	128	122	152	64	148	30	753	$123,086	$3,500	$42,000	$168,586
Bidding and Construction Support													
Bid Support													
Attend Pre-Bid Meeting		8	8					2	18	$3,640	$200		$3,840
Prepare Addenda (assume 2 Addenda)	1	4	8	8	16		4	4	45	$7,276	$200		$7,476
Subtotal Bid Support	1	12	16	8	16	0	4	6	63	$10,916	$400	$0	$11,316
Construction Support													
Review and Respond to Contractor's RFIs (Assume 20)									0	$0			$0
Review Contractor's Submittals and Shop Drawings (Assume 40 Submittals + 20 Resubmittals)									0	$0			$0
Preparation and Submission of Record Drawings					To Be Negotiated Later				0	$0			$0
Attend Meetings During Construction Phase Support (Max 2 Meetings)									0	$0			$0
Subtotal Construction Support	0	0	0	0	0	0	0	0	0	$0	$0	$0	$0
TOTAL NOT-TO-EXCEED	59	149	266	270	432	64	264	68	1,572	$255,692	$8,000	$102,460	$366,152

EXHIBIT 2
FY 2019 HOURLY BILLING RATE SCHEDULE

(Effective from November 1, 2019 to October 31, 2020)

This Schedule will be subject to change at the beginning of the new fiscal year (November 1st)

PERSONNEL CLASSIFICATION			BILLING RATES ($/HOUR)
ENGINEERS			
Engineer 8	E8	Managing Engineer	$260
Engineer 7	E7	Supervising Engineer	$236
Engineer 6	E6	Principal Engineer	$217
Engineer 5	E5	Senior Engineer	$195
Engineer 4	E4	Engineer	$181
Engineer 3	E3	Associate Engineer	$163
Engineer 2	E2	Assistant Engineer	$141
Engineer 1	E1	Junior Engineer	$126
CAD/DESIGNERS			
Designer 6	T6	Principal Designer	$181
Designer 5	T5	Senior Designer	$163
Designer 4	T4	Designer	$141
Designer 3	T3	Associate Designer	$126
Designer 2	T2	Assistant Designer	$106
Designer 1	T1	Junior Designer	$89
FIELD PROFESSIONALS			
Field Professional 5	F5	Senior Resident Engineer	$195
Field Professional 4	F4	Resident Engineer	$181
Field Professional 3	F3	Senior Inspector	$163
Field Professional 2	F2	Inspector	$141
Field Professional 1	F1	Assistant Inspector	$126
ADMINISTRATIVE			
Administrative 4	A4	Senior Contract Manager	$141
Administrative 3	A3	Contract Manager	$126
Administrative 2	A2	Senior Word Processor	$131
Administrative 1	A1	Word Processor	$112

EXHIBIT 3

FY 2019 OTHER DIRECT COST (ODC) BILLING RATE SCHEDULE

(Effective from November 1, 2019 to October 31, 2020)

This schedule will be subject to change at the beginning of the new fiscal year (November 1st).

Automobile Mileage	IRS Published Rate
In-house Reproduction	$0.08 / sheet (8.5 x 11 Bond B & W) $0.20 / sheet (8.5 x 11 Bond Color) $0.15 / sheet (11 x 17 Bond B & W) $0.50 / sheet (11 x 17 Color) $1.25 / sheet (24 x 36 Bond)
Mylar Original Drawing	$8.00 / sheet (24 x 36 or 22 x 34)
Computers & Work Stations	No Charge
Subconsultant Mark-up	Subconsultant Invoice Amount Plus 5%, Unless Client Specifies Otherwise
Bulk Reproduction by Outside Printing Firm	Invoice amount plus 10% Handling Charge
Overnight Mailing, Air Fare, Project-Specific Software, Equipment Rental, etc.	At Cost

EXHIBIT C

CERTIFICATE OF EXEMPTION FROM WORKERS' COMPENSATION INSURANCE

I hereby certify that in the performance of the work for which this Agreement is entered into, I shall not employ any person in any manner so as to become subject to the Workers' Compensation Laws of the State of California.

Executed on this _____ day of _____, 2019, at _____, California.

_____

Consultant

CITY OF CALEXICO

Request for Proposals
For
Engineering Services
For
Sewer Lift Station No. 9 and 11, Sewer Collection and Water Distribution System Improvement Project

Public Works Department
608 Heber Avenue
Calexico, CA 92231
760/768-2160
www.calexico.ca.gov

September 3, 2019

TABLE OF CONTENTS

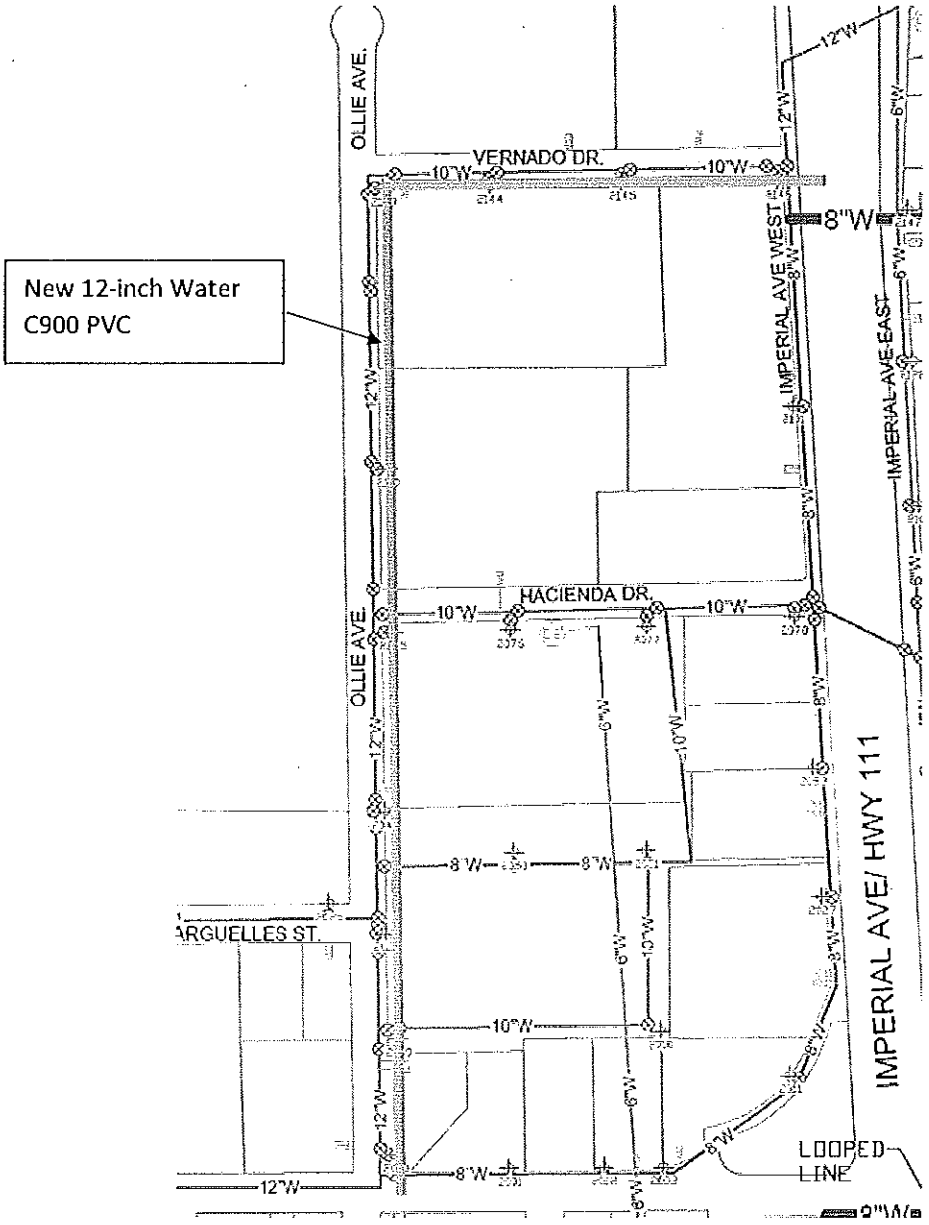
I. INTRODUCTION AND BACKGROUND

The City of Calexico is requesting proposals from qualified and experienced engineering firm to provide engineering services to complete topographic surveys, preliminary engineering, engineering plans, specifications and bidding documents. Lift Station No. 9 and Lift Station No. 11 need to be upgraded and capacity increased, and force mains and gravity sewer systems replaced. Please see attached "Initial Assessment – Sewer Lift Stations No. 9 and 11", dated June 20, 2018 for full details.

One variation to the report - the city requests that the 15-inch diameter gravity sewer pipeline along Ollie Avenue, from State Hwy 98 to Vernado Drive be replaced with a 24-inch diameter gravity sewer pipeline (approximately 2,100 feet). Caltrans is in the design phase currently for the State Highway 98 widening project, from Ollie Avenue easterly to Rockwood Avenue. As a part of that project, the city will be installing a 24-inch diameter stub-out at Ollie Avenue and State Highway 98, extending northward past Caltrans right of way and into city right of way. Therefore, coordination with Caltrans is not anticipated to be a part of the scope of work. Plans are to indicate the connection at the stub-out location.

The design project will include sewer bypass pumping, rehabilitating sewer manholes if necessary, installation of new manholes, replacement of existing 8-inch force main pipelines, and installing and connecting each existing sewer service laterals along the new pipeline alignment. The project design will also include the lift station upgrades as discussed in the above described assessment.

The design project will also include replacement of the 12-inch diameter Asbestos Cement (AC) water pipeline running north/southerly from State Hwy 98 north along Ollie Avenue, then east-westerly along Vernado Drive (10" diameter existing). The existing AC pipelines shall be abandoned in place. There is approximately 3,000 linear feet of 12-inch diameter PVC asbestos cement (AC) pipe water pipeline to be replaced. The proposed 12-inch pipeline is proposed to be composed of C905 PVC. The project will include connecting each existing water service along the pipeline routes, fire hydrants, valves and connections to existing buried water pipelines. Existing pipeline locations and sizes are attached.



II. SCOPE OF WORK

The scope of work includes but is not limited to:

1. The Engineer shall complete a topographic survey of the sites – including research for all existing underground and above ground utilities along the pipeline alignment, easements and right-of-ways, existing elevations of tops of all manholes along the alignment, and inverts of all sewer pipelines entering the sewer manholes. Also, include other improvements as needed and above ground improvements. Elevations shall be based on

current established benchmarks. A topographic map shall be prepared showing the above items.

2. The Engineer shall include in the scope of work and fee a geotechnical report, completed by a registered geotechnical engineer in the State of California. The geotechnical report and work shall include the installation of piezometers, which shall be installed along the length of the gravity sewer pipelines at 200 feet on center and at each of the pump station locations during the project design period to determine the water table depth. The piezometers shall be installed by a Geotechnical Engineer in coordination with the Design Engineer.

3. The water table depth elevation and date the water table depth was obtained is to be illustrated on the gravity sanitary sewer pipeline plan and profile sheets and on the pump station cross-section plan sheet. Separate trench sections above the water table and at or below the water table shall be illustrated on the plans. Dewatering specifications shall be provided, if required. The Engineer shall review water disposal requirements with the Regional Water Quality Control Board during the project design. The location at which water can be disposed of shall be determined during the project design. The water disposal requirements and location at which water is to be disposed shall be included in the plans or specifications.

4. The Engineer shall complete a field inspection of all sewer manholes along the alignments. City staff will assist in opening the manholes if necessary. The engineer shall determine if it is feasible to rehabilitate the existing manholes. The engineer shall prepare a brief preliminary report with alternatives and recommendations; if a new alignment with new manholes is more efficient, use of trenchless technologies, or if excavating and replacing the sewer mains and rehabilitating the manholes in situ is preferable. Final engineering will not begin until the city agrees to the findings in the brief report.

5. The Engineer shall coordinate with the City Public Works Department to obtain locations of the existing sewer laterals. The engineer shall also ensure that all existing underground utilities that are on record are depicted on the plans, including sewer laterals. If potholing is required to find any sewer laterals, the potholing shall be eompleted by city forces. Details shall be provided as needed or directed by the city.

6. The Engineer shall coordinate with the City Fire Department to obtain exact loeations of new fire hydrants.

7. The engineer shall ensure that all existing underground utilities that are on record are depicted on the plans, including sewer laterals. If potholing is required to find any sewer laterals, the potholing shall be completed by city forces. Details shall be provided as needed or directed by the city.

8. The Improvement plans shall include A.C. pavement demolition and replacement requirements and details. Pipeline trenches in pavement areas shall require a 1 foot wide, 1 ½ inch deep pavement grinding area along each side of the pipeline trench.

9. The engineer shall provide erosion control plans along the length of the water, gravity sanitary sewer and sanitary sewer force main. Erosion Control Plans shall also be required at the pump stations.

10. The engineer shall prepare a sequence of construction section indicating the chronological order that major construction items are to be completed. The City of Calexico Staff will review and provide comments regarding the sequence of construction during the project design reviews.

11. A sheet index map is to be provided with the improvement plans illustrating the sanitary sewer force main, gravity sewer main and water pipeline plan and profile sheets and the sewer lift station plan sheets. The stationing along the pipeline shall be illustrated on the index plans. A benchmark table shall be illustrated on the sheet index map. Temporary benchmarks shall be placed along gravity sanitary sewer pipeline sections 200 feet on center and at each sewer lift station during the project design and illustrated on the index and plan and profile sheets.

12. A note shall be placed on the plans requiring the contractor to pothole all utilities which may conflict with the pump stations, sanitary sewer force main, gravity sewer main and water pipeline. The contractor shall obtain the underground utility elevations and verify that conflicts do not exist with the new pipelines and pump stations prior to commencing new pipeline and pump station excavation work.

13. The scope of work shall include all work necessary for completing final stamped engineering plans and details, specifications and bidding documents. Plans shall include plan and profile view of the pipeline in scale 1" = 30' or as recommended by the Engineer. The scope shall also include meetings with the City as necessary during design, attending a pre-bid meeting, bidding and construction services – such as answering bidder's questions, attending a preconstruction meeting, answering RFIs, etc. Construction management shall be completed under a separate task order in the future.

14. The engineer will provide traffic control plans for construction.

15. The parcel owner information and APN number of each lot bordering a pipeline section shall be illustrated on the plans. Illustrate the building outlines serviced with water or sanitary sewer services on the plans.

16. The Engineer shall forward draft improvement plans to the gas, power, telephone, television and any other pertinent utility companies for review and comment during the project design.

17. The Engineer shall coordinate obtaining Customer Service Proposals (CSPs) from the Imperial Irrigation District Energy Department for the demolition of the existing sewer lift station electrical services and the installation of new power services for the sewer lift stations. The City of Calexico shall pay for all fees relative to the CSPs.

18. The Engineer shall coordinate obtaining an Encroachment Permit from the IID and any other required agencies for installing the 8-inch sanitary sewer force main crossing at the Al-American Canal along Scaroni Road. The City of Calexico shall pay for all fees relative to the IID encroachment permit.

19. The Engineer shall provide Sewer Lift Station electrical plans and specifications stamped by a Registered Electrical Engineer in the State of California. The electrical plans shall include an alarm monitoring and pump system remote terminal unit (RTU) communication system.

20. A backup power or pumping system bypass shall be included in the Sewer Lift Station Design.

21. The Engineer shall prepare an Engineers' opinion of probable cost.

III. SUBMITTAL REQUIREMENTS

Proposal should be typed, organized and concise, yet comprehensive.

General Requirements

1. Provide a cover letter.

2. State the interpretation of the work to be performed. State a positive commitment to perform the work in the required manner and time frame; include a basic summary; and demonstrate an understanding of the project. Provide a statement that the offer is valid for at least a ninety (90) day period.

3. Provide the name(s) of the primary and/or alternate individuals authorized to respond to this RFP. Include titles, addresses, e-mail, and phone numbers.

4. The Consultant is representing itself as a qualified professional engineering firm. Therefore, it is acceptable to submit recommendations and comments for consideration on format, process, schedule, and additional content of projects. The City will consider comments and recommendations; however is not required to select any of the recommendations or comments.

5. Expensive bindings, colored displays, promotional materials, etc., are neither necessary nor desired. Emphasis should be concentrated on conformance to the RFP instructions, responsiveness to the RFP requirements, and on completeness and clarity of content.

6. If any subcontractors are utilized, the lead Consultant must submit a description of the firm, the portion of work to be done, and cost of each subcontractor. All subcontracts exceeding $25,000 in cost shall contain all required provisions of the prime contract.

Table of Contents

Include a table of contents with identification of each section and page number.

Summary of Qualifications and Experience

1. State whether the firm is local, regional, national or international.

2. Identify the owner(s) of the firm and legal status (sole proprietor, corporation, etc.)

3. Give the location of the office from which work is anticipated to be done and the number of employees of the company.

4. Identify the qualifications and resumes of all individuals who will be associated with this service. Include professional registrations and affiliations.

5. Summarize specific experiences and qualification for similar and related projects, both federally funded and locally funded. Describe the services previously performed such as studies, reports, etc. List at least three (3) references with telephone numbers and email contact addresses (if available).

Analysis of Effort/Methodology

1. Describe the approach for how the work will be performed. The proposal shall indicate any specific techniques or methodology to be utilized.

2. The proposal shall include a sample project timeline with specific tasks envisioned for this project, including staffing.

3. Indicate what participation, data and products will be requested from the City.

4. Indicate deliverables to be provided and when.

Cost and Fees

Cost Proposals must be submitted with the proposal in a separate sealed and clearly marked envelope (include project title and submitting firm). Cost proposals shall take into account the following:

1. Develop costs and fees for the services requested. Submit a not to exceed fee proposal based on anticipated fully burdened hourly rates.

2. When preparing cost and fees consider the scope of work involving project kick off and review of available documentation, material submittals, project documentation and prepare a lump sum fixed fee breakdown based on anticipated staff and hours. Costs should be organized for full time hourly rates. Such hourly rates should be fully burdened or loaded, including full compensation for all overhead and profit. Billing rates shall include provision for normal office costs, including but not limited to office rental, utilities, insurance, cell phone or radio, equipment, normal supplies and materials, in-house reproduction services, and local travel costs. As much as possible, a fixed fee lump sum breakdown by phase of the construction based on billable hours is desirable for preconstruction and post construction.

3. Breakdown shall include preconstruction services and construction services (Request for information/clarification).

Insurance Requirements

Prior to execution of the agreement with the City, the successful firm must provide evidence of insurance coverages as noted in the sample contract and insurance requirements exhibit.
The successful firm will be required to maintain the required coverages, at its sole cost and expense, throughout the entire term and any subsequent modification terms of the contract.

Insurance requirements noted in sample contract. Insurance requirements may be adjusted once the final cost and fees proposal is reviewed.

IV. SELECTION PROCESS

The City of Calexico will utilize a one-step selection process. The City reserves the right to include an oral interview process component. If an oral interview is considered, selected firms will be notified.

Proposals will be reviewed by an evaluation committee. The evaluation committee's assessment and recommendations shall be forwarded to the City Managers for review. The City Manager shall provide a report of the committee's evaluation and recommendations, along with his recommendation, for the selection of a firm to the City Council for final review and approval to enter into negotiations for an agreement.

Additionally, the City reserves the right to reject any and all proposals submitted and/or request additional information for clarification.

V. TENTATIVE SCHEDULE

Request for Proposal Issued	September 3, 2019

Consultant Proposals Due	September 25, 2019 at 2:00p.m.
Consultant Selection and Negotiations	Week of October 7, 2019
City Council Approval of Contract	October 16, 2019
Project Completion	June 30, 2020

VI. INQUIRIES

Pre-submittal procedural or technical inquires may be directed to Lilliana Falomir, Public Works Manager via email at falomirl@calexico.ca.gov.

VII. SUBMITTAL DEADLINE

Consultant must submit five (5) copies of their proposal with original Consultant signature. The proposal must be formatted in accordance with the instructions of this RFP. Promotional material may be attached, but are not necessary and will not be considered as meeting any of the requirements of this RFP. Proposals must be enclosed in a sealed envelope or package, clearly marked "RFP for Engineering Services for Lift Station No. 9 and 11, Sewer Collection and Water Distribution System Improvement Project" and delivered on or before 2:00p.m. on Wednesday, September 25, 2019 to:

Office of the City Clerk
City Hall
City of Calexico
608 Heber Avenue
Calexico, CA 92231

Late, emailed or facsimile proposals will not be accepted. It is the proposer's responsibility to assure that its proposal is delivered and received at the location specified herein, on or before the date and hour set. Proposals received after the date and time specified will not be considered.

EXHIBIT A

AGREEMENT FOR PROFESSIONAL SERVICES

This Agreement is made and entered into as of the _____ day of _____, 2019, by and between the City of Calexico ("City") and _____ ("Consultant").

RECITALS

A. Consultant is specially trained, experienced and competent to perform the special services which will be required by this Agreement; and

B. Consultant possesses the skill, experience, ability, background, certification and knowledge to provide the services described in this Agreement on the terms and conditions described herein.

AGREEMENT

1. Scope of Services. The Consultant shall furnish the following services in a professional manner. Consultant shall perform the services described on Exhibit A which is attached hereto and incorporated herein by reference. Consultant shall provide said services at the time, place, and in the manner specified in Exhibit A, subject to the direction of the City through its staff that it may provide from time to time.

2. Time of Performance. The services of Consultant are to commence upon execution of this Agreement and shall continue until all authorized work is approved by the City. All such work shall be completed no later than June 30, 2020. Time is of the essence for every provision of this agreement that states a time for performance and for every deadline imposed by the City.

3. Compensation. Compensation to be paid to Consultant shall be as set forth in Exhibit B, which is attached hereto and incorporated herein by reference. Payment by City under this Agreement shall not be deemed a waiver of defects, even if such defects were known to the City at the time of payment.

4. Method of Payment. Consultant shall submit monthly billings to City describing the work performed during the preceding month. Consultant's bills shall include a brief description of the services performed, the date the services were performed, the number of hours spent and by whom, and a description of any reimbursable expenditures. City shall pay Consultant no later than 30 days after approval of the monthly invoice by City staff.

5. Ownership of Documents. All plans, studies, documents and other writings prepared by and for Consultant, its officers, employees and agents and subcontractors in the course of implementing this Agreement, except working notes and internal documents, shall become the property of the City upon payment to Consultant for such work, and the City shall have the sole right to use such materials in its discretion without further compensation to Consultant or to any other party. Consultant shall, at Consultant's expense, provide such reports, plans, studies, documents and other writings to City upon written request.

6 Independent Contractor. It is understood that Consultant, in the performance of the work and services agreed to be performed, shall act as and be an independent contractor and shall not act as an agent or employee of the City. Consultant shall obtain no rights to retirement benefits or other benefits which accrue to City's employees, and Consultant hereby expressly waives any claim it may have to any such rights.

7. Interest of Consultant. Consultant (including principals, associates and professional employees) covenants and represents that it does not now have any investment or interest in real property and shall not acquire any interest, direct or indirect, in the area covered by and during this Agreement or any other source of income, interest in real property or investment which would be affected in any manner or degree by the performance of Consultant's services hereunder. Consultant further covenants and represents that in the performance of its duties hereunder no person having any such interest shall perform any services under this Agreement.

Consultant is not a designated employee within the meaning of the Political Reform Act because Consultant:

a. will conduct research and arrive at conclusions with respect to his/her rendition of information, advice, recommendation or counsel independent of the control and direction of the City or of any City official, other than normal agreement monitoring; and

b. possesses no authority with respect to any City decision beyond rendition of information, advice, recommendation or counsel. (FPPC Reg. 18700(a)(2).)

8. Professional Ability of Consultant. City has relied upon the professional training and ability of Consultant to perform the services hereunder as a material inducement to enter into this Agreement. Consultant shall therefore provide properly skilled professional and technical personnel to perform all services under this Agreement. All work performed by Consultant under this Agreement shall be in accordance with applicable legal requirements and shall meet the standard of quality ordinarily to be expected of competent professionals in Consultant's field of expertise.

9. Indemnity. Consultant agrees to indemnify, including the cost to defend, the City, and its officers, agents and employees from any and all claims, demands, costs or liability that

arise out of, or pertain to, or relate to the negligence, recklessness, or willful misconduct of Consultant and its agents in the performance of services under this contract. This indemnity does not apply to liability for damages for death or bodily injury to persons, injury to property, or other loss, damage or expense arising from the sole negligence, willful misconduct or defects in design by the City or its agents, servants, or independent contractors who are directly responsible to the City, or the active negligence of the City.

To the fullest extent permitted by law, the Consultant shall (1) immediately defend and (2) indemnify the City, and its councilmembers, officers, agents, and employees from and against all liabilities regardless of nature or type that arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of the Consultant, or its employees, agents, or subcontractors. Liabilities subject to the duties to defend and indemnify include, without limitation, all claims, losses, damages, penalties, fines, and judgments; associated investigation and administrative expenses; defense costs, including but not limited to reasonable attorneys' fees; court costs; and costs of alternative dispute resolution. The Consultant's obligation to indemnify applies unless it is finally adjudicated that the liability was caused by the sole active negligence or sole willful misconduct of an indemnified party. If it is finally adjudicated that liability is caused by the comparative active negligence or willful misconduct of an indemnified party, then Consultant's indemnification obligation shall be reduced in proportion to the established comparative liability.

(b) The duty to defend is a separate and distinct obligation from Consultant's duty to indemnify. Consultant shall be obligated to defend, in all legal, equitable, administrative, or special proceedings, with counsel approved by the City, the City and its councilmembers, officers, agents, and employees, immediately upon tender to Consultant of the claim in any form or at any stage of an action or proceeding, whether or not liability is established. An allegation or determination that persons other than Consultant are responsible for the claim does not relieve Consultant from its separate and distinct obligation to defend under this section. The obligation to defend extends through final judgment, including exhaustion of any appeals. The defense obligation includes an obligation to provide independent defense counsel if Consultant asserts that liability is caused in whole or in part by the negligence or willful misconduct of the indemnified party. If it is finally adjudicated that liability was caused by the comparative active negligence or willful misconduct of an indemnified party, Consultant may submit a claim to the City for reimbursement of reasonable attorneys' fees and defense costs in proportion to the established comparative liability of the indemnified party.

(c) The review, acceptance or approval of the City's work or work product by any indemnified party shall not affect, relieve or reduce the City's indemnification or defense obligations. This Section survives completion of the services or the termination of this contract. The provisions of this Section are not limited by and do not affect the provisions of this contract relating to insurance.

10. Insurance Requirements.

a. Consultant, at Consultant's own cost and expense, shall procure and maintain, for the duration of the contract, the following insurance policies.

i. Workers' Compensation Coverage. Consultant shall maintain Workers' Compensation Insurance and Employer's Liability Insurance for his/her employees in accordance with the laws of the State of California. In addition, Consultant shall require each subcontractor to similarly maintain Workers' Compensation Insurance and Employer's Liability Insurance in accordance with the laws of the State of California for all of the subcontractor's employees. Any notice of cancellation or non-renewal of all Workers' Compensation policies must be received by the City at least thirty (30) days prior to such change. The insurer shall agree to waive all rights of subrogation against City, its officers, agents, employees and volunteers for losses arising from work performed by Consultant for City. This provision shall not apply if Consultant has no employees performing work under this Agreement. If the Consultant has no employees for the purposes of this Agreement, Consultant shall sign the "Certificate of Exemption from Workers' Compensation Insurance" which is attached hereto as Exhibit C.

i. General Liability Coverage. Consultant shall maintain commercial general liability insurance in an amount not less than one million dollars ($1,000,000) per occurrence for bodily injury, personal injury and property damage. If a commercial general liability insurance form or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to the work to be performed under this Agreement or the general aggregate limit shall be at least twice the required occurrence limit.

iii. Automobile Liability Coverage. Consultant shall maintain automobile liability insurance covering bodily injury and property damage for all activities of the Consultant arising out of or in connection with the work to be performed under this Agreement, including coverage for owned, hired and non-owned vehicles, in an amount of not less than one million dollars ($1,000,000) combined single limit for each occurrence.

iv. Errors and Omissions Liability. Consultant shall maintain errors and omissions liability insurance for all work performed under this Agreement in an amount of not less than one million dollars ($1,000,000).

b. Policy Endorsements. Each general liability and automobile liability insurance policy shall be with insurers possessing a Best's rating of no less than A:VII and shall be endorsed with the following specific language:

i. The City of Calexico, its elected or appointed officers, officials, employees, agents and volunteers are to be covered as additional insureds

with respect to liability arising out of work performed by or on behalf of the Consultant, including materials, parts or equipment furnished in connection with such work or operations.

ii. This policy shall be considered primary insurance as respects the City, its elected or appointed officers, officials, employees, agents and volunteers. Any insurance maintained by the City, including any self-insured retention the City may have, shall be considered excess insurance only and shall not contribute with it.

iii. This insurance shall act for each insured and additional insured as though a separate policy had been written for each, except with respect to the limits of liability of the insuring company.

iv. Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the City, its elected or appointed officers, officials, employees, agents or volunteers.

v. The insurance provided by this policy shall not be suspended, voided, canceled, or reduced in coverage or in limits except after thirty (30) days written notice has been received by the City.

c. Deductibles and Self-Insured Retentions. Any deductibles or self-insured retentions must be declared to and approved by the City. At the City's option, Consultant shall demonstrate financial capability for payment of such deductibles or self-insured retentions.

d. Certificates of Insurance and Endorsements. Consultant shall provide certificates of insurance with original endorsements to City as evidence of the insurance coverage required herein. Certificates of such insurance shall be filed with the City on or before commencement of performance of this Agreement. Current certification of insurance shall be kept on file with the City at all times during the term of this Agreement.

11. Compliance with Laws. Consultant shall use the standard of care in its profession to comply with all applicable federal, state and local laws, codes, ordinances and regulations.

12. Licenses. Consultant represents and warrants to City that it has all licenses, permits, qualifications, insurance and approvals of whatsoever nature which are legally required of Consultant to practice its profession. Consultant represents and warrants to City that Consultant shall, at its sole cost and expense, keep in effect or obtain at all times during the term of this Agreement, any licenses, permits, insurance and approvals which are legally required of Consultant to practice its profession. Consultant shall obtain a City of Calexico Business License.

13. Controlling Law Venue. This Agreement and all matters relating to it shall be governed by the laws of the State of California and any action brought relating to this Agreement shall be held exclusively in a state court in the County of Imperial, California.

14. Written Notification. Any notice, demand, request, consent, approval or communication that either party desires or is required to give to the other party shall be in writing and either served personally or sent prepaid, first class mail. Any such notice, demand, etc. shall be addressed to the other party at the address set forth herein below. Either party may change its address by notifying the other party of the change of address. Notice shall be deemed communicated within 48 hours from the time of mailing if mailed as provided in this section.

If to City: City of Calexico, City Manager
608 Heber Ave.
Calexico, CA 92231

If to Consultant: _____
_____
_____

15. Consultant's Books and Records.

a. Consultant shall maintain any and all ledgers, books of account, invoices, vouchers, canceled checks, and other records or documents evidencing or relating to charges for services, or expenditures and disbursements charged to City for a minimum period of three (3) years, or for any longer period required by law, from the date of final payment to Consultant to this Agreement.

b. Consultant shall maintain all documents and records which demonstrate performance under this Agreement for a minimum period of three (3) years, or for any longer period required by law, from the date of termination or completion of this Agreement.

c. Any records or documents required to be maintained pursuant to this Agreement shall be made available for inspection or audit, at any time during regular business hours, upon written request by the City Manager, City Attorney, City Auditor or a designated representative of these officers. Copies of such documents shall be provided to the City for inspection at City Hall when it is practical to do so. Otherwise, unless an alternative is mutually agreed upon, the records shall be available at Consultant's address indicated for receipt of notices in this Agreement.

d. Where City has reason to believe that such records or documents may be lost or discarded due to dissolution, disbandment or termination of Consultant's business,

City may, by written request by any of the above named officers, require that custody of the records be given to the City and that the records and documents be maintained in City Hall. Access to such records and documents shall be granted to any party authorized by Consultant, Consultant's representatives, or Consultant's successor-in-interest.

16. Entire Agreement. This Agreement constitutes the complete and exclusive statement of Agreement between the City and Consultant. All prior written and oral communications, including correspondence, drafts, memoranda, and representations, are superseded in total by this Agreement.

17. Amendments. This Agreement may be modified or amended only by a written document executed by both Consultant and City and approved as to form by the City Attorney.

18. Waiver. No failure on the part of either party to exercise any right or remedy hereunder shall operate as a waiver of any other right or remedy that party may have hereunder.

19. Execution. This Agreement may be executed in several counterparts, each of which shall constitute one and the same instrument and shall become binding upon the parties when at least one copy hereof shall have been signed by both parties hereto. In approving this Agreement, it shall not be necessary to produce or account for more than one such counterpart.

20. Assignment and Subcontracting. The parties recognize that a substantial inducement to City for entering into this Agreement is the professional reputation, experience and competence of Consultant. Assignments of any or all rights, duties or obligations of the Consultant under this Agreement will be permitted only with the express consent of the City. Consultant shall not subcontract any portion of the work to be performed under this Agreement without the written authorization of the City. If City consents to such subcontract, Consultant shall be fully responsible to City for all acts or omissions of the subcontractor. Nothing in this Agreement shall create any contractual relationship between City and subcontractor nor shall it create any obligation on the part of the City to pay or to see to the payment of any monies due to any such subcontractor other than as otherwise is required by law.

21. Termination. This Agreement may be terminated by the City immediately for cause or by either party without cause upon fifteen days' written notice of termination. Upon termination, Consultant shall be entitled to compensation for services performed up to the effective date of termination.

SIGNATURES ON FOLLOWING PAGE

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed on the date first written above.

CITY OF CALEXICO:	CONSULTANT:
_____	_____
David Dale City Manager	
APPROVED AS TO FORM:	ATTEST:
_____	_____
Carlos Campos City Attorney	Gabriela Garcia City Clerk

EXHIBIT A

SCOPE OF SERVICES

(proposal dated _____)

EXHIBIT B

SCHEDULE OF CHARGES

EXHIBIT C

CERTIFICATE OF EXEMPTION FROM WORKERS' COMPENSATION INSURANCE

I hereby certify that in the performance of the work for which this Agreement is entered into, I shall not employ any person in any manner so as to become subject to the Workers' Compensation Laws of the State of California.

Executed on this _____ day of _____, 2019, at_____, California.

_____

Consultant

EXHIBIT B

CITY OF CALEXICO

INITIAL ASSESSMENT – SEWER LIFT STATIONS NO. 9 AND 11

June 20, 2018

Prepared By:
The Holt Group, Inc.
1601 North Imperial Avenue
El Centro, CA 92243
THG No. 176.012

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Appendix

I. Project Background and Project Objective

1. Project Background

It is anticipated two (2) major residential developments, the El Portal Subdivision and Las Palmas Subdivision, will soon be approved for construction in the north portion of Calexico. The El Portal Subdivision will consist of 627 single family home units and 17.5 acres of apartment units at full build out. The Las Palmas Subdivision will consist of 330 single family home units, 136 mobile home units and one (1) club house at full build out. The El Portal Subdivision and Las Palmas Subdivsion developments will significantly impact the City of Calexico sewer collection system.

Sewer flows from the El Portal Subdivision and Las Palmas Subdivision will flow through the existing La Jolla Palms Subdivision collection system and lift station. See Exhibit number 1, the existing sewer lift station numbers 9 and 11 sewer vicinity map in the Appendix. The La Jolla Palms lift station will direct the additional wastewater flow from the El Portal Subdivision and Las Palmas Subdivision via an existing sewer force main and downstream gravity pipeline to existing Sewer Lift Station Number 9 located along Scaroni Road north of Cole Boulevard.

Sewer Lift Station Number 9 serves the sewer collection system north of Cole Boulevard and west of Highway 111. Sewer Lift Station Number 9 also receives sewer flow from the Walmart commercial area along Cole Boulevard east of Highway 111. Sewer Lift Station Number 9 receives sewer flow from the two (2) residential and commercial areas via an 18 inch diameter gravity pipeline extending along Cole Boulevard and Scaroni Road. The existing Portico-Robinson Lift Station contributes sewer flow to the sewer collection system north of Cole Road and west of Highway 111 which flows to Sewer Lift Station Number 9. The Las Palmas Sewer Lift Station wastewater flow is directed to the 18 inch gravity pipeline extending along Spud Moreno Street and Scaroni Road which extends to Sewer Lift Station Number 9.

Sewer Lift Station Number 11 receives sewer flow from minor residential and commercial users via a gravity pipeline from the area encompassed by the All American Canal to the south, Highway 111 to the east, Cole Boulevard to the north and Portico Boulevard to the west. Lift Station Number 11 also receives sewer flow from Lift Station Number 9.

The La Jolla Palms Lift Station was constructed in 2008 and possesses sufficient capacity to accept and convey the sewer flows from the proposed El Portal and Las Palmas developments. The La Jolla Subdivision is not fully built out. The gravity and force main pipelines constructed with the La Jolla Lift Station possess sufficient capacity to serve the La Jolla Palms, El Portal and Las Palmas developments at full build out.

Lift Station Numbers 9 and 11 are similar to the extent that both lift stations were constructed in 1979 and have limited sewer capacity. The sewer capacity of the force mains and gravity pipelines upstream and downstream of Sewer Lift Stations 9 and 11 also possess limited capacity. Sewer Lift Stations 9 and 11 and portions of the upstream and downstream force mains and gravity main pipelines do not possess sufficient capacity to convey the increased flows from the El Portal, Las Palmas and La Jolla Palms Subdivisions at full build out.

2. Project Objectives

The Initial Assessment of Existing Sewer Lift Station Numbers 9 and 11 will determine the existing capacity of each Lift Station. The existing La Jolla Palms wastewater flow will be determined. The increased La Jolla Palms wastewater flow after full build out will be determined. The wastewater flow from the proposed El Portal and Las Palmas Subdivisions will be determined.

The Lift Station Number 9 and 11 improvements necessary to accept and convey the increased wastewater flows from the La Jolla Palms Subdivision at full build out and from the proposed El Portal and Las Palmas Subdivisions will be determined. The Lift Station Number 9 and 11 improvement costs necessary to accept and convey the increased sewer flow from the subdivisions will be determined and included at the end of this Initial Assessment Report.

II. Condition of Existing Sewer Lift Stations

1. Lift Station Number 9

Lift Station Number 9 is a "self-priming" Gorman Rupp brand pump station consisting of a 6 foot diameter, 19 foot deep concrete wet well with the packaged pump station located on a concrete slab over the wet well. The duplex pump station is equipped with two (2) 250 gallon per minute, 25 foot total dynamic head centrifugal pumps. Both pumps are currently operational.

Two (2) sewer influent pipelines enter the wet well. The 18 inch diameter gravity sewer pipeline extending along Scaroni Road enters the north side of the wet well approximately 14.5 feet below the existing surface grade. The other sewer influent pipeline from an abandoned business establishment enters the wet well approximately 13 feet below the existing surface grade. The duty pump is activated when the liquid level within the wet well is 6 foot above the wet well bottom. The duty pump is de-activated when the liquid level within the wet well is lowered to a level 5 feet above the wet well bottom. The wet well working volume depth is 1 vertical foot. The wet well working volume is [3.14 x 6 feet x 6 feet/4] x 1 foot depth x 7.48 gallons/cubic foot = 211 gallons. The pump controls allow for alteration of the lead and lag pump between pumping cycles; however, at the present time, a duty pump is being manually selected by the operators for activation and de-activation during pump cycles and therefore only one pump operates between pumping cycles.

Wastewater from sewer lift station number 9 is discharged through a 6 inch diameter, 350 foot pvc force main pipeline to a manhole south of the Scaroni Road and Cole Boulevard Intersection. The wastewater is transmitted south from the manhole along an 8 inch gravity pipeline to Sewer Lift Station Number 11. See Exhibit Number 1 illustrating existing Sewer Lift Station Numbers 9 and 11, the 6 inch diameter force main and the 8 inch gravity pipeline.

If the replacement of Lift Station Number 9 is not to be accomplished within the next two (2) years it is recommended sewer lift station maintenance and refurbishment work be scheduled. It is recommended the concrete wet well be refurbished by sandblasting the wet well concrete surfaces, applying a high strength mortar to the wet well walls and coating the wet well walls with a polyurethane or epoxy coating system. It would be necessary to bypass the wastewater flow around Lift Station Number 9 to perform this work. Other maintenance related items include installation of the pump station electrical motor control center hour meters, suction and discharge pressure gauges and completing repair work on the Remote Terminal Unit (RTU) communication system. It is recommended that the packaged pump station piping be sandblasted and coated and that any inoperable valves or check valves be repaired or replaced.

If the replacement of Sewer Lift Station Number 9 is to occur within the next two (2) years it is not recommended to accomplish the prior described maintenance and refurbishment work.

2. Lift Station Number 11

Lift Station Number 11 is a "self-priming" Gorman Rupp brand pump station consisting of a 6 foot diameter, 19 foot deep concrete wet well with the packaged pump station located on a concrete slab over the wet well. The duplex pump station is equipped with two (2) 250 gallon per minute, 25 foot total dynamic head centrifugal pumps. Both pumps are currently operational.

An 8 inch diameter sewer influent pipeline enters the west side of the wet well approximately 13.5 feet below the existing surface grade. The duty pump is activated when the liquid level within the wet well is 5.67 foot above the wet well bottom. The duty pump is de-activated when the liquid level within the wet well is lowered to a level 5 feet above the wet well bottom. The wet well working volume is approximately 8 inches. The pump controls allow for alteration of the lead and lag pump between pumping cycles; however, at the present time, a duty pump is being manually selected by the operators for activation and de-activation during pump cycles and therefore only one pump operates between pumping cycles.

Wastewater from sewer lift station number 11 is discharged through an 8 inch diameter, 1,350 foot pvc force main pipeline to a manhole south of the Scaroni Road and Vernardo Drive intersection. The wastewater is transmitted west from the manhole along an existing 12 inch gravity pipeline along Vernado Drive. See Exhibit Number 1 illustrating existing Sewer Lift Station Number 11, the 8 inch diameter force main and the 12 inch gravity pipeline along Vernado Drive.

If the replacement of Lift Station Number 11 is not to be accomplished within the next two (2) years it is recommended sewer lift station number 11 maintenance and refurbishment work be scheduled. It is recommended the concrete wet well be refurbished by sandblasting the wet well concrete surfaces, applying a high strength mortar to the wet well walls and coating the wet well walls with a polyurethane or epoxy coating system. It would be necessary to bypass the wastewater flow around Lift Station Number 11 to perform this work. Other maintenance related items include installation of the pump station electrical motor control center hour meters, suction and discharge pressure gauges and completing repair work on the Remote Terminal Unit (RTU) communication and alarm system. It is recommended that the packaged pump station piping be sandblasted and coated and that any inoperable valves or check valves be repaired or replaced.

If the replacement of Sewer Lift Station Number 11 is to occur within the next two (2) years it is not recommended to accomplish the prior described maintenance and refurbishment work.

III. Existing Sewer Lift Station Flow Analysis

1. Existing Sanitary Sewer Flow Analysis for Sewer Lift Station Number 9

Sewer flow entering Sewer Lift Stations 9 and 11 originate from difference sources. Sewer Lift Station 9 is upstream of Sewer Lift Station 11. Sewer Lift Station 9 receives flow from the La Jolla Palms Sewer Lift Station, the residential and commercial area northwest of the lift station and from the Walmart Commercial area along Cole Boulevard. It should be noted that there are additional sewer flow contributions directed to the residential and commercial area northwest of Sewer Lift Station Number 9. The additional sewer flow contributions are from the Portico Robinson Sewer Lift Station, Lift Station Number 10, and the commercial, residential, and industrial area upstream of the Portico/Robinson Sewer Lift Station. See Exhibit Number 1 for the location of the described Sewer Lift Stations and residential, commercial and industrial areas. See the Appendix 2 Schematic Drawing illustrating the existing upstream wastewater sources directing sewer flow to Sewer Lift Station Number 9 in the Appendix.

The La Jolla Palms Sewer Lift Station conveys sewage flow to an 18 inch diameter gravity sewer pipeline which extends along Spud Moreno Street and Scaroni Road prior to connecting to Sewer Lift Station Number 9. The Portico Sewer Lift Station (Lift Station Number 10) receives wastewater flow from an upstream commercial, residential and industrial collection system area. The Portico Sewer Lift Station conveys sewer flow to the downstream residential and commercial gravity sewer pipeline system northwest of Sewer Lift Station Number 9. The residential and commercial gravity sewer pipeline system transmits the sewer flow to Sewer Lift Station Number 9.

Field measurements were obtained from the residential and commercial area, including the Portico Sewer Lift Station upstream of Sewer Lift Station Number 9. The measurements established a sewage flow rate of 5 gallons per minute directed to Sewer Lift Station Number 9 from the residential and commercial area northwest of Sewer Lift Station Number 9, including

the Portico Lift station and upstream residential, commercial and industrial area. A flow rate of 5 gallons per minute equals 300 gallons per hour or 7,200 gallons per day.

Field observations at the La Jolla Palms Station (Lift Station Number 16) established that the duty pump is energized for 1 minute and 56 seconds (which equals 1.93 minutes) on 52 minute intervals. Field measurements and observations established that the duty pump discharge rate is 457 gallons per minute. The duty pump discharges 1.93 minutes x 457 gallons/minute = 882 gallons of sewage from the La Jolla Palms Sewer Lift Station every 52 minutes. This discharge volume equates to 1,018 gallons of sewage every hour.

The existing sewer flow contribution from the Sewer Lift Station Number 9 sources are listed on the following chart:

TABLE 1

EXISTING SOURCE CONTRIBUTING SEWER FLOW TO LIFT STATION NUMBER 9

Source No	Source	Flow Contribution per 52 minute pump cycle - Gallons	Flow Contribution per hour - Gallons	Flow Contribution per day - Gallons	Percentage Contribution Entering Lift Station No. 9
1	La Jolla Palms Sewer Lift Station	882	1,018	24,456	77 %
2	Residential and Commercial Area NW of Lift Station No. 9 including the Portico and Robison Lift Station	260	300	7,200	23%
	Totals	1,142	1,318	31,656	100%

The field testing results illustrate that the majority of the existing sewer flow entering Sewer Lift Station Number 9 is from the La Jolla Palms Sewer Lift Station. The La Jolla Palms Sewer Lift Station is receiving sewer flow from the La Jolla Palms Subdivision gravity sewer collection system. Less than ¼ of the sewer flow entering Sewer Lift Station Number 9 is currently from the Residential and Commercial Area in the immediate vicinity of Sewer Lift Station Number 9, the Portico and Robinson Lift Station and the residential, commercial and industrial area upstream of the Portico and Robinson Lift Station.

The operating cycle of Sewer Lift Station Number 9 is dictated by the operating cycle of the La Jolla Palms Sewer Lift Station since over ¾ of the sewer flow entering Sewer Lift Station Number 9 originates from the La Jolla Palms Sewer Lift Station. The La Jolla Palms Sewer Lift Station cycles approximately every 52 minutes. Every 52 minutes the La Jolla Palms Sewer Lift Station duty pump is energized for 1 minute and 52 seconds. During the time the pump is energized 882 gallons of sewage flow is conveyed to Sewer Lift Station Number 9. The 882 gallons of sewage flow enters Sewer Lift Station Number 9 and the additional 260 gallons which enters Sewer Lift Station Number 9 from the Residential and Commercial Area, including the Portico and Robinson Lift Station during the 52 minute La Jolla Lift Station Pump Cycle surpasses the Sewer Lift Station 9 working volume and triggers a Sewer Lift Station Number 9 pumping cycle. ***The simplified, condensed summary regarding the Sewer Lift station Number 9 operating cycle is that the large sewer flow volume, "slug volume" conveyed from the La Jolla Palms Sewer Lift Station to Lift Station Number 9 over an extremely short period of time triggers Sewer Lift Station Number 9 to cycle in a delayed synchronization with the La Jolla Palms Sewer Lift Station approximately every 52 minutes.***

2. Existing Sanitary Sewer Flow Analysis for Sewer Lift Station Number 11

Sewer flow entering Sewer Lift Station Number 11 originates from Sewer Lift Station Number 9 or from the Commercial/Residential Area west of Sewer Lift Station Number 11. The Commercial/Residential Area west of Sewer Lift Station Number 11 is bounded by the All-American Canal on the south, Cole Boulevard on the north, Scaroni Road on the east and

Portico Boulevard to the west. See Exhibit Number 1 for the location of Sewer Lift Station Number 11 and the commercial/residential area west of Sewer Lift Station Number 11.

The existing wastewater flow entering Sewer Lift Station Number 11 from Sewer Lift Station Number 9 is illustrated on the previous Table 1 Chart. Field measurements were obtained from the residential and commercial area upstream of Sewer Lift Station Number 11. The measurements established a sewage flow rate of 3 gallons per minute directed to Sewer Lift Station Number 11 from the residential and commercial area. A flow rate of 3 gallons per minute equals 180 gallons per hour or 4,320 gallons per day.

The existing sewer flow contribution from Sewer Lift Station Number 11 sources are listed on the following chart:

TABLE 2

EXISTING SOURCE CONTRIBUTING SEWER FLOW TO LIFT STATION NUMBER 11

Source No	Source	Flow Contribution per 52 minute pump cycle - Gallons	Flow Contribution per hour - Gallons	Flow Contribution per day - Gallons	Percentage Contribution Entering Lift Station No. 11
1	Sewer Lift Station Number 9	1,142	1,318	31,656	88%
2	Residential and Commercial Area West of Lift Station No. 11	156	180	4,320	12%
	Totals	1,298	1,498	35,976	100%

The field testing results illustrate that the majority of the existing sewer flow entering Sewer Lift Station Number 11 is from Sewer Lift Station Number 9. A total of 88 percent of the sewer flow entering Sewer Lift Station Number 11 is from Sewer Lift Station Number 9. The Residential and Commercial area in the immediate vicinity of Sewer Lift Station Number 11 is contributing only 12 percent of the influent sewer flow.

The operating cycle of Sewer Lift Station Number 11 is dictated by the operating cycle of Sewer Lift Station Number 9 since 88% of the sewer flow entering Sewer Lift Station Number 11 originates from the Sewer Lift Station Number 9. Sewer Lift Station Number 9 cycles approximately every 52 minutes. Every 52 minutes the Lift Station Number 9 duty pump is energized for approximately 8 minutes. During the time the pump is energized 1,142 gallons of sewage flow is conveyed to Sewer Lift Station Number 11. The 1,142 gallons of sewage flow enters Sewer Lift Station Number 11 and the additional 156 gallons of sewage flow which enters Sewer Lift Station Number 11 from the Residential and Commercial Area during the 52 minute Sewer Lift Station Number 9 cycle surpasses the Sewer Lift Station 11 working volume and triggers a Sewer Lift Station Number 11 pumping cycle.

The simplified, condensed summary regarding the Sewer Lift station Number 11 operating cycle is that the large sewer flow volume, "slug volume" conveyed from Sewer Lift Station Number 9 over a short period of time triggers Sewer Lift Station Number 11 to cycle in delayed synchronization with the Sewer Lift Station Number 9 approximately every 52 minutes. The simplified overarching condensed summary is that the operating cycles of both Sewer Lift Stations 9 and 11 are controlled and triggered by the large sewer flow volume "slug volume" conveyed by the upstream La Jolla Palms Sewer Lift Station. Sewer Lift Stations 9 and 11 cycle in a delayed synchronization with the La Jolla Palms Subdivision.

IV. Anticipated Sewer Flows from El Portal Subdivision, Las Palmas Subdivision and full build out of the La Jolla Palms Subdivision

The proposed El Portal and Las Palmas Subdivisions will contribute significant increased sewer flows to the City of Calexico sewer collection system. The full build out of the La Jolla Palms Subdivision will also contribute significant increased sewer flows to the collection system. The El Portal and Las Palmas Subdivision sewer flow and the increased La Jolla Palms sewer flow will be directed to the La Jolla Palms Sewer Lift Station. The La Jolla Palms Sewer Lift Station will direct the increase sewer flows to Lift Stations 9 & 11. See Exhibit 3, the Sewer Lift Station Number 9 and 11 projected flow schematic drawing. The anticipated sewer flows from the El Portal and Las Palmas Subdivisions and from the full build out of the La Jolla Palms Subdivision is calculated as follows:

1. El Portal Subdivision anticipated sewer flow

According to the El Portal Subdivision Unit/Phasing Map dated January 3, 2018, the proposed El Portal Subdivision will include 627 single family units and 17.5 acres of multi-family units (apartments) that will contribute sewer flow to the Calexico Sewer Collection System. The estimated residential sewer flow generation per person is 85 gallons/person/day. The most recent Department of Finance Data establishes the residential dwelling unit density at 4.08 persons/dwelling unit.

The sewer flow generated from the single family units is calculated as follows:

Q = 85 gallons/person/day x 4.08 persons/dwelling unit x 627 single family units =

217,444 gallons/day

Convert gallons/day (GPD) to gallons per minute (GPM) – Average Daily Flow:

Q = 217,444 gallons/day x 1 day/1440 minutes =

151 gallons/minute (Average Daily Flow)

Per the City of Calexico Zoning Code the residential multi-family (apartments) maximum density is 30 dwelling units (DU's) per acre. The number of apartment units and resultant sewer flow for the El Portal Subdivision is calculated as follows:

30 DU/acre x 17.5 acres = 525 Dwelling Units

525 DU x 85 gallons/person/day x 4.08 persons/dwelling unit =

182,070 gallons/day

Convert gallons/day (GPD) to gallons per minute (GPM) – Average Daily Flow:

Q = 182,070 gallons/day x 1 day/1440 minutes =

126 gallons/minute (Average Daily Flow)

TABLE 3

Total Sewer Flows El Portal Subdivision

Item No	Item	Sewer Flow Gallons/Day	Sewer Flow Gallons/Minute Average Daily Flow
1	627 Single Family Homes	217,444	151
2	525 Apartment Units on 17.5 Acres	182,070	126
	Totals	**399,514 Gallons/Day**	**277 Gallons/Minute**

2. Las Palmas Subdivision anticipated sewer flow

The Las Palmas Subdivision is to be comprised of 330 single family units, 136 mobile home units and 1 club house.

The sewer flow generated from the single family units is calculated as follows:

Q = 85 gallons/person/day x 4.08 persons/dwelling unit x 330 single family units =

114,444 gallons/day

Convert gallons/day (GPD) to gallons per minute (GPM) – Average Daily Flow:

Q = 114,444 gallons/day x 1 day/1440 minutes =

79 gallons/minute (Average Daily Flow)

The sewer flow generated from the mobile home units is calculated as follows:

Q = 85 gallons/person/day x 4.08 persons/dwelling unit x 136 single family units =

47,165 gallons/day

Convert gallons/day (GPD) to gallons per minute (GPM) – Average Daily Flow:

Q = 47,165 gallons/day x 1 day/1440 minutes =

33 gallons/minute (Average Daily Flow)

The sewer flow generated from the Club House is calculated as follows:

Q = 5,000 square foot club house x 0.10 gallons/square foot =

500 gallons/day

Convert gallons/day (GPD) to gallons per minute (GPM) – Average Daily Flow:

Q = 500 gallons/day x 1 day/1440 minutes =

0.35 gallons/minute (Average Daily Flow)

TABLE 4

Total Sewer Flows Las Palmas Subdivision

Item No	Item	Sewer Flow Gallons/Day	Sewer Flow Gallons/Minute Average Daily Flow
1	330 Single Family Homes	114,444	79
2	136 Mobile Home Units	47,165	33
3	Club House	500	0.35
	Totals	**162,109 Gallons/Day**	**112 Gallons/Minute**

3. La Jolla Palms Subdivision anticipated sewer flow at full build out

There are currently 239 existing residential units at the La Jolla Palm Subdivision. There are 101 undeveloped lots reserved for future residential units. In addition, there are 26 acres approved for non-residential Commercial Neighborhood (CN) development. The sewer flow generated from the additional 101 residential units and 26 acres of CN development is calculated as follows:

The sewer flow generated from the single family units is calculated as follows:

Q = 85 gallons/person/day x 4.08 persons/dwelling unit x 101 single family units =

35,027 gallons/day

Convert gallons/day (GPD) to gallons per minute (GPM) – Average Daily Flow:

Q = 35,027 gallons/day x 1 day/1440 minutes = **24 gallons/minute (Average Daily Flow)**

The sewer flow generated from the Commercial Neighborhood area is calculated as follows:

Per the City of Calexico Zoning Code the equivalent dwelling unit for non-residential Commercial Neighborhoods is 1.8 equivalent dwelling units (edu) per acre. An edu is defined as the sewer flow from 1 residential dwelling unit.

The sewer flow from 1 residential unit is calculated as follows:

1 residential dwelling unit x 4.08 persons/residential dwelling unit x 85 gallons/person/day = 347 gallons/day

1 edu = 347 gallons/day

26 CN acres x 1.8 edu/CN acre x 347 gallons/day/edu = **16,240 gallons/day**

Convert gallons/day (GPD) to gallons per minute (GPM) – Average Daily Flow:

Q = 16,240 gallons/day x 1 day/1440 minutes = **11 gallons/minute (Average Daily Flow)**

TABLE 5

Total additional sewer flow after full built out of La Jolla Palms Subdivision

Item No	Item	Sewer Flow Gallons/Day	Sewer Flow Gallons/Minute Average Daily Flow
1	101 Single Family Homes	35,027	24
2	26 Commercial Neighborhood Development	16,240	11
	Totals	**51,267 Gallons/Day**	**35 Gallons/Minute**

TABLE 6

Summary of Anticipated Sewer Flows from El Portal Subdivision, Las Palmas Subdivision and full build out of the La Jolla Palms Subdivision

Item No	Item	Sewer Flow Gallons/Day (GPD)	Sewer Flow Gallons/Minute (GPM) Average Daily Flow	Percentage Increased flow Contribution by Subdivision
1	El Portal Subdivision	399,514	277	65%
2	Las Palmas Subdivision	162,109	112	27%
3	La Jolla Palms Subdivision	51,267	35	8%
	Totals	**612,890 GPD**	**424 GPM**	100%

V. Sewer Lift Station Numbers 9 and 11 Influent Flow After Full Build Out of the El Portal, Las Palmas and La Jolla Palms Subdivisions

The sewer flows to Sewer Lift Station Numbers 9 and 11 will exponentially increase after the full build out of the El Portal, Las Palmas and La Jolla Palm Subdivisions. The following charts illustrate the anticipated sewer flows entering Sewer Lift Stations 9 and 11 after the full build out of the El Portal, Las Palmas and La Jolla Palm Subdivisions. ***The charts illustrate the flows from the Portico/Robinson Sewer Lift Station and the Commercial/Residential Areas near Sewer Lift Station Numbers 9 and 11 to remain unchanged from the existing flows.***

TABLE 7

Lift Station 9 Sewer Flow after full build out of the El Portal Subdivision, Las Palmas Subdivision and full build out of the La Jolla Palms Subdivision

Item No	Item	Sewer Flow Gallons/Day (GPD)	Sewer Flow Gallons/Minute (GPM) Average Daily Flow	Percentage flow Contribution per Item
1	Existing Sewer Flow From La Jolla Palms Sewer Lift Station	24,456	17	4%
2	Existing Sewer Flow - Residential and Commercial Area NW of Lift Station 9 including Portico and Robinson Lift Station and Walmart Commercial Area along Cole Boulevard	7,200	5	1%
3	El Portal Subdivision - sewer flow after full build out	399,514	277	62%
4	Las Palmas Subdivision after full build out	162,109	112	25%
5	La Jolla Palms Subdivision *increased* sewer flow after full build out	51,267	35	8%
	Totals	**644,546 GPD**	**446 GPM**	100%

TABLE 8

Lift Station 11 Sewer Flow after full build out of the El Portal Subdivision, Las Palmas Subdivision and full build out of the La Jolla Palms Subdivision

Item No	Item	Sewer Flow Gallons/Day (GPD)	Sewer Flow Gallons/Minute (GPM) Average Daily Flow	Percentage flow Contribution per Item
1	Existing Sewer Flow from Lift Station Number 9	31,656	22	5%
2	Existing Sewer Flow - Residential and Commercial Area West of Lift Station 11	4,320	3	1%
3	El Portal Subdivision - sewer flow after full build out	399,514	277	61%
4	Las Palmas Subdivision after full build out	162,109	112	25%
5	La Jolla Palms Subdivision *increased* sewer flow after full build out	51,267	35	8%
	Totals	**648,866 GPD**	**449 GPM**	**100%**

See the Exhibit 3 schematic drawing in the Appendix which illustrates the flow contributors to Lift Stations 9 and 11 at full build out.

VI. Sewer Lift Station Numbers 9 and 11 Analysis and Replacement Recommendations

The sewer flow through the La Jolla Palms Sewer Lift Station, Sewer Lift Station 9 and Sewer Lift Station 11 currently occurs in series with the contents of the La Jolla Palms Sewer Lift Station conveyed to Sewer Lift Station 9 and the Sewer Lift Station 9 contents conveyed to Lift Station Number 11. This "piggy back" sewer lift station approach is recommended to be continued since the upstream gravity influent collection systems for each of the sewer lift stations have been constructed and the flowline elevations of the collection system influent pipelines entering the sewer lift station wet wells have been established. It may (or may not) be possible to construct a deep gravity pipeline to reduce the number of existing sewer lift stations however; the construction of a deep gravity pipeline would be very expensive and require a significant capital expenditure (in the millions of dollars). It would require a separate investigation to determine whether it would be physically possible to install a deep gravity pipeline to reduce the number of existing sewer lift stations.

It should also be mentioned that the installation of variable frequency drive (VFD) pumps would result in electrical expense savings over time and would result in a more consistent, lower flow rate through the force main and gravity main pipelines extending between the sewer lift stations and downstream of Sewer Lift Station Number 11. The lower flow rates could be conveyed through smaller diameter pipes and there would be a capital expense savings from using smaller diameter pipelines. However; the City of Calexico is using self-priming pumps in the majority of its sewer lift stations. Self-priming pumps are not supplied with VFD capability. The Calexico Public Works Staff is familiar with the operation and maintenance aspects of the self-priming pumps. The self-priming pumps are placed above grade and can be easily accessed for maintenance as opposed to submersible pumps which are submerged in the sewer lift station wet well. The self-priming pumps are reliable and are not maintenance intensive. The existing La Jolla Palms Sewer Lift Station is supplied with self-priming pumps capable of transmitting the increased flows from the full build out of the La Jolla Palms, Las Palmas and El Portal Subdivisions. It would be very costly to replace the existing La Jolla Palms Sewer Lift

Station self-priming pumps with VFD pumps. Finally, the variable frequency electrical drives are heat and dust sensitive. To reliably install a variable frequency drive system it would be recommended the VFD units be installed in a building enclosure which was insulated, dust tight and air conditioned. The air conditioned, dust tight and insulated building enclosure would significantly add to the capital expense of the VFD pumps and sewer lift stations.

Per the review of the above options including VFD Pumps, possible deep gravity sewer pipeline or self-priming pumps for the replacement of Sewer Lift Station Numbers 9 and 11; it is recommended the City of Calexico maintain its current practice of improving Sewer Lift Station Numbers 9 and 11 with constant speed self-priming pumps. The self-priming constant speed pumps are more energy intensive to operate, result in transmitting the sewage in a relatively short time duration, constant flow rate, high volume, slug flow and require pipelines with larger pipeline diameters upstream and downstream of the sewer lift stations. However; given the other prior noted options, the use of self-priming pumps is the preferred choice for the Sewer Lift Station Numbers 9 and 11 improvements.

After the full build out of the El Portal, Las Palmas and La Jolla Palms Subdivisions the following average daily flow and peak flows are anticipated at each sewer lift station. The average daily flows were previously illustrated on Tables 6, 7 and 8. A peaking factor of 2 (2 times the average daily flow) has been used to calculate the peak flow at each sewer lift station.

TABLE 9

La Jolla Palms Sewer Lift Station and Sewer Lift Stations 9 & 11 Average Daily and Peak Sewer Flows after full build out of the El Portal Subdivision, Las Palmas Subdivision and full build out of the La Jolla Palms Subdivision

Item No	Item	Sewer Flow Gallons/Day ADF	Sewer Flow GPM ADF	Sewer Flow Gallons/Day Peak Flow	Sewer Flow GPM Peak Flow AFD x 2
1	La Jolla Palms Sewer Lift Station	612,890	426	1,225,780	852
2	Sewer Lift Station No. 9	644,546	448	1,289,092	896
3	Sewer Lift Station No. 11	648,866	451	1,297,732	901

*ADF – Average Daily Flow

The existing La Jolla Palms Sewer Lift Station is comprised of three (3) 500 gallon per minute centrifugal self-priming pumps. Two pumps are active and the third pump is a spare, redundant pump. If one of the two (2) active pumps fails or becomes inoperable, the third pump can be activated to replace the failed/inoperable pump. The two (2) pumps are capable of pumping 1,000 gallons per minute. The two (2) active pumps are capable of conveying the Peak Flow of the La Jolla Palms Sewer Lift Station after the full build out of the El Portal, Las Palmas and La Jolla Palms Subdivisions. It will not be necessary to increase the capacity of the existing La Jolla Palms Sewer Lift Station after the full build out of the El Portal, Las Palmas and La Jolla Palms Subdivisions.

The Peak Flows entering Sewer Lift Station Numbers 9 and 11 are 896 gallons per minute and 901 gallons per minute respectively after the full build out of the El Portal, Las Palmas and La Jolla Palms Subdivisions. It is recommended that the existing Sewer Lift Station Numbers 9 and 11 be replaced with self-priming sewer lift stations similar to the La Jolla Palms Sewer Lift Station with two (2) active 500 gallon per minute centrifugal pumps and a third spare,

redundant pump. The two (2) active 500 gallon per minute centrifugal pumps would be capable of conveying 1,000 gallons per minute, which is greater than the Peak Flows of Sewer Lift Station Numbers 9 and 11 after the full build out of the El Portal, Las Palmas and La Jolla Palms Subdivisions.

It is recommended that the existing Sewer Lift Station Numbers 9 and 11, 39 year old sewer lift station concrete wet wells in poor condition be replaced with a new concrete 12 foot diameter wet wells similar to the existing La Jolla Palms Sewer Lift Station. The concrete wet well walls shall be coated with a polyurethane or epoxy coating system. It is recommended that the new skid mounted centrifugal sewer lift station be supplied fully equipped with upstream piping connections, downstream piping fittings, valves and check valves, pressure gauges, and all other required mechanical components. The new sewer lift stations are to be supplied with motor control centers and control systems to activate and de-activate the pumps. The sewer lift stations shall be supplied with alarm systems to detect pump failure and high water levels, as a minimum. New concrete support slabs shall be placed at the top of the sewer lift station wet wells to support and secure the skid mounted pump stations. The sewer lift stations shall be supplied with enclosures to protect all skid mounted sewer lift station mechanical and electrical components. It may be necessary to install new electrical services for the sewer lift stations. Water services with a meter and backflow preventer shall be provided to supply wash down water to the sewer lift stations. A new remote terminal unit shall be required to forward alarms and telemetry information to an operations center location. A new chain link fence with privacy slats and a gate shall be provided for the sewer lift stations. A light pole and luminaire shall be provided to illuminate the sewer lift station compounds. A concrete entrance to the sewer lift stations shall be provided. A minimum of 1 foot of Class 2 Base or a concrete surface section shall be placed within the interior of each sewer lift station compound (within the exterior chain link fence).

An Engineers Opinion of Probable Cost (EOOPC) for the removal and replacement of Sewer Lift Station Numbers 9 and 11 including the replacement of a portion of the upstream and downstream pipelines is included in a later section of this document.

VII. Analysis and Recommended Replacement of Pipelines Upstream and Downstream of Sewer Lift Station Numbers 9 and 11

1. Pipeline flow analysis assumption and pipe segment listing

A review of the pipeline sections upstream and downstream of Sewer Lift Station Numbers 9 andf 11 is required to determine whether the existing pipelines are sufficiently sized to transmit the sewer flow after the full build out of the El Portal, Las Palmas and La Jolla Palms Subdivisions. As was previously noted, this Initial Assessment Document addresses the sewer flow after the full build out of the El Portal, Las Palmas and La Jolla Palms Subdivisions and the existing sewer flows in the areas served by Sewer Lift Station Numbers 9 and 11. ***Future increased flows from the other areas served by Sewer Lift Station Numbers 9 and 11 (Walmart commercial area, commercial/residential area northwest of Sewer Lift Station Number 9, Portico/Robinson Sewer Lift Station including the upstream commerical, residential and industrial area and the commercial/residential area west of Sewer Lift Station Number 11) have not been considered as a part of the pipeline analysis.*** The flow capacity of the following existing pipeline sections upstream and downstream of Sewer Lift Stations 9 and 11 will be reviewed:

PIPELINE SECTIONS UPSTREAM AND DOWNSTREAM OF SEWER LIFT STATION NUMBERS 9 AND 11

1. 18 inch diameter gravity pipeline sections along Scaroni Road and Spud Moreno Street downstream of the La Jolla Sewer Lift Station and upstream of Sewer Lift Station Number 9.

2. 6 inch force main downstream of Sewer Lift Station Number 9.

3. 8 inch gravity pipeline from the termination point of the 6 inch force main downstream of Sewer Lift Station Number 9 to Sewer Lift Station Number 11.

4. 8 inch force main from Sewer Lift Station Number 11 to the termination of the 8 inch force main at the manhole at the intersection of Scaroni Road and Vernado Drive.

5. 12 inch gravity pipeline along Vernardo Drive from Scaroni Drive to Ollie Avenue

6. 15 inch gravity pipeline along Ollie Avenue from Vernado Drive to State Highway 98.

See the Exhibit 4 Sewer Pipeline Replacement Schematic Map in the Appendix.

2. Review flow capacity of 18 inch gravity pipeline sections along Scaroni Road and Spud Moreno Street downstream of the La Jolla Sewer Lift Station and upstream of the Sewer Lift Station Number 9

Peak daily flows entering the La Jolla Sewer Lift Station after the full build out of the El Portal, Las Palmas and La Jolla Palms Subdivisions will result in the two (2) 500 gallon/minute active pumps being energized. The two (2) pumps will convey sewage to the 18 inch diameter gravity pipeline section along Spud Moreno Street and Scaroni Road at a flow rate of 1,000 gallons per minute. Table 7 illustrates the flow entering the 18 inch diameter pipeline section from the residential and commercial areas northwest of Sewer Lift Station Number 9 to be 7,200 gallons per day which equals 7,200 gallons per day/1440 minutes/day = 5 gallons per minute. Using a peaking factor of 2, the peak flow entering the 18 inch pipeline from the residential and commercial areas is: 2 x 5 gallons/minute = 10 gallons/minute.

The total flow to be conveyed along the 18 inch diameter gravity pipeline section after the full build out of the El Portal, Las Palmas and La Jolla Palms Subdivisions is therefore 1,000 gallons per minute + 10 gallons per minute = 1,010 gallons per minute.

The Manning Equation is used to calculate the flow of a gravity pipeline as follows:

$$Q = \frac{1.49}{n} \, x \, A \, x \, R^{2/3} \, x \, S^{1/2}$$

Where:
Q = Flow in cubic feet/second
n = Roughness Coefficient = 0.012
S = Slope of the Sanitary Sewer Pipeline (feet/feet) = 0.002 ft/ft – (Assumed Slope)*
R = Hydraulic Radius = Area/Wetted Perimeter (feet squared/feet)
A = Cross-sectional area of the pipe

*This initial assessment document assumes the slope of the sanitary sewer pipelines to be 2/10^{ths} vertical feet in 100 horizontal feet or 0.002 feet/feet.

Calculate the full flow capacity of the 18 inch gravity pipeline along Spud Moreno Street and Scaroni Road as follows:

A = $A = \frac{3.14\ x\ (18"/12"/FT)^2}{4} = 1.767\ FT^2$

R = A/Wetted Perimeter = $\frac{1.767\ FT^2}{\pi\ x\ 18"/12"/FT} = 0.375\ FT$

Q = $\frac{1.49}{0.012}\ x\ 1.767\ FT^2\ x\ (0.375)^{2/3}\ x\ (0.002)^{1/2}$

Q = $5.1\ FT^3/sec$

Q = 7.48 gallons/FT^3 x 60 sec/min x 5.1 = 2,289 GPM

Peak Wastewater Flow = 1,010 Gallons/Minute

½ flow capacity of the 18 inch pipeline is approximately 916 gallons/minute per attached Manning Formula calculation printout. The calculation printout illustrates the flow to be 2.04 cubic feet per second with equals 2.04 cubic feet/second x 60 seconds/minute x 7.48 gallons/cubic feet = 916 gallons/minute.

Partially Full Pipe Flow Calculations - U.S. Units

II. Calculation of Discharge, Q, and average velocity, V
for pipes more than half full

Instructions: *Enter values in blue boxes. Calculations in yellow*

Inputs

Pipe Diameter, **D** =	18	in
Depth of flow, **y** =	9	in

(must have $y \geq D/2$)

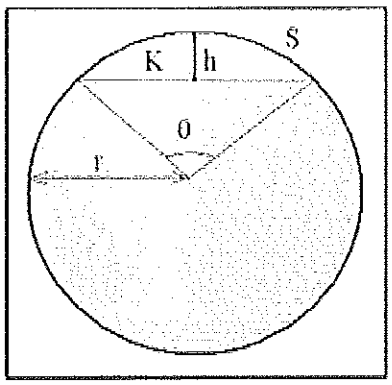
Full Pipe Manning roughness, n_{full} =	0.012	
Channel bottom slope, **S** =	0.002	ft/ft

Calculations

n/n_{full} =	1.25
Partially Full Manning roughness, **n** =	0.015

Calculations

Pipe Diameter, **D** =	1.5	ft
Pipe Radius, **r** =	0.75	ft
Circ. Segment Height, **h** =	0.750	ft
Central Angle, **q** =	3.14	radians
Cross-Sect. Area, **A** =	0.88	ft^2
Wetted Perimeter, **P** =	2.4	ft
Hydraulic Radius, **R** =	0.38	ft
Discharge, **Q** =	2.04	cfs
Ave. Velocity, **V** =	2.31	ft/sec
pipe % full [$(A/A_{full})*100\%$] =	50.0%	



Partially Full Pipe Flow Parameters
(More Than Half Full)

r = D/2

h = 2r - y

(hydraulic radius)

R = A/P

(Manning Equation)

$Q = (1.49/n)(A)(R^{2/3})(S^{1/2})$

V = Q/A

P

$$\theta = 2 \arccos\left(\frac{r - h}{r}\right)$$

$$A = \pi r^2 - \frac{r^2(\theta - \sin\theta)}{2}$$

$$P = 2\pi r - r * \theta$$

Equation used for n/n_{full}: $n/n_{full} = 1.25 - (y/D - 0.5)*0.5$ (for $0.5 \leq y/D \leq 1$)

1,010 gallons/minute – 916 gallons/ minute = 94 gallons/minute

94 gallons/minute x 100% = 9%
1010 gallons/minute

The 18 inch diameter pipeline will flow at 9% below the peak flow of 1,010 at ½ pipe flow; however, it will be accepted as sufficiently close to meeting the criteria of the pipe flowing ½ full at peak flow. The 18 inch pipeline is therefore acceptable.

Conclusion :

Based on a criteria that the 18 inch diameter pipeline is capable of conveying the peak flow at slightly over ½ pipe capacity it is concluded the existing 18 inch diameter pipeline along Spud Moreno Street and Scaroni Road is adequately sized to convey the wastewater flow after the full build out of the El Portal, Las Palmas and La Jolla Palms Subdivisions.

3. Review flow capacity of 6 inch diameter force main pipeline downstream of Sewer Lift Station Number 9

The maximum flow rate entering and exiting Sewer Lift Station Number 9 was noted to be 1,010 gallons per minute per prior item 2. Per Cameron Hydraulic Data the velocity through a 6 inch diameter pipeline conveying 1,010 gallons per minute would be approximately 11.5 feet per second and would have a head loss of 7.9 feet/100 feet. The 6 inch pipeline segment is 350 feet long. The headloss through the 6 inch diameter, 350 foot long pipeline would be 350 feet x 7.9 feet/100 feet = 27.65 feet. The head loss of 27.65 feet through the 6 inch diameter, 350 foot long pipeline is too great and would require the pump motors be oversized and the electrical costs to operate the sewer lift station to be excessive. A pipe with a diameter size resulting in a lower velocity and lower head loss is required.

Per the Cameron Hydraulic Data an 8 inch diameter pipeline conveying 1,010 gallons per minute has a velocity of approximately 6.40 feet/second and a headloss of 1.8 feet/100 feet. The headloss through the 8 inch diameter, 350 foot long pipeline would be 1.8 feet/100 feet x 350 feet = 6.3 feet. A frictional headloss of 6.3 feet is reasonable.

Conclusion: ***It is recommended the existing 350 foot long – 6 inch diameter forcemain downstream of Pump Station 9 be replaced with a 350 foot long – 8 inch diameter forcemain.***

4. 8-inch gravity pipeline from the termination point of the 6 inch force main downstream of Sewer Lift Station Number 9 to Sewer Lift Station Number 11

Per item 3 the maximum flow rate to be transmitting to the existing 8 inch gravity pipeline from Sewer Lift Station Number 9 via the downstream forcemain is 1,010 gallons per minute. The 8 inch pipeline is to convey the sewer flow from the forcemain termination manhole by gravity to Sewer Lift Station Number 11.

The Manning Equation is used to calculate the flow of a gravity pipeline as follows:

$$Q = \frac{1.49}{n} \, x \, A \, x \, R^{2/3} \, x \, S^{1/2}$$

Where:

Q = Flow in cubic feet/second
n = Roughness Coefficient = 0.012
S = Slope of the Sanitary Sewer Pipeline (feet/feet) = 0.002 ft/ft – (Assumed Slope)
R = Hydraulic Radius = Area/Wetted Perimeter (feet squared/feet)
A = Cross-sectional area of the pipe

Calculate the full flow capacity of the 8 inch gravity pipeline upstream of Sewer Lift Station Number 11 as follows:

$$A = A = \frac{3.14 \, x \, (8"/12"/FT)^2}{4} = 0.34889 \, FT^2$$

$$R = A/\text{Wetted Perimeter} = \frac{0.34889 \, FT^2}{\pi \, x \, 8"/12"/FT} = 0.1666 \, FT$$

$$Q = \frac{1.49}{0.012} \, x \, 0.34889 \, FT^2 \, x \, (0.1666)^{2/3} \, x \, (0.002)^{1/2}$$

$$Q = 0.58658 \, FT^3/sec$$

Q = 7.48 gallons/FT^3 x 60 sec/min x 0.58658 = 263.3 GPM

The full flow capacity of the existing 8 inch gravity sanitary sewer pipeline is 263.3 GPM

Conclusion :

The 8 inch gravity pipeline downstream of Sewer Lift Station Number 9 and upstream of Sewer Lift Station Number 11 is to convey 1,010 gpm at ½ full. The 8 inch pipeline can only convey 263.3 GPM in a full flow condition. The 8 inch pipeline is insufficiently sized to convey the peak sewer flow.

Per prior item number 2 an 18 inch diameter pipeline is acceptable to convey the peak flow of 1,010 gallons per minute.

The 8 inch gravity sewer pipeline downstream of Sewer Lift Station Number 9 and upstream of Sewer Lift Station Number 11 is to be replaced with an 18 inch gravity sewer pipeline.

5. Review the flow capacity of the 8 inch force main from Sewer Lift Station Number 11 to the termination of the 8 inch force main at the manhole at the intersection of Scaroni Road and Vernado Drive

From prior items 2 and 3 the total peak flow entering and exiting Sewer Lift Station Number 9 is 1,010 gallons per minute. The same peak flow will enter downstream Sewer Lift Station Number 11. Table 8 noted that an additional 3 gallons per minute sewer flow would enter Sewer Lift Station Number 11 from the nearby residential and commercial area. Using a peaking factor of 2 the 3 gallons per minute average daily flow would be 6 gallons per minute peak flow. The 8 inch diameter force main pipeline downstream of Sewer Lift Station Number 11 would therefore transmit a peak flow of 1,016 gallons per minute.

Per the Cameron Hydraulic Data an 8 inch diameter pipeline conveying 1,016 gallons per minute has a velocity of approximately 6.48 feet/second and a headloss of 1.84 feet/100 feet. The headloss through the 8 inch diameter, 1,350 foot long pipeline would be 1.84 feet/100 feet x 1,350 feet = 24.8 feet. A pipeline frictional headloss of 24.8 feet is too high. It would require the pump motors to be oversized and the electrical costs to operate the sewer lift station to be excessive. A pipe with a diameter size resulting in a lower velocity and lower head loss is required.

Per the Cameron Hydraulic Data a 10 inch diameter pipeline conveying 1,016 gallons per minute has a velocity of 4.15 feet/second and a headloss of 0.588 feet/100 feet. The headloss

through the 10 inch diameter, 1,350 foot long pipeline would be 0.588 feet/100 feet x 1,350 feet = 7.9 feet. A pipeline frictional headloss of 7.9 feet is acceptable.

Conclusion: ***The pipeline frictional headloss of 24.8 feet is too high. The existing 8 inch diameter forcemain downstream of Sewer Lift Station Number 11 is to be replaced with a 10 inch diameter forcemain.***

6. 12 inch gravity sewer pipeline accepting sewer flow from the 8 inch force main downstream of Sewer Lift Station Number 11. The 12 inch gravity pipeline extends along Vernado Drive from Scaroni Drive to Ollie Avenue

The 12 inch gravity sewer pipeline along Vernardo Drive from Scaroni Drive to Ollie Avenue will accept the peak sewer flow of 1,016 gallons per minute (see item 5) from the forcemain downsteam of Sewer Lift Station Number 11.

The Manning Equation is used to calculate the flow of a gravity pipeline as follows:

$$Q = \frac{1.49}{n} \, x \, A \, x \, R^{2/3} \, x \, S^{1/2}$$

Where:

Q = Flow in cubic feet/second
n = Roughness Coefficient = 0.012
S = Slope of the Sanitary Sewer Pipeline (feet/feet) = 0.002 ft/ft – (Assumed Slope)
R = Hydraulic Radius = Area/Wetted Perimeter (feet squared/feet)
A = Cross-sectional area of the pipe

Calculate the full flow capacity of the 12 inch gravity pipeline along Vernardo Drive from Scaroni Drive to Ollie Avenue as follows:

$$A = A = \frac{3.14 \, x \, (12"/12"/FT)^2}{4} = 0.785 \, FT^2$$

$$R = A/\text{Wetted Perimeter} = \frac{0.785 \, FT^2}{\pi \, x \, 12"/12"/FT} = 0.25 \, FT$$

$$Q = \frac{1.49}{0.012} \, x \, 0.785 \, FT^2 \, x \, (0.25)^{2/3} \, x \, (0.002)^{1/2}$$

$$Q = 1.73 \, FT^3/sec$$

$Q = 7.48$ gallons/FT^3 x 60 sec/min x 1.73 = 776 GPM

Conclusion: ***The 12 inch diameter pipeline conveys 776 gallons per minute at full flow which is less than the required peak flow of 1,016 gallons per minute. Per prior items 2 and 4 a gravity 18 inch diameter pipeline is acceptable to convey the required peak flow of 1,016 gallons per minute. It is recommended the existing 12 inch diameter gravity sewer pipeline along Vernardo Drive from Scaroni Drive to Ollie Avenue be replaced with an 18 inch diameter gravity sewer pipeline.***

7. 15 inch gravity pipeline along Ollie Avenue from Vernado Drive to State Highway 98

The 15 inch gravity pipeline along Ollie Avenue from Vernado Drive to State Highway 98 will accept and convey the peak sewer flow of 1,016 gallons per minute from the gravity pipeline along Vernado Drive.

The existing 15 inch gravity pipeline along Ollie Avenue from Vernado Drive to State Highway 98 is capable of conveying the following full pipe flow:

The Manning Equation is used to calculate the flow of a gravity pipeline as follows:

$$Q = \frac{1.49}{n} \, x \, A \, x \, R^{2/3} \, x \, S^{1/2}$$

Where:

Q = Flow in cubic feet/second
n = Roughness Coefficient = 0.012
S = Slope of the Sanitary Sewer Pipeline (feet/feet) = 0.002 ft/ft – (Assumed Slope)
R = Hydraulic Radius = Area/Wetted Perimeter (feet squared/feet)
A = Cross-sectional area of the pipe

Calculate the full flow capacity of the 15 inch gravity pipeline along Ollie Avenue from Vernardo Drive to Highway 98 as follows:

$$\text{A} = A = \frac{3.14 \, x \, (15"/12"/FT)^2}{4} = 1.227 \, FT^2$$

$$\text{R} = \text{A/Wetted Perimeter} = \frac{1.227 \, FT^2}{\pi \, x \, 15"/12"/\text{FT}} = 0.3126 \, FT$$

$$\text{Q} = \frac{1.49}{0.012} \, x \, 1.227 \, FT^2 \, x \, (0.3126)^{2/3} \, x \, (0.002)^{1/2}$$

Q = 3.13 FT^3/sec

Q = 7.48 gallons/FT^3 x 60 sec/min x 3.13 = 1,405 GPM

Conclusion: ***The existing 15 inch diameter gravity pipeline conveys 1,405 gallons per minute at full flow which is greater than the required peak flow of 1,016 gallons per minute. Although the existing 15 inch diameter gravity pipeline is not capable of conveying the 1,016 gallons per minute flow at ½ pipe capacity it can convey the required peak flow at full pipe capacity. Given that the existing 15 inch diameter gravity pipeline along Ollie Avenue from Vernardo Drive to Highway 98 can convey the 1,016 gallons per minute peak flow, it is recommended the 15 inch dimater gravity pipeline remain in place.***

VIII. Engineers Opinion of Probable Cost for Sewer Lift Station Numbers 9 and 11 and upstream and downstream Pipeline Improvements

The Engineers Opinion of Probable Cost for the replacement of Sewer Lift Station Numbers 9, Sewer Lift Station Number 11 and the replacement of a portion of the pipelines upstream and downstream of Sewer Lift Station Numbers 9 and 11 is summarized on Table 10. A Shared Cost Table Number 11 follows Table Number 10. The Shared Cost Table attributes the cost to the major users based upon the increased percentage of sewer flow contribution by each user to Sewer Lift Station 9 and 11. See Initial Assessment Sections IV and V and Table 8 for the percentage of sewer flow contributions from the major users.

Following are Tables 10 and 11 and the detailed Engineers Opinion of Probable Costs for the sewer lift stations and pipeline improvements. The detailed Engineers Opinion of Probable Costs includes a construction contingency of 10 percent and the Engineering Design, Bidding and Construction Management Costs. Geotechnical costs are also included.

TABLE 10

Cost of Improvements to the Sewer Lift Station Numbers 9 and 11 and upstream and downstream Pipelines

No.	Item	Cost
1.	Lift Station No. 9 Improvements	$780,124
2.	Lift Station No. 11 Improvements	$780,124
3.	Replace Forcemain Pipeline downstream of Lift Station No. 9 with an 8-inch diameter pipeline	$53,950
4.	Replace Gravity Pipeline upstream of Lift Station No. 11 with an 18-inch diameter pipeline	$406,900
5.	Replace Forcemain Pipeline downstream of Lift Station No. 11 with a 10-inch diameter pipeline	$130,940
6.	Replace Gravity Pipeline along Vernardo Drive with an 18-inch diameter pipeline	$221,210
	Total	**$2,373,248**

TABLE 11

Shared Cost of Sewer Lift Station Numbers 9 and 11 and upstream and downstream Pipelines Improvements

No.	Item	Percentage Flow Contribution Per Table 8	Cost Contribution based on Total Cost of **$2,373,248**
1.	Existing Sewer Flow from La Jolla Palms Subdivision, Walmart Commercial Area, Commercial and Residential Area NW of Sewer Lift Station No. 9 and the Portico/Robinson Lift Station	5 %	$118,662.40
2.	Existing Sewer Flow – Residential and Commercial Area West of Lift Station 11	1 %	$23,732.5
3.	El Portal Subdivision – Sewer Flow after Full Build Out	61 %	$1,447,681.30
4.	Las Palmas Subdivision – Sewer Flow after Full Build Out	25 %	$593,312.00
5.	La Jolla Palms Subdivision – increased sewer flow after full build out	8 %	$189,859.9

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CITY OF CALEXICO - INITIAL ASSESSMENT OF LIFT STATIONS NO. 9 AND 11

THG PROJECT No 176.012

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST FOR LIFT STATION NO. 9

DATE: June 20, 2018

NO.	ITEM	UNIT	UNIT COST	ESTIMATED QUANTITY	TOTAL
1	**Site Demolition**				
1.1	Demolition of existing lift station skid.	L.S.	$2,000.00	1	$2,000.00
1.2	Demolition of existing Wet Well Structure.	CYD	$25.00	8	$200.00
1.3	Demolition of existing concrete slab at surface grade.	CYD	$200.00	13	$2,500.00
1.4	Demolition and disposal of miscellaneous piping.	L.S.	$5,000.00	1	$5,000.00
1.5	Remove and dispose of existing site fencing.	L.F.	$15.00	49	$735.00
2	**Excavate Native Material**				
2.1	Remove and dispose of native material for the installation of the wet well.	CYD	$25.00	241	$6,025.00
2.2	Remove and dispose of native material for Class II Base in site.	CYD	$25.00	10	$250.00
3	**Wet Well Subgrade**				
3.1	Install 3/4-inch crushed rock for wet well subgrade.	TON	$40.00	27	$1,080.00
3.2	Place geofabric surrounding the crushed rock.	S.F.	$1.00	570	$570.00

NO.	ITEM	UNIT	UNIT COST	ESTIMATED QUANTITY	TOTAL
4	**Install Lift Station Wet Well**				
4.1	Install Wet Well's Concrete Foundation	CYD	$600.00	9	$5,400.00
4.2	Install Wet Well's Concrete Walls	CYD	$600.00	16	$9,600.00
4.3	Install Concrete Civil within Base of Wet Well	CYD	$600.00	6	$3,600.00
4.4	Install Concrete Slab at Surface Grade.	CYD	$600.00	13	$7,800.00
4.6	Install Granular Sand Backfill	TON	$28.00	290	$8,120.00
4.7	Shoring and Dewatering	L.S.	$150,000.00	1	$150,000.00
5	**Self-Priming Pre-Packaged Pump Station Improvements**				
5.1	Install Self Priming Pre-Package Pump Station per Improvement Plans and manufacturers recommendation	L.S.	$318,000.00	1	$318,000.00
5.2	Install 6-inch AWWA C-900 DR-18 PVC suction pipeline with fittings	L.F.	$40.00	50	$2,000.00
5.3	Install 6-inch diameter stainless steel pipeline anchor brackets	E.A.	$1,000.00	2	$2,000.00
5.4	Install 6-inch x 4-inch ductile iron increasing 90 degree elbow	E.A.	$800.00	2	$1,600.00
5.5	Install 6-inch diameter ductile iron 90-degree elbow	E.A.	$600.00	3	$1,800.00
5.6	Install 6-inch ductile iron discharge piping	L.F.	$50.00	20	$1,000.00
6	**Site Civil Improvements**				
6.1	Install 12inches of class 2 base inside lift station fencing area. the class 2 base material shall be compacted to 95 percent of maximum density per ASTM D-1557.	TONS	$40.00	38	$1,520.00
6.2	Install new 6-foot high chain link fence with vinyl privacy slats	L.F	$40.00	56	$2,240.00
6.3	Power Pole to be relocated by the imperial irrigation district energy division	L.S.	$15,000.00	1.00	$15,000.00
6.4	Control and Scada System	L.S	$15,000.00	1.00	$15,000.00
6.5	Light Pole and Fixture	L.S	$3,600.00	1.00	$3,600.00
6.6	Water Service Backflow and Meter	L.S.	$1,400.00	1.00	$1,400.00
6.7	Traffic Control Plan Implementation	L.S.	$2,800.00	1.00	$2,800.00

NO.	ITEM	UNIT	UNIT COST	ESTIMATED QUANTITY	TOTAL
7	**Mobilization**				
7.1	Mobilization, submittals, geotechnical testing for submittals, project meetings, demobilization, protection of existing facilities, administration, temporary facilities, safety requirements, insurance, bid bond, payment bond, performance bond, taxes, permits, fees, o & m manuals, facilities startup, as-builts, restroom facilities, project signs, staging area costs, temporary electricity, construction water costs, construction staking, and surveying costs.	L.S	$30,000.00	1	$30,000.00
				SUBTOTAL CONSTRUCTION COST (1-7)	$600,840.00
				CONSTRUCTION COST - CONTIGENCY (10 %)	$60,084.00
				CONSTRUCTION COST - TOTAL	$660,924.00
8	**Engineering for Lift Station**				
8.1	Design of Lift Station Including Electrical Design (9 % of construction cost)	L.S.	$54,100.00	1	$54,100.00
8.2	Geotechnical Report	L.S	$5,000.00	1	$5,000.00
8.3	Bidding of Lift Station (2 % of construction)	L.S	$12,000.00	1.00	$12,000.00
8.4	Construction Management of Lift Station (8 % of construction)	L.S.	$48,100.00	1.00	$48,100.00
				TOTAL ENGINEERING COST	$119,200.00
				TOTAL COST OF PROJECT	$780,124.00

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CITY OF CALEXICO - INIITIAL ASSESSMENT OF LIFT STATIONS NO. 9 AND 11

THG PROJECT No 176.012

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST FOR LIFT STATION NO. 11

DATE: June 20, 2018

NO.	ITEM	UNIT	UNIT COST	ESTIMATED QUANTITY	TOTAL
1	**Site Demolition**				
1.1	Demolition of existing lift station skid.	L.S.	$2,000.00	1	$2,000.00
1.2	Demolition of existing Wet Well Structure.	CYD	$25.00	8	$200.00
1.3	Demolition of existing concrete slab at surface grade.	CYD	$200.00	13	$2,500.00
1.4	Demolition and disposal of miscellaneous piping.	L.S.	$5,000.00	1	$5,000.00
1.5	Remove and dispose of existing site fencing.	L.F.	$15.00	49	$735.00
2	**Excavate Native Material**				
2.1	Remove and dispose of native material for the installation of the wet well.	CYD	$25.00	241	$6,025.00
2.2	Remove and dispose of native material for Class II Base in site.	CYD	$25.00	10	$250.00
3	**Wet Well Subgrade**				
3.1	Install 3/4-inch crushed rock for wet well subgrade.	TON	$40.00	27	$1,080.00
3.2	Place geofabric surrounding the crushed rock.	S.F.	$1.00	570	$570.00

NO.	ITEM	UNIT	UNIT COST	ESTIMATED QUANTITY	TOTAL
4	**Install Lift Station Wet Well**				
4.1	Install Wet Well's Concrete Foundation	CYD	$600.00	9	$5,400.00
4.2	Install Wet Well's Concrete Walls	CYD	$600.00	16	$9,600.00
4.3	Install Concrete Civil within Base of Wet Well	CYD	$600.00	6	$3,600.00
4.4	Install Concrete Slab at Surface Grade.	CYD	$600.00	13	$7,800.00
4.6	Install Granular Sand Backfill	TON	$28.00	290	$8,120.00
4.7	Shoring and Dewatering	L.S.	$150,000.00	1	$150,000.00
5	**Self-Priming Pre-Packaged Pump Station Improvements**				
5.1	Install Self Priming Pre-Package Pump Station per Improvement Plans and manufacturers recommendation	L.S.	$318,000.00	1	$318,000.00
5.2	Install 6-inch AWWA C-900 DR-18 PVC suction pipeline with fittings	L.F.	$40.00	50	$2,000.00
5.3	Install 6-inch diameter stainless steel pipeline anchor brackets	E.A.	$1,000.00	2	$2,000.00
5.4	Install 6-inch x 4-inch ductile iron increasing 90 degree elbow	E.A.	$800.00	2	$1,600.00
5.5	Install 6-inch diameter ductile iron 90-degree elbow	E.A.	$600.00	3	$1,800.00
5.6	Install 6-inch ductile iron discharge piping	L.F.	$50.00	20	$1,000.00
6	**Site Civil Improvements**				
6.1	Install 12inches of class 2 base inside lift station fencing area. the class 2 base material shall be compacted to 95 percent of maximum density per ASTM D-1557.	TONS	$40.00	38	$1,520.00
6.2	Install new 6-foot high chain link fence with vinyl privacy slats	L.F	$40.00	56	$2,240.00
6.3	Power Pole to be relocated by the imperial irrigation district energy division	L.S	$15,000.00	1.00	$15,000.00
6.4	Control and Scada System	L.S	$15,000.00	1.00	$15,000.00
6.5	Light Pole and Fixture	L.S	$3,600.00	1.00	$3,600.00
6.6	Water Service Backflow and Meter	L.S.	$1,400.00	1.00	$1,400.00
6.7	Traffic Control Plan Implementation	L.S.	$2,800.00	1.00	$2,800.00

NO.	ITEM	UNIT	UNIT COST	ESTIMATED QUANTITY	TOTAL
7	**Mobilization**				
7.1	Mobilization, submittals, geotechnical testing for submittals, project meetings, demobilization, protection of existing facilities, administration, temporary facilities, safety requirements, insurance, bid bond, payment bond, performance bond, taxes, permits, fees, o & m manuals, facilities startup, as-builts, restroom facilities, project signs, staging area costs, temporary electricity, construction water costs, construction staking, and surveying costs.	L.S	$30,000.00	1	$30,000.00
				SUBTOTAL CONSTRUCTION COST (1-7)	$600,840.00
				CONSTRUCTION COST - CONTIGENCY (10 %)	$60,084.00
				CONSTRUCTION COST - TOTAL	$660,924.00
8	**Engineering for Lift Station**				
8.1	Design of Lift Station Including Electrical Design (9 % of construction cost)	L.S.	$54,100.00	1.00	$54,100.00
8.2	Geotechnical Report, Including Piezometer	L.S.	$5,000.00	1.00	$5,000.00
8.3	Bidding of Lift Station (2 % of construction)	L.S	$12,000.00	1.00	$12,000.00
8.4	Construction Management of Lift Station (8 % of construction)	L.S.	$48,100.00	1.00	$48,100.00
				TOTAL ENGINEERING COST	$119,200.00
				TOTAL COST OF PROJECT	$780,124.00

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CITY OF CALEXICO - INITIAL ASSESSMENT OF LIFT STATIONS NO. 9 AND 11

THG PROJECT No 176.012

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST FOR PROPOSED PIPELINE IMPROVEMENTS

DATE: JUNE 20, 2018

ITEM NO.	ITEM	UNIT	UNIT COST	ESTIMATED QUANTITY	TOTAL
1	**Install new 8-inch dia. PVC forcemain pipeline from Lift Station No. 9 to a manhole approximately 400 feet south of Lift Station No. 9.**				
A	Sawcutt existing A.C pavement for the full depth	L.F.	$4.00	204	$816.00
B	Remove and Dispose of existing A.C pavement	CYD	$100.00	2	$200.00
C	Trench/Excavate existing native material in areas w/overlying AC Pavement	CYD	$25.00	36	$900.00
D	Trench/Excavate existing native material in areas without overlying AC Pavement	CYD	$25.00	117	$2,925.00
E	Install new 8-inch AWWA C-900 DR-18 PVC forcemain pipeline	L.F.	$24.00	400	$9,600.00
F	Backfilling of Granular Sand in Trenched Pipeline Area	TON	$28.00	89	$2,492.00
G	Backfilling of Native Material in Trenched Pipeline Area without overlying A.C. Pavement	CYD	$15.00	50	$750.00
H	Backfilling of Native Material in Trenched Pipeline Area with existing overlying A.C. Pavement	CYD	$15.00	14	$210.00
I	Install 12-inches of Class II Base	TON	$38.00	55	$2,090.00
J	Install 4-inches of A.C. Pavement	TON	$140.00	5	$700.00
K	Abandon in place and cap ex. 6-inch dia. pipeline	L.S	$4,000.00	1	$4,000.00
L	Implement Traffic Control	L.S	$10,000.00	1	$10,000.00
M	Erosion Control	L.S	$2,000.00	1	$2,000.00
N	Mobilization	L.S	$5,000.00	1	$5,000.00
			SUBTOTAL CONSTRUCTION (A THROUGH N)		$41,683.00
			CONSTRUCTION COST - CONTINGENCY (10 %)		$4,168.30
			CONSTRUCTION COST - TOTAL		$45,851.30
	Engineering Design (8 % of construction)	L.S.	$3,700.00	1	$3,700.00
	Bidding Services (1.5 % of construction)	L.S	$700.00	1	$700.00
	Construction Management (8 % of construction)	L.S.	$3,700.00	1	$3,700.00
			TOTAL PROJECT COST		$53,951.30

ITEM NO.	ITEM	UNIT	UNIT COST	ESTIMATED QUANTITY	TOTAL
2	**Install new 10-inch dia. PVC forcemain pipeline along Scaroni Road From Lift Station No. 11 to the termination point at the mahole located at the Scaroni Rd and Verando Dr. intersection.**				
A	Sawcutt existing A.C pavement for the full depth	L.F.	$2.00	1,014	$2,028.00
B	Remove and Dispose of existing A.C pavement	CYD	$100.00	12	$1,200.00
C	Trench/Excavate existing native material in areas with native material only	CYD	$25.00	358	$8,950.00
D	Trench/Excavate existing native material in areas with AC Pavement	CYD	$25.00	246	$6,150.00
E	Install new 10-inch AWWA C-900 DR-18 PVC forcemain pipeline	L.F.	$28.00	1,350	$37,800.00
F	Backfilling of Granular Sand in Trenched Pipeline Area	TON	$28.00	275	$7,694.40
G	Backfilling of Native Material in Trenched Pipeline Area with AC Pavement	CYD	$15.00	120	$1,800.00
H	Backfilling of Native Material in Trenched Pipeline Area without AC Pavement	CYD	$15.00	235	$3,525.00
I	Install 12-inches of Class II Base	TON	$38.00	70	$2,660.00
J	Install 4-inches of A.C. Pavement	TON	$140.00	25	$3,500.00
K	Abandon in place and cap ex. 8-inch dia. pipeline	L.S	$4,000.00	1	$4,000.00
L	Implement Traffic Control	L.S	$10,000.00	1	$10,000.00
M	Erosion Control	L.S	$2,000.00	1	$2,000.00
N	Mobilization	L.S	$10,000.00	1	$10,000.00
			SUBTOTAL CONSTRUCTION (A THROUGH N)		$101,307.40
			CONSTRUCTION COST - CONTINGENCY (10 %)		$10,130.74
			CONSTRUCTION COST - TOTAL		$111,438.14
	Engineering Design (8 % of construction)	L.S.	$8,900.00	1	$8,900.00
	Bidding Services (1.5 % of construction)	L.S	$1,700.00	1	$1,700.00
	Construction Management (8 % of construction)	L.S.	$8,900.00	1	$8,900.00
			TOTAL PROJECT COST		$130,938.14

ITEM NO.	ITEM	UNIT	UNIT COST	ESTIMATED QUANTITY	TOTAL
3	**Install new 18-inch dia. PVC gravity pipeline in A.C. pavement along Vernado Dr. from Scaroni Rd. to Ollie Ave.**				
A	Sawcutt existing A.C pavement for the full depth	L.F.	$2.00	1,726	$3,452.00
B	Remove and Dispose of existing A.C pavement	CYD	$100.00	32	$3,153.00
C	Trench/Excavate existing native material	CYD	$25.00	929	$23,220.00
D	Install new 18-inch PVC gravity pipeline	L.F.	$55.00	860	$47,300.00
E	Backfilling of Granular Sand in Trenched Pipeline Area	TON	$28.00	349	$9,772.00
F	Backfilling of Native Material in Trenched Pipeline Area	CYD	$15.00	542	$8,127.00
G	Install 12-inches of Class II Base	TON	$38.00	178	$6,764.00
H	Install 4-inches of A.C. Pavement	TON	$140.00	64	$8,960.00
I	Abandon in place and cap ex. 12-inch dia. gravity pipeline	L.S	$4,000.00	1	$4,000.00
J	Removal of native material for new 4-foot dia. manholes	CYD	$25.00	36	$900.00
K	Install 1-foot of crushed rock beneathe new manhole	TON	$40.00	3	$120.00
L	Total vertical feet of manhole	L.F.	$600.00	40	$24,000.00
M	Install 2-feet of concrete in bottom of abandoned manhole	CYD	$250.00	4	$930.00
N	Backfill abandoned manhole with granular sand up to 4 feet below surface grade	TON	$28.00	21	$588.00
O	Remove and dispose of P.C.C collar and manhole P.C.C wall structure for a depth of 4-feet below surface grade	CYD	$180.00	6	$1,008.00
P	Remove and dispose of manhole frame and cover	EA	$100.00	4	$400.00
Q	Remove native material around abandoned manhole	CYD	$25.00	21	$525.00
R	Install 12-inches of class II base for abandoned manhole	TON	$38.00	10	$380.00
S	Install 4-inches of AC Pavement for abandoned manhole	TON	$140.00	4	$504.00
T	Implement Traffic Control	L.S	$10,000.00	1	$10,000.00
U	Erosion Control	L.S	$2,000.00	1	$2,000.00
V	Mobilization	L.S	$15,000.00	1	$15,000.00
			SUBTOTAL CONSTRUCTION (A THROUGH V)		$171,103.00
			CONSTRUCTION COST - CONTINGENCY (10 %)		$17,110.30
			CONSTRUCTION COST - TOTAL		$188,213.30
	Engineering Design (8 % of construction)	L.S.	$15,100.00	1	$15,100.00
	Bidding Services (1.5 % of construction)	L.S	$2,800.00	1	$2,800.00
	Construction Management (8 % of construction)	L.S.	$15,100.00	1	$15,100.00
			TOTAL PROJECT COST		$221,213.30

ITEM NO.	ITEM	UNIT	UNIT COST	ESTIMATED QUANTITY	TOTAL
4	**Install new 18-inch dia. PVC gravity pipeline from the manhole at Cole Blvd and Scaroni Rd intersection extending to lift station No. 11**				
A	Sawcutt existing A.C pavement for the full depth	L.F.	$2.00	3,606	$7,212.00
B	Remove and Dispose of existing A.C pavement	CYD	$40.00	66	$2,640.00
C	Trench/Excavate existing native material	CYD	$25.00	1,944	$48,600.00
D	Install new 18-inch PVC gravity pipeline	L.F.	$55.00	1,800	$99,000.00
E	Backfilling of Granular Sand in Trenched Pipeline Area	TON	$28.00	730	$20,440.00
F	Backfilling of Native Material in Trenched Pipeline Area	CYD	$15.00	1,118	$16,770.00
G	Install 12-inches of Class II Base	TON	$38.00	373	$14,174.00
H	Install 4-inches of A.C. Pavement	TON	$140.00	134	$18,788.00
I	Abandon in place and cap ex. 8-inch dia. gravity pipeline	L.S	$4,000.00	1	$4,000.00
J	Removal of native material for new 4-foot dia. manholes	CYD	$25.00	63	$1,575.00
K	Install 1-foot of crushed rock beneathe new manhole	TON	$40.00	5	$212.00
L	Total vertical feet of manhole	L.F.	$600.00	70	$42,000.00
M	Install 2-feet of concrete in bottom of abandoned manhole	CYD	$250.00	6	$1,500.00
N	Backfill abandoned manhole with granular sand up to 4 feet below surface grade	TON	$28.00	37	$1,036.00
O	Remove and dispose of P.C.C collar and manhole P.C.C wall structure for a depth of 4-feet below surface grade	CYD	$180.00	10	$1,764.00
P	Remove and dispose of manhole frame and cover	EA	$100.00	7	$700.00
Q	Remove native material around abandoned manhole	CYD	$25.00	37	$925.00
R	Install 12-inches of class II base for abandoned manhole	TON	$38.00	17	$646.00
S	Install 4-inches of AC Pavement for abandoned manhole	TON	$140.00	6	$840.00
T	Implement Traffic Control	L.S	$10,000.00	1	$10,000.00
U	Erosion Control	L.S	$2,000.00	1	$2,000.00
V	Mobilization	L.S	$15,000.00	1	$20,000.00
			SUBTOTAL CONSTRUCTION (A THROUGH V)		$314,822.00
			CONSTRUCTION COST - CONTINGENCY (10 %)		$31,482.20
			CONSTRUCTION COST - TOTAL		$346,304.20
	Engineering Design (8 % of construction)	L.S.	$27,700.00	1	$27,700.00
	Bidding Services (1.5 % of construction)	L.S	$5,200.00	1	$5,200.00
	Construction Management (8 % of construction)	L.S.	$27,700.00	1	$27,700.00
			TOTAL PROJECT COST		$406,904.20
			TOTAL CONSTRUCTION COST FOR ALL PIPELINE IMPROVEMENTS		$813,006.94

IX. Conclusion

The Initial Assessment of Sewer Lift Stations 9 and 11 was prepared to analyze the impacts from the ***increased*** sewer flows from the Las Palmas Subdivision, El Portal Subdivision and full build out of the La Jolla Palms Subdivision. This Initial Assessment Document does not include projected future increased sewer flows from other areas contributing sewer flow to Sewer Lift Stations 9 and 11. The recommended improvements and associated costs to Sewer Lift Stations 9 and 11 and a portion of the pipelines upstream and downstream of Sewer Lift Stations 9 and 11 are therefore based solely on the increased flows from the Las Palmas, El Portal and La Jolla Palms Subdivisions after full build out and not from anticipated or projected future flows from other contributing areas.

Following are the major observations and conclusions resultant from the preparation of the Initial Assessment of Sewer Lift Station Numbers 9 and 11:

1. The existing La Jolla Palms Sewer Lift Station is sufficiently sized to convey the increased sewer flows from the Las Palmas, El Portal and La Jolla Palms Subdivisions at full build out. Improvements to the La Jolla Palms Sewer Lift Station is not required.

2. The sewer flow from the La Jolla Palms Sewer Lift Station is directed to Lift Station Number 9. The Lift Station Number 9 sewer flow is directed to Lift Station Number 11. This "piggy back" sewer lift station approach is recommended to be continued as explained in Section VI.

3. The current sewer flows from other areas such as the Walmart Commercial Area and Commercial and Residential Areas in the vicinity of Sewer Lift Stations 9 and 11 contribute relatively small sewer flows to Sewer Lift

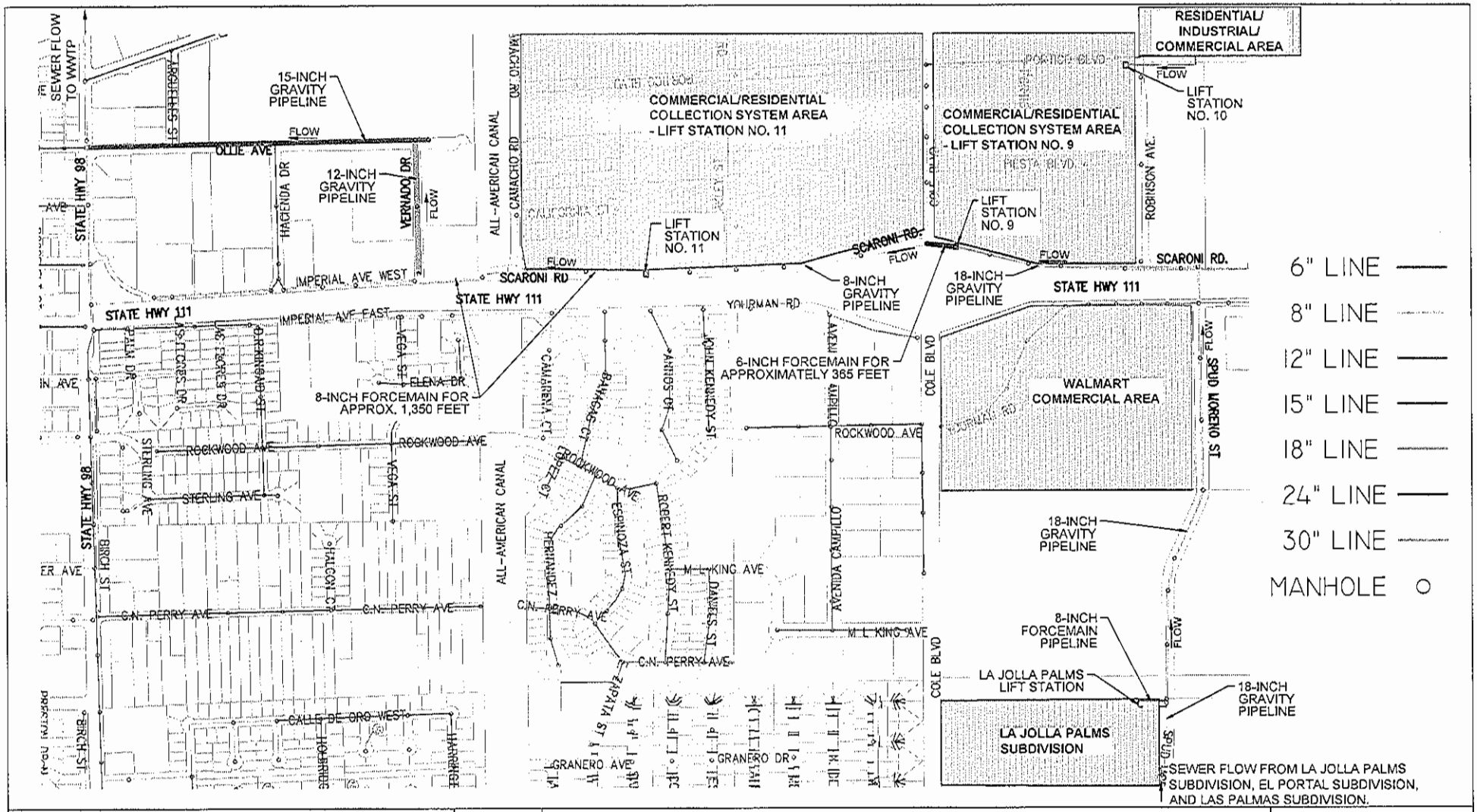
Station Numbers 9 and 11. See Tables 1 and 2. Sewer flows to Sewer Lift Stations 9 and 11 will rise exponentially after the full build out of the Las Palmas, El Portal and La Jolla Palms Subdivisions. See Tables 7 and 8.

4. Sewer Lift Station Numbers 9 and 11 do not possess sufficient capacity to pump the sewer flows from the Las Palmas, El Portal and La Jolla Palms Subdivisions at full build out. It will be necessary to replace Lift Station Numbers 9 and 11 with larger lift stations. See Section VI.

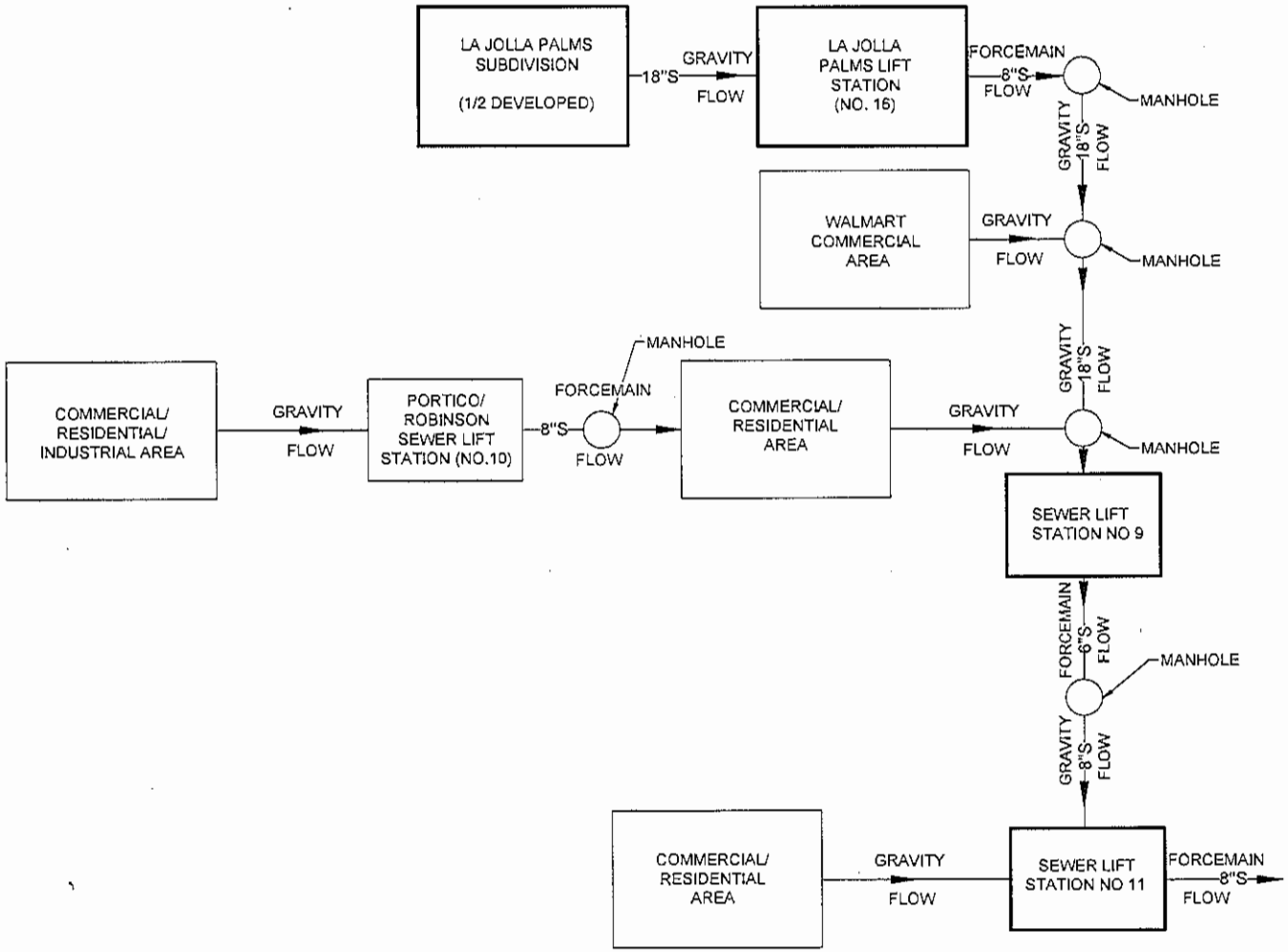
5. A portion of the piping upstream and downstream of Lift Stations 9 and 11 is not adequately sized to convey the sewer flows from the Las Palmas, El Portal and La Jolla Palms Subdivisions at full build out. See Section VII regarding the analysis and replacement recommendations of several pipeline sections upstream and downstream of Lift Station Numbers 9 and 11.

6. The Engineers Opinion of Probable Cost for replacing Sewer Lift Station Numbers 9 and 11 and portions of the pipeline sections upstream and downstream of Sewer Lift Station Numbers 9 and 11 included in Section VIII. Also included in Section VIII is the major user shared cost contribution for the replacement of Sewer Lift Station Numbers 9 and 11 and the improvement of portions of the pipeline sections upstream and downstream of the Lift Stations. See Chart 11. The shared cost is based upon the percentage of sewer flow contribution by each major user.

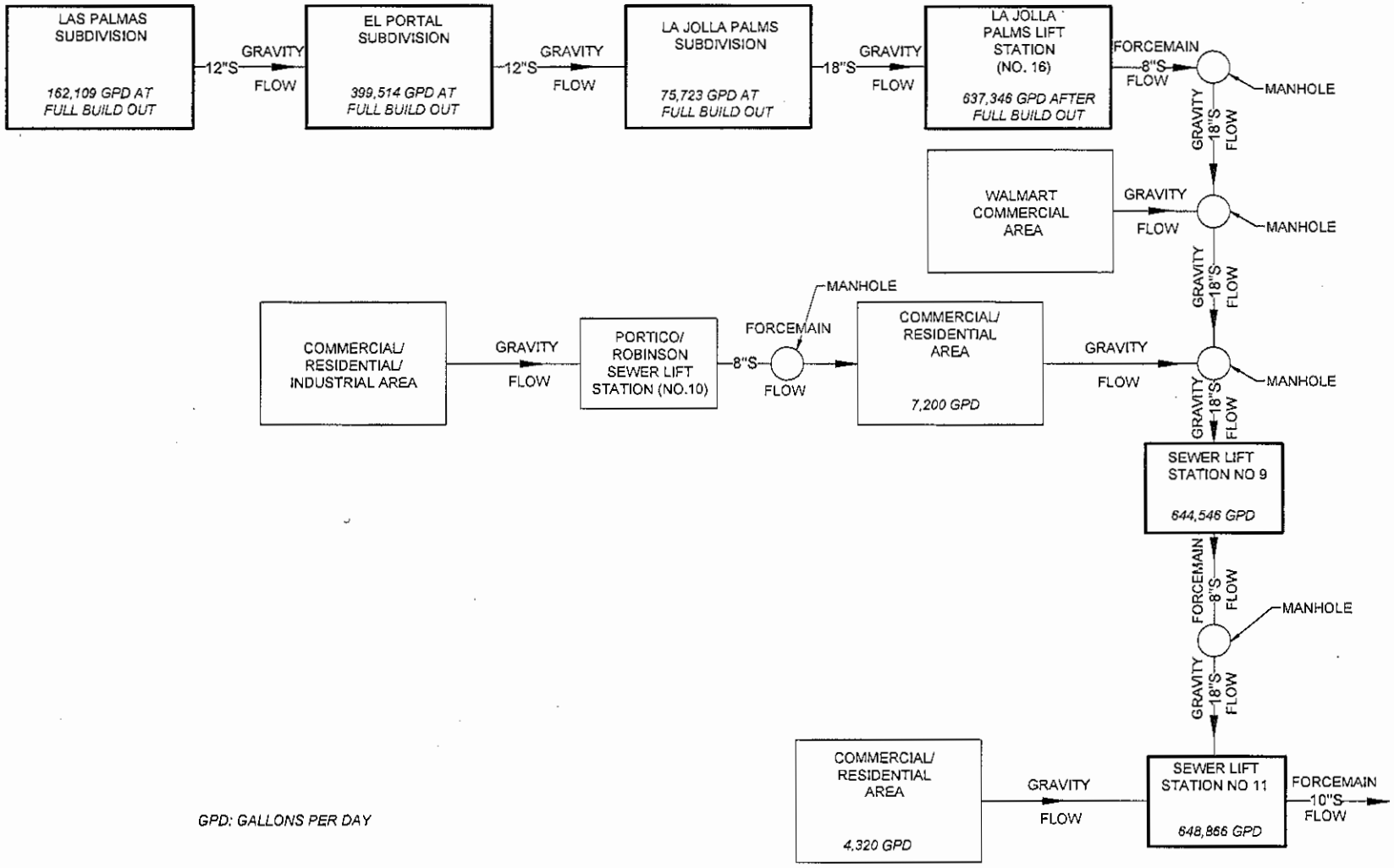
X. Appendix



The Holt Group, Inc. ENGINEERING PLANNING -SURVEYING	NOT TO SCALE	CITY OF CALEXICO INITIAL ASSESSMENT OF LIFT STATIONS NO. 9 AND NO. 11	EXHIBIT 1
1601 NORTH IMPERIAL AVENUE EL CENTRO, CALIFORNIA 92243 | 760-337-3883		EXISTING LIFT STATION NO. 9 AND 11 SEWER VICINITY MAP	PROJECT NO THG 175.012 | DATE: 06-20-2018



The Holt Group, Inc. ENGINEERING PLANNING SURVEYING 1001 NORTH IMPERIAL AVENUE EL CENTRO, CALIFORNIA 92243 — 760-337-3883	NOT TO SCALE	CITY OF CALEXICO INITIAL ASSESSMENT OF LIFT STATIONS NO. 9 AND NO. 11 LIFT STATION NO. 9 AND 11 EXISTING FLOW SCHEMATIC	EXHIBIT 2 PROJECT NO THG 176.012 — DATE: 06-20-2018



The Holt Group, Inc.
ENGINEERING PLANNING SURVEYING
1601 NORTH IMPERIAL AVENUE EL CENTRO, CALIFORNIA 92243
760-337-3883

NOT TO SCALE

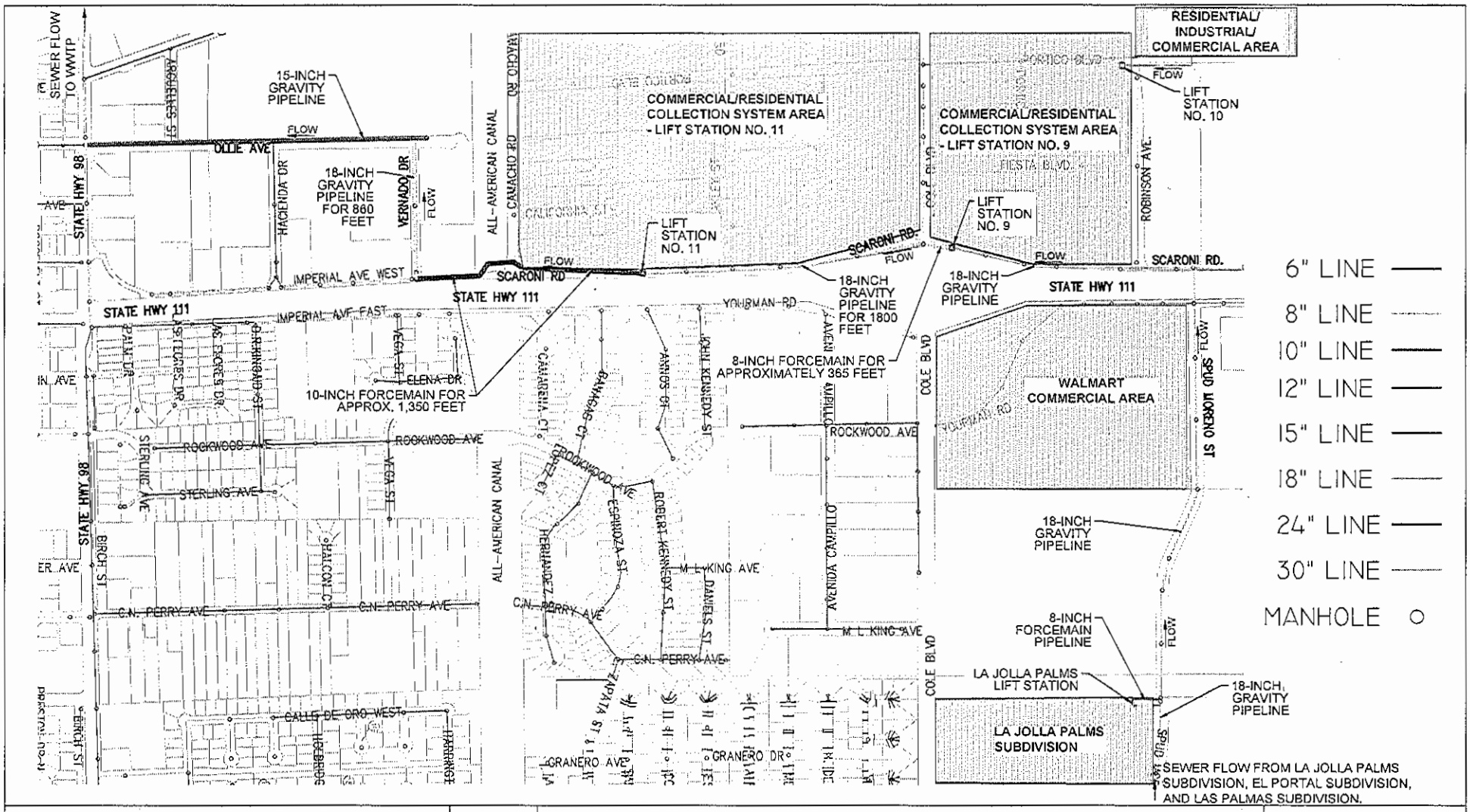
CITY OF CALEXICO INITIAL ASSESSMENT OF LIFT STATIONS NO. 9 AND NO. 11

LIFT STATION NO. 9 AND 11 PROJECTED FLOW SCHEMATIC

EXHIBIT 3

PROJECT NO THG 176.012

DATE: 06-20-2018



The Holt Group, Inc. ENGINEERING PLANNING SURVEYING	NOT TO SCALE	CITY OF CALEXICO INITIAL ASSESSMENT OF LIFT STATIONS NO. 9 AND NO. 11	EXHIBIT 4
1601 NORTH IMPERIAL AVENUE EL CENTRO, CALIFORNIA 92243 / 760-337-3883		PIPELINE REPLACEMENT SEWER SCHEMATIC MAP	PROJECT NO THG 176.012 / DATE: 06-20-2016